

ABSTRACT

Lisa M. Nuesell, *ADVANCING STUDENT SUCCESS AND COLLEGE COMPLETION FOR NONTRADITIONAL STUDENTS: AN EXAMINATION OF DISTANCE EDUCATION PARTICIPATION AND DEGREE ATTAINMENT* (Under the direction of Dr. Crystal Chambers). Department of Educational Leadership, November 2016.

This quantitative ex post facto study examined the relationship between online programming and persistence for the nontraditional student population in higher education. Colleges and universities today are increasing their online course offerings in response to various pressures, including the pressure to continually innovate and integrate emerging technologies into their educational strategies; to promote access to a growing and diverse nontraditional population; and to address public appeals for accountability and improved graduate outcomes. However, there is little research on the outcomes that nontraditional students experience from online programming, such as degree attainment. In this study, the nontraditional student population is examined in terms of the differences among discrete sub-populations, using a traditionality model developed by Horn and Carroll (1996). Data from a national dataset obtained through the National Center for Education Statistics (NCES), the Beginning Postsecondary Students of 2004–2009 Longitudinal Study (BPS:04/09), were analyzed using logistic regression analysis. The study found that the composite nontraditional student group who attempted to complete all courses in academic year 2003-04 through online education was less likely to persist or attain a degree. In contrast, when examining the stratified nontraditional population, those students categorized as moderately nontraditional had a higher probability of persisting or attaining a degree when enrolled in a limited number of online courses. Results of this study would be particularly useful for educators and administrators interested in improving degree

attainment by understanding the diversity of the nontraditional population and the potential role of online programming in their educational attainment.

ADVANCING STUDENT SUCCESS AND COLLEGE COMPLETION FOR
NONTRADITIONAL STUDENTS: AN EXAMINATION OF DISTANCE EDUCATION
PARTICIPATION AND DEGREE ATTAINMENT

A Dissertation

Presented to

The Faculty of the Department of Educational Leadership
East Carolina University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education in Educational Leadership

by

Lisa M. Nuesell

November, 2016

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DEDICATION

To my son, Cole, your curiosity and adventurous spirit, the kind found only in childhood, remind me of what is most important in life. As with everything else, this dissertation is for you.

ACKNOWLEDGEMENTS

There are few accomplishments in life that result without perseverance, sacrifice, and the support of others. My academic journey and the development of this dissertation were no exceptions. I would like to express my sincere appreciation to the many people who supported me through this process.

I would like to start by thanking my dissertation chairperson, Dr. Crystal Chambers, for her encouragement, time, and constant feedback throughout the doctoral program. In addition, I would like to thank my dissertation committee members for without each of you this would not have been possible: Dr. David Siegel, for his willingness to help me continue with my coursework against all odds, Dr. Beverly King, and Dr. David Dommer.

I offer special thanks to my fellow colleagues in the RTP cohort. Your spirited humor and thoughtful conversations kept me balanced. Without your support, encouragement, commiseration, and breakfast dates, this would continue to remain unfinished.

I would also like to thank my parents, Sal and Susan Mercurio, for instilling in me the competitive drive that would not allow me to quit. As parents, you set an incredible example for me and I sincerely appreciate your patience and understanding when my schoolwork caused me to be absent or absentminded.

Finally, I am grateful for my colleague, companion, and husband, Jerry Nuesell, whose love and support have proven invaluable. Thank you for your willingness to walk this journey with me and keep me grounded along the way. I am truly happier for having met you, a better person for having known you, and luckier for the many years we still have ahead.

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CHAPTER 1: INTRODUCTION

Background and Context

Among the widespread innovations in higher education today is institutions' growing use of technology to advance their educational missions and instructional efficacy. In particular, the educational use of mass media and information technology, such as online programming, have been shown to have the potential to increase institutions' capacity and reach, as well as alter the ways in which educators access and impart information to students (Cleveland-Innes & Garrison, 2012; Gumpert & Chun, 2005; Keengwe & Schnellert, 2012). One promising application of instructional technology is in distance education, which is the use of technology to facilitate a connection between students, faculty, and resources in a quasi-permanent separated learning environment (Benson & Samarawickrema, 2009). Distance education can increase opportunities for individuals who may not otherwise be able to pursue post-secondary education; this is because distance learning allows individuals the flexibility to access materials on their own schedules and participate from remote locations (Yukselturk & Yildirim, 2008). Online programs offer students and faculty an alternative to traditional learning paradigms, one that is learner-centered and helps to facilitate technology competence through its delivery model (Deimann & Bastiaens, 2010; Holder, 2007).

Evidence suggests that the benefits of distance learning may be particularly salient among the burgeoning population of nontraditional learners, whose defining characteristics—age, family status, delayed enrollment, part-time status, financial independence and outside employment—are often associated with difficulty attending more traditional face-to-face classes (Giancola, Munz, & Trares, 2008; Pontes & Pontes, 2012). By their very nature, online courses have the capacity to increase flexibility and access, thus alleviating many of the barriers placed

on students, especially those categorized as nontraditional students (Bambara, Harbour, Davies, & Athey, 2009; Nash, 2005). Online programming may well be a logical remedy in assisting nontraditional students, based on its capacity to further institutional reach, promote effectual pedagogy, and increase access (Cleveland-Innes & Garrison, 2012; Gumport & Chun, 2005; Keengwe & Schnellert, 2012).

The nontraditional learner population is increasing in size and visibility (Choy, 2002; Complete College America, 2011). Nontraditional students are typically categorized by characteristics such as their enrollment patterns (delayed enrollment after high school and/or part-time attendance), financial independence, family situation (dependents and/or a spouse), and employment status (35 hours or more per week) (Choy, 2002; Complete College America, 2011; Horn & Carroll, 1996). The continued growth of this population appears to be altering the demographic profile of the customary undergraduate student. A traditionality continuum model, developed by Horn and Carroll (1996), draws attention to the complex nature of nontraditional students by placing them on a traditionality scale according to the number of characteristics a student maintains. Students identified as having one characteristic are defined as minimally nontraditional; students with two or three characteristics are defined as moderately nontraditional; and students who have four or more characteristics are defined as highly nontraditional (Horn & Carroll, 1996). Data from the National Center for Education Statistics (NCES) indicate that 73% of all undergraduates meet some portion of the defining characteristics of a nontraditional student, and approximately half of the total undergraduate population is considered “highly nontraditional,” based on Horn and Carol’s (1996) traditionality continuum model (see also Choy, 2002; Macari, Maples, & D’Andrea, 2006). According to NCES (2014), enrollment in postsecondary institutions by students 25 to 35 years of age is expected to increase 20% between 2010 and 2021. This projected expansion is in addition to the 45% increase already seen between 1996 and

2010 (Hussar & Bailey, 2013). With the noted influx of nontraditional students, many institutions are turning to educational technologies for remote learning as a way to meet student and institutional needs (Moore, Dickson-Deane, & Galyen, 2011; Yukselturk & Bulut, 2007). As consumers of post-secondary education, nontraditional students have shown strong preference for convenience and accessibility, a need that can often be met through the use of online learning platforms (Pontes & Pontes, 2012; Rovai & Downey, 2010).

A number of studies have found that, in assessing student learning outcomes, no significant differences exist between traditional face-to-face and online offerings (Bell & Federman, 2013; Bernard, Abrami, Borokhovski, Wade, Tamin, Surkes, & Bethel, 2009; Means, Toyama, Murphy, Bakia, & Jones, 2009). In a meta-analysis, Russell (1999) indexed 355 research reports, summaries, and papers supporting the lack of significant difference in learning outcomes for face-to-face versus online courses.

Meanwhile, political mandates from the Obama administration, and public policy research organizations such as the Lumina Foundation and the Bill and Melinda Gates Foundation, are calling for postsecondary institutions to become more responsive to a changing society. This shift in the national dialog has resulted in educational policy efforts to increase degree attainment through the use of innovative offerings and delivery models, such as online programming. In a report tracking online education in the United States, the Sloan Consortium indicated that in 2012, 69.1% of institutions reported that online education was of critical importance to their long-term strategic goals, an increase of almost 20% over the span of ten years (Allen & Seaman, 2013).

One important, longstanding measure of student success has been graduation rates. This metric has garnered national attention for its capacity to indicate effectiveness. The importance

of graduation data was reinforced by Congress when they passed H.R.1454, the Student Right-to-Know and Campus Security Act (1989-1990), which requires higher education institutions to publicize graduation rates (Bailey, Crosta, & Jenkins, 2006). Beyond political mandates, institutions are increasingly casting their attention to the improvement of student graduation rates, as they can have regulatory implications, societal repercussions, and financial incentives for both the student and the college (Miller, 2014). Furthermore, successfully guiding students to degree completion is typically part of the underlying fabric for most institutional missions. Doyle and Gorbunov (2010) found that dropout rates are as much as 50 percent higher among students with delayed entry into college, one of the more common characteristics of a nontraditional student. This rather pronounced student departure percentage presents a problem for postsecondary institutions looking to improve rates of retention and graduation.

While the sheer number of studies pertaining to online learning platforms speaks to continued efforts to legitimize this educational approach, most studies have focused on course grade point averages, examinations, and student satisfaction surveys as measures of effectiveness (Zhao, Lei, Yan, Lai, & Tan, 2005) rather than a more longitudinal gauge such as degree attainment. What little research is available tends to be inconclusive; some research points to decreased graduation rates as compared to traditionally seated programs (Terrell, 2014), while other studies suggest the opposite (Neumark, Johnson, & Mejia, 2014). With so much tied to degree completion, it is surprising that the preponderance of online studies rarely extend beyond individual course completion to look more directly at a holistic measure of student success such as graduation rate. Furthermore, retention theory, in its current form, offers little guidance to institutions on how to retain their growing populations of virtual nontraditional students. To that

end, this study will examine the potential effects of online programming on persistence and graduation rates for nontraditional students.

Problem Statement

Initial research in online course completion has suggested that students, both traditional and nontraditional, withdraw from courses at higher rates when compared with their seated counterparts (Hart, 2012; Leeds, Campbell, Baker, Ali, Brawley, & Crisp, 2013; Xu & Jaggars, 2011). As Clark (1983) noted, educational technology is merely a tool for instructional delivery and does not itself have the ability to leverage student achievement. While this may certainly be true of any instructional instrument, the literature also suggests that online programming has the capacity to integrate educational strategy and provide a mechanism for increased student access and opportunity, especially among a population who would otherwise be unable to attend traditional face-to-face models. Yet online programming has spread so rapidly among colleges and universities, that questions surrounding forethought, planning, and educational outcomes have yet to be resolved (Kasraie & Alahmad, 2014; Levy, 2003; Minnaar, 2013). Some feel that institutions have hastened their expansions into online programming for budgetary reasons alone, leading to concerns about academic integrity, student experience, and sustainability (Kasraie & Alahmad, 2014). Meanwhile, public policy and accreditation agencies are calling for evidence-based measures in the form of graduation rates to ensure institutions are able to successfully shepherd students to degree attainment. This issue is of particular concern with the growing population of nontraditional students, who often rely on the convenience and flexibility of online courses, yet are prone to having lower graduation rates than the general population of post-secondary students.

There is a conspicuous lack of research investigating the potential impact online programming may have on graduation rates for colleges and universities. What little research is available centers on comparisons of effectiveness (grade point averages, examinations, or student satisfaction ratings) between traditionally seated and online programs (Bernard et al., 2009; Guri-Rosenblit & Gros, 2011; Zhao et al., 2005), or individual course completion rates (Hart, 2012), rather than more longitudinal success measures such as degree attainment. To further illustrate the lack of data relevant to distance education, the Department of Education's Integrated Postsecondary Education Data System (IPEDS), one of the most comprehensive data collection agencies for higher education, began asking institutions to report on online and distance education as recently as fall 2012 (Lokken & Mullins, 2014). While administrators in higher education tend to agree that online programming is of critical importance to the overall planning and strategy for the institution (Allen & Seaman, 2013), little information is available to understand the scope of this endeavor and the impact it may have on successfully graduating students.

Purpose of the Study

The purpose of this ex post facto study was to determine whether enrollment in online courses had an impact on degree attainment and persistence for nontraditional students. Persistence (defined as those students who remain in attendance or graduate) of two groups of nontraditional students – those enrolled in online courses and those enrolled in traditionally seated programs -- were compared. Through examination of the Beginning Postsecondary Students of 2004-2009 Longitudinal Study (BPS:04/09), a national data set obtained through the National Center for Education Statistics (NCES), this study paid particular attention to the nontraditional student population by further exploring levels of traditionality, as defined by Horn

and Carroll (1996), to determine whether the number of nontraditional characteristics play a function in persistence. Due to conflicting and mixed outcomes of studies surrounding degree completion and online programming, this study focused on the topic from a theoretical perspective as well as through the use of empirical data-driven research. There is a need for additional research to understand, what, if any, impact online programming may have on graduation rates for nontraditional students.

Research Questions

Through a conceptual understanding of nontraditional students, their enrollment behaviors, and online programming, the following research questions and hypotheses were established:

RQ1: Are nontraditional students, as defined by Horn and Carol (1996), who engage in online learning more likely to attain a degree or remain enrolled as compared to those nontraditional students who do not?

H1o: Engaging in online learning is not a significant predictor of the likelihood of persisting for nontraditional students.

H1a: Engaging in online learning is a statistically significant predictor of the odds of persisting for nontraditional students.

RQ2: Are there differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional?

H2o: Students in categories of traditionality do not differ significantly in their likelihood of persisting.

H2a: Students in categories of traditionality differ significantly in their likelihood of persisting.

The research questions will be addressed through examination of data provided by the National Center for Educational Statistics (NCES).

Significance of the Study

This study is significant for a variety of reasons. As noted previously, there is currently a large and meaningful gap in the literature, specifically for studies that focus on potential links between enrollment in online courses and successful degree completion by nontraditional students. Research currently available focuses on the comparison of learning outcomes based on grade point averages and examinations between online and traditionally seated modalities (Bernard et al., 2009; Guri-Rosenblit & Gros, 2011; Zhao et al., 2005), or individual course completion rates (Hart, 2012). This study extends the knowledge base by further examining these outcomes in terms of persistence (which includes graduation rates), providing educators with the information needed to make informed decisions about the role of online programming and how it specifically relates to degree attainment. Results of this study will also be worthwhile to educators interested in understanding the diversity of the nontraditional population by drawing attention to the variances of traditionality within the population. With political mandates and performance-based funding standards compelling institutions to increase college completion rates, it behooves institutions to find opportunities to elevate this measure in meaningful ways. President Obama's "2020 Goal," delivered to a congressional audience, provides a clear directive that "by 2020, America will once again have the highest proportion of college graduates in the world" (Obama, 2013).

Beyond practical needs, there are important reasons to examine the role of online programming in retaining nontraditional students to graduation. There is a need to better understand how educational technology may play a distinct and integral part in educational strategy. Furthermore, a focus on online programming can help uncover a deeper understanding of retention approaches by forcing researchers to include a much broader range of variables often not considered in contemporary student retention theories.

The research offers potential contributions to the fields of education, strategy and planning, and technology by situating the research within these fields. Ultimately, the results of this study serve as an informative example, in a general sense, to institutions that are looking for opportunities to improve graduation rates for their nontraditional population. As E. Gordon Gee (2013), Chair of the National Commission on Higher Education and president of The Ohio State University, laments,

While America boasts an unequalled system of higher education, we cannot afford to squander the opportunity it represents to millions of Americans. We must broaden the national conversation about higher education. It is incumbent upon campus leaders to ensure that completion is as much of an institutional priority as access (American Council on Education, 2013, p.1).

Conceptual Framework

A conceptual or theoretical framework can serve as the underlying structure behind the methodology. It also offers a contextual footing that can help guide the study to new and relevant forms of information (Yin, 2013). Understanding a phenomenon such as persistence for nontraditional students engaged in online learning should not be isolated from a theoretical or conceptual construct. Darkenwald and Merriam (1982) italicize this by stating:

Some see philosophy and action as mutually exclusive concepts belonging to different realms. Another approach is to attempt to synthesize the two into one view. There appears to be an emerging consensus among philosophers that both are necessary: theory without practice leads to empty idealism, and action without philosophical reflection is mindless activism. (p. 37)

The pressure is mounting for colleges and universities to remain responsive to what has become an actively growing and diverse student population. Institutions of higher education have become challenged with the task of realigning both mission and educational environment in support of this new and diverse population (Kasworm, 2009). As andragological theory purports, there are inherent differences in learner characteristics, motivation, and barriers for adult learners (Knowles, 1973), causing institutions to look to new modalities as a way of addressing their needs. At the same time, public policy is calling for accountability and outcomes, primarily in the form of graduation rates, especially as it relates to institutions that receive federal funds and student assistance. There are significant financial incentives for institutions that are tied to metrics such as student success and college completion rates (National Center for Public Policy and Higher Education, 2011). This shift necessitates a broader understanding of, and attention to, online programming including the potential opportunities this mechanism has to offer. If institutions decide to integrate online programming as a way of meeting new demands, it is essential that they do so responsibly and with an understanding about whether this technology can assist or encumber degree completion for nontraditional students. To do so effectively requires a purposeful investigation that is data-driven and evidence based.

Much like the innovation itself, theoretical frameworks surrounding distance education are dynamic and continually advancing. Online learning paradigms have foundations in

behaviorist, cognitivist, and constructivist theories (Anderson, 2011). From a student departure and persistence perspective, the most widely accepted theoretical contributions come from Tinto's Integration Theory (1975) and Bean and Metzner's (1985) conceptual model of student attrition (Rovai, 2003); however, questions have been raised about the applicability of these theories to nontraditional online students (Braxton, Jones, Hirschy, & Hartley, 2008; Braxton, Sullivan, & Johnson, 1997). Developing a better understanding of student departure, including supporting theories, can serve as an analogous structure for institutions looking to improve degree attainment. Specifically, this study looked to the theoretical contributions of Tinto (1975, 1987, 1993), Bean and Metzner (1985), and Kember (1989) in an effort to better understand and explain the possible causes of student attrition. Student departure theory served as a framework to guide inquiry and interpret nontraditional persistence findings. In addition to retention models, this study was guided by the concept of traditionality as a way of defining the population and differentiating nontraditional students by their varying characteristics. Generally speaking, the literature has categorized nontraditional students using age-based distinctions, and while this may be fitting for the greater part of the population, there are a number of other characteristics that define nontraditional students and which may, in turn, have an impact on successful degree attainment. For the purpose of this study, Horn and Carroll's (1996) scaled model of traditionality was employed to provide a more holistic understanding and evaluation of this student base. Horn and Carroll (1996) offer a more nuanced approach to categorizing nontraditional students by including seven possible characteristics to define nontraditional students. The specific characteristics and the associated scaled model are outlined in more detail in upcoming sections. To this end, Chapter 2 will look to theory as a way of deconstructing the larger order by providing a review of topics related to persistence, and degree attainment.

Methodology Overview

The literature on nontraditional students and student success draws attention to the importance of course delivery convenience and flexibility (Deimann & Bastiaens, 2010; Holder, 2007). While courses offered via distance education tend to have higher attrition rates than their seated counterparts (Bollinger & Halupa, 2012; Lee & Choi, 2011), they also offer a mechanism to offset some of the competing commitments identified by many within the nontraditional population (Pontes & Pontes, 2012). These competing commitments, such as family responsibilities and full-time employment, have been shown to directly influence a student's decision to remain enrolled (Fike & Fike, 2008; Gilardi & Guglielmetti, 2011). This study used data from the Beginning Postsecondary Students of 2004-2009 Longitudinal Study (BPS:04/09) to investigate possible areas of influence between online programming and nontraditional persistence and degree attainment. The BPS:04/09 is a national database sponsored by the National Center for Education Statistics (NCES) and is cited as being “the primary federal entity for collecting, analyzing, and reporting data related to education in the United States and other nations” (Wine, Janson, & Wheelless, 2011). The BPS:04/09 dataset was deemed an appropriate instrument for the following reasons: (1) the BPS:04/09 tracked first-time students (including nontraditional students) enrolled in a postsecondary institution (United States or Puerto Rico) for a six-year period; (2) data collected from the survey captured participation in distance education, demographic variables, and student persistence status including degree attainment; and (3) response data were compiled through the 2004 National Postsecondary Student Aid Study (NPSAS:04), student interviews, and institutional reported data. The BPS:04/09 was developed to be nationally representative of first-time attending students, with a total of 16,680 respondents, and representing 1,360 postsecondary institutions across all sectors. Established as a longitudinal

study, the BPS:04/09 collected data in increments of three years over a six-year period, beginning in 2004, to better understand the educational experiences of students through graduation and into the workforce.

The present study adopted a quantitative, non-experimental research design to address the primary research questions and determine if any potential relationships exist between enrollment in distance education and persistence for nontraditional students. Statistics were calculated using PowerStats, an online statistical software package provided by NCES for use with their postsecondary studies. Descriptive statistics, standard deviations, and frequencies were developed for the sample and a binomial logistic regression model was used to determine if there were any significant predictive relationships between one or more of the identified variables. The dependent (outcome) variable is degree attainment and/or continued persistence by the student at the point of the study's conclusion in 2009. The independent (predictor) variables identified for this study are enrollment in distance education and demographic variables used to classify students as traditional and nontraditional.

Limitations/ Delimitations

As is the case with any research design, there are a number of inherent limitations with the study. These limitations will be separated into two categories: (1) the NCES dataset and (2) the overall study.

NCES Dataset

The data obtained for this study was collected by the National Center for Education Statistics and relied on student-level data from the National Postsecondary Student Aid Study (NPSAS) and from a longitudinal spin-off study entitled 2004/09 Beginning Postsecondary Students Longitudinal Study (BPS:04/09). The BPS:04/09 dataset used is subject to limitations

by design. First, while extensive, the dataset obtained from NCES is limited by the use of variables that can be effectively defined and measured. For example, the dataset is unable to provide information on contextual factors that may prove useful in understanding the findings or analyzing variations. Variables not captured in the existing data set may, in part, contribute to successful degree completion. Second, participants were not obtained through use of a simple random sampling strategy; instead a clustering strategy by participating institutions was employed. Third, the dataset maintains reliable results for institutional reported data, but some independent variables were obtained through self-reported responses by students and relied on memory recall, resulting in possible concerns regarding accuracy (Menard, 2007). Fourth, the BPS:04/09 dataset represents a longitudinal study of postsecondary students. As with most longitudinal studies, the long duration can result in a loss of interest or participation in the study (Menard, 2007). Fifth, the dataset is representative of first-time attending students. Many nontraditional students have previously attended a postsecondary institution(s) and are therefore not considered a first-time student. Finally, enrollment patterns for nontraditional students cannot always fit within anticipated constructs due to the complexity of life circumstances; therefore, the dataset may not account for degree completion outside of the BPS:04/09 longitudinal timeline of six years.

Study Design

First, there is the potential for bias on the part of the researcher. I have taken an active role working with online programming and nontraditional students, and as a result, may have developed a number of unconscious assumptions about the practice that have the potential to influence the direction of the literature review, inform the selection of variables to be studied, and/or influence the interpretation of results. Second, the topic of online programming is

continually evolving, and as such, there is often confusion among institutions, and even within institutions, about definitions related to this broad topic (Bacow, Bowen, Guthrie, Lack, & Long, 2012; Hart, 2012). Because new technology and delivery models are evolving rapidly, it can be difficult to effectively compare institutional-reported data and draw comparisons, even when using a single common dataset. Third, due to the relative newness of online programming within higher education, accreditation and quality standards are works in progress and continually evolving (Meyer, 2014). Consequently, institutions may differ on the policies and practices associated with the modality, which could have an impact on findings. As an example, institutions vary widely in the support structure and services available to students (e.g., remote tutoring, advising, or financial assistance), as well as in policies that can impact online program participation (e.g. limited degree or course offerings or limitations for online course enrollment). Each of these in and of themselves could impact persistence or degree completion. Nonetheless, the conclusions drawn may still have predictive value. Researchers, administrators, and others may use the findings of this study as a contextual backdrop to help further the understanding of distance education usage for degree attainment among nontraditional students.

Definitions

This section outlines the conceptual definitions used in this study. Due to the rather emergent quality of technology-based programming, definitions and terms tend to evolve as the industry evolves, resulting in a lack of consensus surrounding accepted definitions. It is therefore necessary to clarify important terms and concepts used in the development of the study.

Attrition - When a student discontinues enrollment at a postsecondary institution and fails to reenroll in subsequent consecutive semesters (Seidman, 2005).

Degree Attainment - The act of completing the required coursework and earning a postsecondary degree. For the purpose of this study, degree attainment specifically refers to an earned degree within the six-year period of the study.

Dropout - A student who has formally withdrawn, left without notifying the university, or did not complete a course during a semester (Castles, 2004). For the purpose of this study a student was considered a dropout if they did not successfully graduate or remain enrolled within the six-year period of the study.

Graduation Rate - The overall percentage of an institution's first-year undergraduate student base who complete a degree within 150% of the anticipated program timeframe (U.S. Department of Education, 2015).

Nontraditional Student - A student who has one or more of the following characteristics: (a) aged 25 years or older, (b) delayed enrollment in postsecondary education, (c) maintains part-time attendance, (d) is financially independent, (e) maintains full-time employment, and/or (f) has dependents (Choy, 2002; Horn & Carroll, 1996). Nontraditional students are further categorized based on their level of traditionality as defined by Horn and Carroll (1996): minimally nontraditional (one characteristic), moderately nontraditional (two or three characteristics), and highly nontraditional (four or more characteristics).

Online Programming or Distance Education - Educational learning that occurs where participants and learning resources are separated by time and/or geography (Rovai, Ponton & Baker, 2008; see Table 1 for classifications related to online course delivery).

Persistence - A student who is able to remain enrolled or completes an academic course of study despite obstacles or adverse circumstances (Hart, 2012).

Table 1

Course Classifications Based on Material Delivery

Percent of Coursework Delivered Online	Type of Course	Description
0%	Traditional	Course where no online technology was used. Content is delivered in writing or orally.
1-29%	Web Facilitated	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a learning management system (LMS) or web pages to post the syllabus and assignments.
30-79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
Over 80%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Note. Adapted from “Going the Distance: Online Education in the United States,” by I. E. Allen and J. Seaman, 2011

Stopout - A student who temporarily leaves the institution and then returns (Seidman, 2005). For the purpose of this study, a student could be categorized as a stopout if s/he left an institution for any period of time and returned prior to the six-year period of the study.

Transfer - A student who starts his/her education at one institution and subsequently transfers educational credits to another institution (Hoyt & Winn, 2004).

Organization of the Study

Chapter 1 of this dissertation provided an overview of the study including background and context of the challenges facing the enterprise of higher education as the student base shifts to a more nontraditional population and the calls for accountability continue to mount. Moreover, the first chapter outlined the purpose of the study, which was to investigate the use of online programming to promote increased degree attainment among nontraditional students using quantitative analysis of national data. This study took the position that online programming has the capacity for increased flexibility and accessibility, allowing nontraditional students an opportunity to complete a degree that might otherwise not be possible through traditional models. Finally, a brief survey of the conceptual framework and study methodology was presented. The balance of this study will be executed through four chapters. Chapter 2 will provide the history, response of higher education, and conceptual framework by exploring the following topics: (a) the history of distance education, (b) the changing face of higher education, (c) the expansion, value, and challenges impacting online learning, (d) the shifting profile of college students, (e) the significance and factors impacting graduation rates, and (f) a review of retention models and theory. Following the review of the literature, Chapter 3 will outline the systematic analysis of the research methods applied to this study and detail the national dataset used. Chapter 4 will include an in-depth examination of the data and determine whether

nontraditional students enrolled in online courses maintain higher levels of persistence as compared with traditional face-to-face models. The review will also investigate the nontraditional population by exploring levels of traditionality. Lastly, Chapter 5 will provide a contribution to the knowledge of online programming, nontraditional students, and degree attainment by detailing a summary of the conclusions and articulating possible avenues for future research.

CHAPTER 2: REVIEW OF LITERATURE

The purpose of this study was to investigate the potential benefits of online programming for nontraditional students, specifically for their persistence to degree as measured by graduation rates. The preceding chapter outlined several of the relevant challenges facing colleges and universities, including the pressure to continually innovate and integrate emerging technologies into their educational strategies; the need to be responsive and promote access to a growing and diverse nontraditional population; and the tension brought about by public appeals for accountability and improved graduate outcomes. This chapter provides a context for this study by expanding upon these themes through a comprehensive review of the literature. This survey of the available research aided with the identification of variables selected for inclusion in the research design and analysis.

The literature review is organized into four sections, which focus on (a) distance education, especially online programming; (b) the growth of the nontraditional student population; (c) graduation rates as a key outcome of higher education institutions; and (d) theories of student departure, persistence, and retention. The first section describes the history and expansion of distance education, a key trend in the changing face of higher education today. The second section outlines the shifting profile of the college student and the increasing number of students who do not fit the traditional profile of the college student. The third section focuses on the significance of graduation rates and the factors that affect them. Finally, the fourth gives an overview of three theories from the 1960s, 1970s, and 1980s that have sought to explain student integration, attrition, and retention. The analysis of the literature suggests that online programming has the potential to improve the graduation outcomes of nontraditional students, thereby benefitting students and institutions alike.

History and Development of Distance Education

Online education finds its historical roots in early distance and correspondence education. Accounts vary as to the birth of distance education, but it is most frequently associated with an English inventor of shorthand, Sir Isaac Pitman, in 1840 (Colorado & Eberle, 2010). Driven by an entrepreneurial spirit, Pitman sought to remove the barriers of traditional education and gain access to a potentially unlimited student base by creating the first correspondence courses. These long distance courses gained notoriety, and in turn, led to the department of correspondence teaching in the early 1900s at the University of Chicago, one of the founding schools of distance education in the United States (Colorado & Eberle, 2010). As technology advanced, distance education evolved into many different forms, including audio, teleconferencing, video, and most recently multi-media and Internet-based forms of education (Moore & Kearsley, 2011).

Despite once being stigmatized, distance education and online courses have begun to negotiate a level of respect within academia, garnering support and acknowledgement as a pedagogically sound form of education. Holmberg (1995), a noted scholar in the field of virtual education, stated, “The image of distance education in many countries changed from one of a possibly estimable but little respected endeavor to one of a publicly acknowledged type of education” (p. 4). Beyond mere acceptance as a model that is on par with traditional models, distance education has also, in tandem with technological advances, caused educators to focus less on the limitations of online programming and more on the potential opportunities this mechanism has to offer. It is no longer a question of it being comparable; rather, it is now changing the educational landscape on a global scale (Bowen, 2013).

This widespread change may be evidenced in the unprecedented growth of online programs. Online offerings now represent a standard element of institutional offerings (Allen &

Seaman, 2014; Crawford-Ferre & Wiest, 2012). As evidence of the pervasive growth of online education, the Sloan Consortium reported in 2012 that a total of 7.1 million students enrolled in at least one online course during the 2011-2012 academic year, an increase of 412,000 over the previous year (Allen & Seaman, 2014). The U.S. Department of Education's Integrated Postsecondary Data System (IPEDS) offered a slightly more reserved estimation, identifying approximately 5.5 million students in 2012 who had enrolled in at least one online course and within that subset, close to 2.6 million enrolled in fully online programs (USDOE, 2014). Discrepancies in the data notwithstanding, both agencies agree that online education is growing at a pace that surpasses the growth rate of the overall postsecondary student body. For comparison, the Sloan Consortium reported that the online growth rate from 2002 to 2012 was 16.1%, while the overall growth rate for the entire higher education student body within the same reported period was 2.5% (Allen & Seaman, 2014). Beyond these metrics, in a survey of prospective students, approximately one-half indicated a preference for fully online delivery options or a blended combination of traditional and online modalities (Garrett, 2007). Furthermore, the rise in distance education has created a fertile ground for the birth and rapid growth of Massive Open Online Courses (MOOCs). MOOCs are free open access courses delivered virtually through the World Wide Web, offering an alternative to traditional credit driven models. While the attention given to MOOCs is considerable, empirical evidence of success or failure is fairly limited to date (Liyanagunawardena, Adams, & Williams, 2013). The lack of rigorous assessment currently available, however, has done little to temper the level of interest and continued expansion of MOOCs. Data provided by Class Central (an online course aggregator from many postsecondary schools) revealed 35 million students enrolled in at least one of the 4,200 MOOCs available during the 2015 calendar year (Shah, 2015). The preference

of students as demonstrated by growing enrollments in virtual learning is a clear signal to academic leaders that online programming deserves meaningful consideration as a strategy for sustainable and scalable growth.

The expansion of innovation within colleges and universities has created new opportunities for academics, as well as institutional capacity and reach. At the same time, it is also tempered by the very real consequence of additional competition from institutions that were previously outside the sphere of access (Allen & Seaman, 2010; Rovai & Downey, 2010). In a study conducted by Allen and Seaman (2013), of the 2,820 participating higher education institutions, almost 62% of colleges reported that their recruitment span had increased significantly as a result of offering online programs.

Particularly in the face of competition, institutions experiencing a reduction in enrollment bear a sense of pressure to consider online programming as a mechanism to meet student demand or risk becoming stagnant in an evolving educational landscape (Dilbeck, 2008; Rovai & Downey, 2010; Sjogren & Fay, 2002). Cannell (1999) emphasizes this by adding, “Distance education, and its accompanying technology, is attractive to higher education because it seems to address the challenges of declining enrollments, increasing costs, and increasing globalization” (p. 6). Brown and Duguid (1996) speak further to this relationship by stating, “For all the institutional inertia, universities are changing—primarily because their ‘environment’ is changing” (p. 12). In this vein, Christensen and Eyring (2011) have likened colleges and universities to living organisms that “seek not just to survive, but to grow and improve in scale, scope and prestige” (p. 48).

Indeed, many institutions have hastened their expansion into distance education despite lacking the necessary resources and data to fully comprehend how this new initiative may impact

the institution and the outcomes of students (Rovai & Downey, 2010). This leads to one of the many criticisms of the current online program development process: that is, it focuses too singularly on curricular delivery and course development without proper consideration of the holistic student experience and outcomes (Husmann & Miller, 2001). It is important to offer academically sound and flexible delivery options to meet the new and growing demand being placed on institutions; it is equally important to ensure these offerings promote degree completion among participants.

Expansion of Online Programming

Like distance education more broadly, online programming grew out of an unmet need in traditional education (Karatas, Ozcan, Polat, Yilmaz, & Topuz, 2014). Since its beginnings, online programming has been recognized as having the capacity to shift traditionally seated paradigms within higher education. Online programming is often said to be growing at a rate that far outpaces traditional programs. With this pattern of growth, institutions that choose not to offer online options are quickly becoming the minority (Allen & Seaman, 2013). According to a recent study conducted by the Sloan Consortium, over 99% of all public institutions include online offerings, and a majority of institutions within all other segments (private and for-profit) report that they offer some type of online opportunities (Allen & Seaman, 2013).

The continued growth of online programs has permeated cultural and geographical boundaries, illustrating its sweeping and global reach. From an international perspective, the proliferation of online programs is fueled by its ability to serve students from distant or isolated areas (Vasudevan, 2013). For example, the University of London International Programme currently has 50,000 students taking classes from 190 different countries (Simpson, 2013). The largest university is The Open University of China (formally China Central Radio and Television

University), boasting more than 3.5 million registered students (The Open University of China website, 2016). Within the United States, education is the second-largest market, after healthcare, and represents an annual market share of approximately three-quarters of a trillion dollars (Dundon, 2008). Within this market, online and distance education are seen as the fastest-growing segment (see Table 2).

From Table 2, one can see that online programming has not only become an integral part of the educational infrastructure, but also has secured a footing in the future of education strategy. Dunn (2000) echoes these sentiments, forecasting significant advancements in the upcoming twenty years:

The number of degree-granting institutions will continue to grow, while the number of traditional campuses will decline. By 2025, half of today's existing independent colleges will be closed, merged, or significantly altered in mission (p. 37).

Perhaps the most dramatic evidence of Dunn's (2000) prediction can be seen in the staggering proportion of institutions that have come to include online education as institutional strategy. Allen and Seaman (2013) found that, in 2012, close to 70% of institutions looked to distance education as a critical component of their long-term strategy thereby reshaping both their mission and market.

The increase in distance education enrollment can be attributed to two main factors. First, the population of nontraditional students is on the rise, and this group tends to participate in distance education at higher rates than their traditional peers (Radford & Weko, 2011). NCES (2015) has confirmed this growth, reporting that enrollment for students over age 25 increased by 35% between 2000 and 2012. Furthermore, additional gains of 20% are projected through the year 2023, almost doubling the projected growth of traditional-aged students (USDOE, 2015).

Table 2

Comparison of Total Enrollment to Online Growth, 2002-2012

Academic Year	Total Enrollment	Total Enrollment Annual Growth Rate	Online Enrollment of at Least One Online Course	Online Enrollment Annual Growth Rate
2002	16,611,710	NA	1,602,970	NA
2003	16,911,481	1.8%	1,971,397	23.0%
2004	17,272,043	2.1%	2,329,783	18.2%
2005	17,487,481	1.2%	3,180,050	36.5%
2006	17,758,872	1.6%	3,488,381	9.7%
2007	18,248,133	2.8%	3,938,111	12.9%
2008	19,102,811	4.7%	4,606,353	16.9%
2009	20,427,711	6.9%	5,579,022	21.1%
2010	21,016,126	2.9%	6,142,280	10.1%
2011	20,994,113	-0.1%	6,714,792	9.3%
2012	21,253,086	1.2%	7,126,549	6.1%

Note. Table adapted from Allen and Seaman. Sloan Consortium (2013).

The second factor contributing to the growth in the nontraditional student population is that the central proportion of institutions have increased their online offerings, thus leading to the growth in overall distance education enrollment (Allen & Seaman, 2013; Radford & Weko, 2011).

The growth of the nontraditional population has served as a catalyst for many institutions to establish or increase their online offering portfolios. Online programming is seen as a viable option to help to address the increased need for access and flexibility as student demographics change. At the same time, the current research surrounding graduation rates for distance education has been inconclusive, and some suggest that rates for degree-seeking students in online programs are lower than their companion-seated programs (Terrell, 2014). Given that institutions are at a crossroads where they need to increase capacity, service, and academic outcomes, online programming may well be a viable option. However, its correlation with degree attainment will need to be investigated more thoroughly in order for educators and policymakers to understand its viability for the growing segment of nontraditional students.

Regulatory Oversight and Accreditation

The increase in overall college enrollment corresponds to a shift from an industry-based economy to a knowledge-based one. This shift marks an opportunity and an obligation to ensure that postsecondary education is meeting emergent needs and embracing innovation in a responsible way (Ramaley, 2007). Recent changes have created a need for new educational policies, including oversight and compliance standards. Parker (2012) remarked on the legitimacy issues surrounding online programming by stating, “Online education carries the dual burdens of rapid growth and deepening suspicion about its quality” (p. 63).

A 1999 report from the National Center for Educational Statistics (NCES) outlined a significant dearth in the accreditation of and quality assurance in distance education programs in

spite of the recognized growth of such programs (Lewis, Snow, Farris, Levin, & Greene, 1999). This finding was underscored in a more recent report from the Secretary of Education's Commission on the Future of Higher Education (U.S. Department of Education, 2006), which found that the successes of postsecondary institutions were matched only by their "significant shortcomings" (p. 7). According to the report, accreditation and federal and state regulation have not only failed to support innovation; they have also impeded the ability of higher education to develop entrepreneurial strategies to meet the needs of diverse student populations (USDOE, 2006). More recently, in a 2014 audit by the Office of the Inspector General, the U.S. Department of Education issued a report entitled, "Title IV of the Higher Education Act Programs: Additional Safeguards are Needed to Help Mitigate the Risks that are Unique to the Distance Education Environment" (USDOE, 2014). This report outlines the potential for students to commit federal financial aid fraud due to the lack of safeguards regarding online and distance education.

Since the 2014 report was released, federal and state governments have called on the higher education sector to adopt standards that ensure responsible growth, provide adequate support, and guard the integrity of academic programs. Pressure and mandates for accountability have followed, requiring measures to demonstrate student learning outcomes in the form of retention, job placement, and graduation rates (USDOE, 2006). Some critics have argued that online programming, and the strain it places on institutional policy, has created a level of unease among governmental agencies and the public at large regarding the ability of accreditation agencies to effectively regulate this new terrain. Porter (2015) noted that one of the failings of accreditation agencies is that they apply traditionally minded standards to distance education. Accrediting agencies (and their auditors) often misunderstand nontraditional education practices

and routinely question or try and assimilate these practices with more traditional ones. This, in turn, can necessitate long and costly visits to postsecondary institutions and include extensive paperwork and submissions.

Although most accreditation agencies are, perhaps, more laggard than some would like, they have succeeded at altering current policy standards to include evolving technology and educational practices. One example of such a measure is a comprehensive document describing best practices for electronically offered degree and certificate programs. The document was created by the Western Cooperative for Educational Telecommunications (WCET), an organization with recognized expertise in the field of distance education, in order to “assist institutions in planning distance education activities and to provide a self-assessment framework for those already involved” (WCET, 2002, p. 1). These standards, which have been adopted by eight regional accrediting commissions, have been made widely available to the higher education community and have been recognized by numerous programmatic accrediting agencies, the U.S. Department of Education, and the American Association of University Professors (AAUP), among others. However, while these quality standards are broadly distributed, they remain largely voluntary except for institutions that choose to seek regional accreditation.

Although new standards are continually issued, a common concern among accreditors is the inherent difficulty of authentication. By definition, online programming is both virtual and remote. The underlying challenge with extended education centers on the institution’s ability to ensure that the students who are enrolling are who they claim to be, and furthermore, that they are the ones who are completing the educational requirements as prescribed by the institution. As accreditors struggle with how to ensure authenticity, they require institutions to furnish ever

more data and evidentiary documents, causing a significant strain on administrative time and resources.

It is important to note that online programming has opened the door for many students to attend colleges and universities previously beyond their reach. Institutions with robust online programs recognize this potential and are actively recruiting across the country. This has attracted concern from state authorizing officials, who require approval to recruit and enroll within state boundaries. Because each state's authorization process operates independently, the required documents, fees, and approval processes vary considerably. The resulting confusion and inefficiency can lead to administrative backlogs as well as substantial fees and significant waiting periods for colleges and universities. While the Federal government is currently working to streamline this process by encouraging all state legislatures to approve the State Authorization Reciprocity Agreement (SARA), it has been slow to take hold. SARA would enable institutions that are in good standing with their regional accrediting bodies to receive state approval by reciprocity, through a single fee and authorization process.

It is, however, important to note that regulatory oversight and accreditation can provide a number of benefits for students and institutions. Institutions that seek to participate and are successful in the accreditation process retain the ability to secure much-needed federal funding and maintain a level of credibility for prospective students and other stakeholders (Parker, 2012). Graduation rates, as part of accreditation standards, have become an increasingly accepted indicator of quality assurance and student success, therefore, institutions will need to determine what role, if any, online programming can play in improving nontraditional student outcomes.

Value of Online Programming

The significance of online programming within higher education is rapidly increasing, as evidenced by the sheer number of programs being added by institutions each year. To many, online programming has become a common solution to a number of challenges facing higher education and is considered of critical strategic importance for institutional sustainability (Allen & Seaman, 2011). As outlined below, this increase is being fueled by many different factors, thus substantiating the value of online programming.

According to Lipps (2009), online programming has the potential to lower operational costs and improve efficiencies, and may play a significant role in managing college affordability. Aoki and Pogroszewki (1998) posit the three major factors contributing to the growth of online programs: (1) institutions' desire to increase enrollment by broadening their prospective pool through non-resident students; (2) a recognition of the unique needs of adult students to accomplish their educational goals while balancing the constraints of time and distance; and (3) an appreciation of new technologies that is making online learning more attractive. Miller and Schiffman (2006) contributed to this list, adding that online programming has the additional capacity to improve the quality of educational offerings and teaching methods.

For students, the perceived value in online programming is based on their motivations and their opportunities to realize desired outcomes. For many, the opportunity to increase salaries, attain professional advancement, or change careers can be actualized through the convenience of online programs, whereas traditional offerings come with the barriers of time and proximity. Threlkeld and Brzoska (1994) suggested that the value of online programming for students ultimately falls within two domains: (1) convenience and flexibility and (2) accessibility. Aslanian and Clinefelter (2012) found that nontraditional students have numerous

motivations to engage in distance education. The most pervasive reasons included the ability to maintain employment and family responsibilities, being able to choose between full-time and part-time options, the ability for self-directed instruction, flexibility and convenience in course delivery, increased options in programs of study and institutions, accelerated opportunities, and lower tuition costs (Aslanian & Clinefelter, 2012).

Viewed from a macro perspective, the value of online programming can also be seen as advantageous to society as a whole. The increased accessibility of online programming allows higher education to become a reality and a viable option for a greater percentage of the population. A correlation has been found between postsecondary education and measures of wellbeing, community involvement, and cultural acceptance (Miller, 2006). Furthermore, individuals who earn a degree tend to be more active citizens in their communities; engage in more volunteer activities and political involvement; are more likely to have regular health care; and are more likely to instill the value of education in their children (Baum, Ma, & Payea, 2013; Miller, 2006). Finally, the community and the economy also enjoy a direct monetary gain, as college graduates tend to have higher earnings, thus paying more taxes and spending more discretionary income, ultimately improving the economy (Baum, Ma, & Payea, 2013; Miller, 2006).

Challenges Impacting Online Programming

Although enrollment in online courses has grown significantly over the past decade, this growth is marked by a number of complexities that deserve consideration. The innovative nature of online programming is by its nature disruptive, and like most disruptions, it can be at odds with the more traditional ethos of higher education (Christensen, Horn, Caldera, & Soares, 2011). To be sure, online programming has ushered in solutions to many of the needs of a

growing student base, but its progressive nature has also caused stress on many pillars of the higher education enterprise. For some educators, the adoption of innovation is a natural part of the evolution of education; for others, this cultural shift elicits a level of uncertainty and represents a formidable challenge to the sanctity of traditional education practices. In an effort to provide a balanced review of online programming within the higher education domain, it is necessary to mention the challenges surrounding the implementation and management of online programs.

Responding to Evolving Technology

As technology continues to evolve, each development brings incremental changes in the dissemination of information and in the interaction between faculty and student. These changes do not come without significant costs, and most institutions simply cannot keep pace with the changes. This stressor can feed the growing competition among many institutions, creating a culture of rivalry and further stratifying rich and poor institutions.

From a fiscal perspective, there is a common assumption in higher education that the integration of technology will offset the costs of other expenditures, such as facilities (Kirshstein & Wellman, 2012); however, this assumption rarely takes into account the various additional expenses that an institution can expect to incur for technology upgrades, increased infrastructure to support new technology investments, training and support, and adoption of virtual resources. Indeed, technology investments typically go hand in hand with human capital investments, which are necessary to ensure effectiveness (Bichelmeyer, Keucher, Eddy, Sadowski, Bott, & Hannon, 2011). Little research is available on the true itemized costs associated with online technology adoption (Nichols, 2012).

Support and Organizational Culture

For all the proponents of online programming, there are an equal number of critics and skeptics. Some stakeholders argue that online programming is a passing fad and cannot replace the quality of education one would receive in a traditional classroom (Seaman, 2009). Others characterize the integration of online education as the industrialization of teaching and the privatization of education. Schauer, Rockwell, Fritz and Marx (2005) recognized that a successful distance education strategy must be a collaborative one involving three institutional levels: the department, the college, and the central administration. Howell, Williams, and Lindsay (2003), in their extensive meta-analysis of the literature, found that as online programming is introduced at an institution, its organizational structure undergoes a pervasive decentralization. This decentralization may serve as a consequence of the progression to political democratization by allowing the collective group of constituents to be active participants in the decision-making process when considering, introducing, or offering distance education (McGinn & Welsh, 1999). Wang (2012) noted similar findings although he underscored the need for a cohesive and shared approach to planning as a successful strategy for implementing online programs. In addition, Wang (2012) recommended consideration for external factors and an emerging framework for online program planning which should include institutional context and environmental factors. Ultimately, what appears to be most evident is that an institution's inclusion of online programming requires a certain level of consensus among all stakeholders and an effective plan that will be responsive to the emergent or contextual complexities that are bound to take shape with this new modality.

The most vocal opponents to the integration of online programming tend to be faculty members. While it should be noted that not all faculty members resist innovative technology

such as distance education, there is an outspoken group that expresses concerns about educating students in a virtual environment. According to the literature, the most frequent concerns include the following: lack of training and preparation for teaching in an online environment (includes both pedagogy and technology training) (Allen & Seaman, 2008; Graham & Jones, 2011; Orr, Williams, & Pennington, 2009; Tabata & Johnsrud, 2008); lack of administrative and financial support (Leist & Travis, 2010; Mills, Yanes, & Casebeer, 2009; Nelson & Thompson, 2005; Saltmarsh & Sutherland-Smith, 2010); inability to maintain academic integrity and ensure quality in educational delivery (Mills, Yanes, & Casebeer, 2009; Nelson & Thompson, 2005; Ward, Peters, & Shelley, 2010); and concerns about increased workload and stagnant compensation (Bolliger & Wasilik, 2009; Singleton & Session, 2011; Tabata & Johnsrud, 2008; Wegmann, & McCauley, 2008).

In Kofman and Senge's (1993) work on commitment within learning organizations, they argued that "organizations are microcosms of the larger society" (p. 7). While this may well be the case, they are also their own construction and domain. When looking at colleges and universities one can begin to take note of what is explicit about institutions and also what is inherently implicit; institutional culture is typically found in the latter category. What little is agreed upon with regard to culture, focuses on the notion that organizational culture stems from shared assumptions, beliefs, and rituals inherent in the organization (Martin, 2002).

Ultimately, the success or failure of an institution's distance education program hinges on the organizational culture, or more specifically, the readiness of institutional members to actively support the initiative and collectively engage in acts of collaboration. Geertz (1973) characterized the relationship between individual and culture as follows:

Man is an animal suspended in webs of significance he himself has spun. I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law, but an interpretive one in search of meaning (p. 5).

In this analogy, Geertz (1973) also highlights the interconnection between culture and the institution itself. Following the logic of Geertz (1973), institutional culture becomes the intrinsic thread that connects all elements of the institution, and on a broader scale, the institution itself is embedded in and shaped by the surrounding culture. While absolute consensus and unflinching support may not be realistic to expect, ultimately the enterprise of online programming is a collective one. As such, in order to succeed, it needs to be rooted within the mission of the institution and sanctioned by the institutional community as a whole.

Engaging New Pedagogy

Teaching and learning within an online environment can be profoundly different than in the traditional classroom, and it requires a pedagogical shift in both the teacher and the learner (Keengwe & Kidd, 2010; Moore & Kearsley, 2011; Reisetter, LaPointe, & Korcuska, 2007).

When faculty members have little or no direct contact with students, they may experience difficulties in building and sustaining intrapersonal relationships with students. Furthermore, for faculty members who rely on observation and nonverbal cues to gauge the level of understanding within the classroom, virtual correspondence and asynchronous interaction can make it difficult to effectively assess student comprehension. Finally, there is the underlying question of educational quality. While technological innovation is designed to enhance educational quality, many feel that online education acts as an inferior surrogate, rather than a useful supplement, to most educational models. Contrary to this assumption, Moore and Kearsley (2011) found that (1) no substantial evidence has determined that traditional teaching methods are more effective than

online methods; (2) online instruction can be just as effectual as traditional face-to-face methods; (3) the absence of direct physical interaction between faculty and students does not necessarily impact learning negatively; and (4) “what makes any course good or poor is ... how well it is designed, delivered and conducted, not whether the students are face-to-face or at a distance” (p. 65).

Re-Envisioning Support Services

Although academic content alone cannot accomplish the underlying goals of intellectual and personal development, its complement, student services, often remains on the periphery of university life (Sandeem & Barr, 2014). A supporting framework for this claim is found in Tinto’s (1975) student integration model. This theory affirms that student motivation and academic capacity need to be matched with the institution’s academic and social offerings in order for students to successfully persist through graduation. In short, the likelihood that a student will be successful (persist through graduation) is predicted by his or her level of integration into the social fabric of the academic community. Unfortunately, many of the same services used to enhance social integration and support in residential institutions are difficult to replicate in an online environment (Britto & Rush, 2013; Hornak, Akweks, & Jeffs, 2010). Student services such as academic advising have routinely relied on personal face-to-face connections, which can be difficult to duplicate in chat rooms or through other virtual means (Hornak et al., 2010). Therefore, all functional areas, such as financial aid, academic advising, student affairs, counseling, and tutoring, among others, need to reevaluate their service models to accommodate the needs of virtual students as well as the accreditation mandates that are designed to promote equal service. This work can create a strain on the institutional infrastructure, as well as on faculty and staff, particularly those who may not be familiar with

emerging technology. Brock (2010) highlights the paradox faced by many institutions when he states:

One of the ironies in higher education is that institutions, such as Ivy League schools and highly selective liberal arts colleges, that enroll the best prepared and most traditional students tend to offer the most such guidance, while institutions that serve the least prepared and most nontraditional students tend to offer much less (p. 119).

Another concern with distance-based services is the question of confidentiality and security (Hornak et al., 2010). Given this concern, institutions need to be prepared to develop not only pedagogically sound online curriculum, but also virtual services to support and enhance the student experience. Admittedly, this can be a costly endeavor.

Growth of Nontraditional Student Population

Evidence indicates that the widespread growth in online programming, and the increased offerings of distance education programs across the varied educational sectors, is due, in part, to an expanding nontraditional student base (Radford & Weko, 2011). According to a 2011 NCES report, 73% of students enrolled in higher education are considered nontraditional, with 32% employed full-time, 37% enrolled on a part-time basis, and 40% over the age of 25 (Complete College America, 2011). Along similar lines, Ruffalo Noel Levitz (2016) stated that adult enrollment increased by 41% between 2000 and 2011, with an additional anticipated growth of 14% through the year 2021. As shown in Table 3, the Lumina Foundation (2015) saw marked growth in the educational attainment levels of individuals above the age of 25 using data reported by the U.S. Census Bureau.

Table 3

2013 Educational Attainment Levels (25-64 Years of Age)

Level of Education	Percentage of Population
Less than ninth grade	4.72%
High school diploma	26.37%
Some college, no degree	21.76%
Associate's degree	8.85%
Bachelor's degree	19.83%
Graduate or Professional degree	11.27%

Note. Table adapted from the Lumina Foundation (2015).

The expansion in the population of adult students has been attributed to a cultural shift that began in the mid-twentieth century. The shift corresponded to the rising prominence of military veterans post-World War II (Bean & Metzner, 1985; Kasworm, Rose, & Ross-Gordon, 2010), as well as to the civil rights and women's movements (Kasworm, 2003). According to Kasworm (2003), the rise in overall enrollment for adult students signaled "changing beliefs by adults and our society about the importance of a college credential linked to work stability, financial support, and related life opportunities" (p. 4).

Attempts to define the nontraditional student have been the occasion of much recent debate. Many researchers use a singular attribute model, following the U.S. Department of Commerce, which defines nontraditional students solely on the basis of age (25 years or older) (Shin, 2005). On the other hand, Bean and Metzner (1985) identify three defining characteristics of a nontraditional student: age, enrollment status (full-time vs. part-time), and residence (on-campus vs. off-campus commuters). Kasworm (2003; 2014) established a similar profile for the nontraditional student, with the caveat that students should meet at least two or more of the following criteria: (1) aged 25 years or older; (2) had an extended absence from school following high school; (3) employed full-time while attending school on a part-time basis; (4) married and/or have dependents; and (5) be financially independent. Using a more nuanced approach, Horn and Carroll (1996) developed a classification stratum that was later adopted by the National Center for Education Statistics (NCES). According to a 2002 publication from NCES, nontraditional students are those characterized as having one or more of the following attributes: (1) delayed enrollment of at least one year from high school graduation; (2) maintains part-time attendance status for a portion of the academic year; (3) maintains full-time employment (35 hours per week or more) while attending school; (4) is financially independent based on financial

aid requirements; (5) has dependents; (6) is a single parent; and/or (7) has some type of high school equivalency certificate (such as a GED) (Choy, 2002; Horn & Carroll, 1996).

While there are a number of varying definitions and constructs associated with nontraditional students, a number of overlapping characteristics have emerged to help distinguish this population. Understanding the traits of this population is particularly salient due to the sheer number of current students enrolled in the higher education system, and also because these attributes can impact the student's persistence and ability to graduate from school (Choy, 2002; USDOE, 2015). The growing nontraditional population exhibits lower graduation rates than traditional full-time students, as evidenced in data obtained by Complete College America (see Table 4).

The varying definitions applied to nontraditional students highlights the diversity that exists within this population and suggests that they cannot be considered a homogeneous group (Stanescu, Iorga, Monteagudo, & Freda, 2015). The social, financial, and employment responsibilities borne by nontraditional students makes it very difficult to develop a one-size-fits-all educational experience for them, and this places considerable stress on colleges and universities to design effective support systems. Many of the attributes that characterize nontraditional students can also be obstacles to academic process. For example, one of the distinguishing characteristics of a nontraditional student is having competing commitments and obligations alongside academic coursework, such as full-time employment and home-life commitments. These students can experience difficulties managing priorities, maintaining balance, and achieving a successful end goal such as graduation. Given this context, adult students tend to have different motivations than traditional students, such as employment mobility or career change, self-fulfillment, financial stability, and serving as a role model to

Table 4

Graduation Rate Comparison for Full-Time and Part-Time Students

Educational Attainment	Full-time	Part-time	Part-time (25 years or older)
1-year certificate (within 2 years)	27.8%	12.2%	11.3%
2-year associate (within 4 years)	18.8%	7.8%	4.6%
4-year bachelor's (within 8 years)	60.6%	24.3%	10.6%

Note. Table adapted from Complete College America.

children or other family members (Choy, 2002; Giancola, Grawitch, & Borchert, 2008; Radford & Weko, 2011). Much like the underlying motivation, the trajectory of nontraditional students can be equally varied, but it tends to be non-linear (MacFadgen, 2007) and may involve disjointed enrollment patterns, institutional transfers to one or more schools, or shifting learning modalities such as online programming.

In a study conducted by Horn and Carroll (1996) and later reaffirmed by Choy (2002) and Complete College America (2011), nontraditional students are less likely than their traditional counterparts to persist beyond 5 years, or to graduate at all, because of the complexity and multiplicity of their lives. The needs and motivations of nontraditional students create a fertile ground for the use of online programming. According to Schlosser and Simonson (2009), “The original target groups of distance education efforts were adults with occupational, social, and family commitments. This remains the primary target group today” (p. 9). Distance education provides a measure of access and flexibility that is not always available in traditionally seated models. The constraints of location and travel are also removed, thus providing access to distant and more diverse educational opportunities. Furthermore, online programming allows flexibility, particularly when courses are offered through asynchronous delivery methods. The ability to attend classes any time or place makes online programming a suitable option for nontraditional students. Research by Muller (2008) and Pontes and Pontes (2012) supports the idea that this modality offers nontraditional students opportunities to continue their educations by removing some of the common impediments.

Nevertheless, despite efforts to be more inclusive of populations, such as nontraditional students, research on student persistence generally emphasizes the importance of social attachment, which is rarely replicated in distance programming (Crosling, Heagney & Thomas,

2009; Tinto, 1993). Morris, Finnegan, and Wu (2005) noted statistically significant correlations between time spent by students engaged in educational activities and the rates of course completion. Yet, little research has specifically looked at overall graduation rates of nontraditional students engaged in online learning to ensure this modality is truly suited for the endeavor. As cited earlier, 73 percent of all post-secondary students are in some way nontraditional if the broad definition is applied (Choy, 2002; USDOE, 2011). With the rates of nontraditional students expected to continue to increase, educators need concrete data on the preferences and enrollment patterns of nontraditional students to help determine whether or not educational offerings such as online learning can assist with degree completion.

Graduation Rates as Outcome Measure

Education is often intimately linked to economic and social development, and one of the most common benchmarks of success is the college graduation rate. In 1990, Congress reinforced this measure by approving legislation that required colleges and universities to publicize their institutional graduation rates (Bailey, Crosta, & Jenkins, 2006). This was done, in part, to add a level of transparency for consumers who were choosing between institutions and trying to make a sound financial investment. Subsequently, in 2008, Congress passed a measure to reauthorize the Higher Education Act (HEA), further requiring that institutions disclose graduation rates for those students receiving Pell Grants, subsidized Stafford loans, and other forms of financial aid.

For the purpose of this dissertation, the term *graduation rate* is defined as the number of students in a program who complete their degree within 150% of the anticipated program length, divided by the total number of students who enroll in the program. For example, among those completing a traditional four-year degree program, those students who complete the degree

within six years will serve as documented graduates. This calculation was adopted from the graduation rate definition supplied by IPEDS and the Federal Student Aid office of the U.S. Department of Education (USDOE, 2016). However, unlike the aforementioned definition, this dissertation will not recognize only full-time, first-time freshmen. This classification can exclude much of the nontraditional population who enroll with transfer credits from previous institutions or attend on a part-time basis.

As of late, an increased focus on student outcomes has, naturally, spurred conversation about outcome measures and specifically those that serve as yardsticks for performance (Bailey, Calcagno, Jenkins, Leinbach, & Kienzi, 2006). While this measure may not be infallible, generally speaking, graduation rates tend to be one of the conventional gauges of institutional and student success, and virtually all campus stakeholders have a vested interest in this metric. The U.S. Department of Education (2015) views graduation rates as a key accountability measure.

Significance for Students, Institutions, and Society

Significance for Students

Although the overall value of a college education may vary from student to student based on individual motivations, there are a number of documented benefits that tend to be closely associated with completion of a college degree. According to a 2013 publication by the College Board, degree recipients earn higher incomes, maintain greater levels of job satisfaction, and experience increased health benefits as compared to those without a degree (Baum, Ma, & Payea, 2013).

For many nontraditional students, the motivations to complete their educational programs are improved job prospects and the probability of greater financial stability (Merriam, Caffarella,

& Baumgartner, 2012). Data obtained from the Bureau of Labor Statistics and outlined in Table 5 details the overall increase in median weekly earnings based on a gain in educational achievement. According to the census data, those students with an earned bachelor degree receive 65% more income as compared to those with a high school diploma, and the gap continues to broaden for those with additional advanced credentials. The College Board calculated individual earnings relative to the net cost of a degree, and found that a typical college graduate (given a four-year trajectory beginning at age 18) should anticipate enough additional earnings by age 36 to offset time spent out of the workforce and the full cost of tuition (Baum et al., 2013). As further evidence, researchers from the Brookings Institute (2011) contended,

On average, the benefits of a four-year college degree are equivalent to an investment that returns 15.2% per year. This is more than double the average return to stock market investments since 1950, and more than five times the returns to corporate bonds, gold, long-term government bonds, or home ownership (Greenstone &Looney, 2011, p. 1).

Also evidenced by Table 5, median weekly earnings increase significantly based on educational attainment.

Beyond the promise of better employment and increased fiscal returns, the attainment of a college degree also appears to have a positive impact on individuals' health and lifestyle. For example, college graduates' smoking rates are meaningfully lower than non-graduates, with a reported 17% gap between college and high school graduates (Baum et al., 2013). College graduates also indicated higher levels of exercise activity and significantly lower rates of obesity (Baum et al., 2013; Selingo, 2013). Finally, cognitive research compiled by Pascarella and Terenzini (2005) shows that engagement in college education improves critical thinking, written and oral communication skills, and overall academic content knowledge.

Table 5

Median Earning, Unemployment, and Poverty Rates by Educational Achievement (25 Years and Older)

Educational Attainment	Median Weekly Earnings (2014)	Unemployment Rate (2014)	Poverty Rate (2011)
Less than High School Diploma	\$488	9.0%	28.0%
High school diploma	\$668	6.0%	14.0%
Some college, no degree	\$741	6.0%	11.0%
Associate's degree	\$792	4.5%	8.0%
Bachelor's degree	\$1,101	3.5%	5.0%
Master's degree	\$1,326	2.8%	-
Professional degree	\$1,639	1.9%	-
Doctoral degree	\$1,591	2.1%	-

Note. Table adapted from Bureau of Labor Statistics, Current Populations Survey and College Board, Education Pays (2013).

Significance for Institutions

In addition to students, institutions themselves have also found reason to focus their attention on graduation rates. As noted previously, colleges and universities are required by federal mandates to report and publicize graduation rates, and these rates have, in turn, become the measure by which many prospective students make their enrollment decisions. One of the more recognized publications to use graduation rates as a metric for institutional ranking is the U.S. News and World Report Best Colleges Report (Luca & Smith, 2013). While academic researchers and others have considerable misgivings about this rather idiosyncratic ranking system, it may have a Heisenberg-like effect on the higher education system (Shin, Toutkoushian, & Teichler, 2011; Thompson, 2000). That is, the attention drawn to certain metrics, such as graduation rates, may have an effect on the behavior of colleges and universities. For online programs in particular, graduation rates can help to improve the public perception by highlighting successful student outcomes as institutional achievements.

Graduation rates also play a considerable role in the financial bottom line and fiscal health of an institution. With a recent decrease in federal funding and support, many institutions have become more tuition-dependent, relying on continuous enrollment through graduation to counterbalance federal reductions. Early student withdrawals not only signal an immediate loss in revenue through forfeited tuition monies, but can also mean decreased potential for future earnings in the form of alumni donations from successful graduates.

Significance for Society

Graduation rates can have an impact on more than simply the internal ecosystem of an institution. From a macro perspective, these rates have impacts within society at large. Higher education is often understood in terms of an open systems model, which recognizes the interplay

between the institution and the larger environment (Birnbaum, 1988). Just as the environment exerts additional forces (political, social, and economic) that impact the educational system, institutional outcomes can have a direct effect on the larger society. For example, research has suggested a correspondence between high educational attainment and reduced likelihood of committing many types of crimes (Lochner, 2007). Similarly, Freeman (1996) determined that a two-thirds majority of convicted males in 1993 reported having less than a high school diploma. Considering unemployment as an important marker of societal health, the Bureau of Labor Statistics reported that unemployment rates decrease by almost half when comparing baccalaureate-prepared individuals with those who had only a high school diploma. Along similar lines, research from the College Board outlined in Table 5 shows a strong correlation between low educational attainment and poverty (Baum et al., 2013).

Finally, it is important to note that improving graduation rates can also serve the professional community. The recent shift from an industrialized economy to a knowledge-based one has created global competition and the need for evolving skill-sets. Industries increasingly require that employees seek professional certifications and continuing education as a condition of their continued employment (Altbach, 2011; Carnevale, Smith, & Strohl, 2010). Research by the Georgetown University Center on Education and the Workforce found that by 2018, 63% of jobs will require an associate degree or higher, leaving a shortage of 3 million college graduates in the workforce (Carnevale et al., 2010). This demand for college credentials is bolstered by a renewed focus on human capital, with its emphasis on efficacy, outcomes, and employee satisfaction in the marketplace (Ployhart & Moliterno, 2011). The shift is also evidenced in the Obama administration's goal to increase post-secondary degree attainment by the year 2020 in order to have the highest proportion of college graduates in the world (Obama, 2013).

Factors Impacting Graduation Rates

Although graduation rates serve as an acceptable and measurable indicator of institutional success, there are a number of inherent limitations in how rates are calculated, defined, and employed by the national education reporting mechanisms. Bailey (2012) warned against the over-reliance on graduation rates on the grounds that rates do not distinguish between different educational sectors or institutional types. For institutions such as community colleges, graduation rates can appear inexplicably low because a sizable number of enrolled students transfer to 4-year institutions rather than graduating with a degree from the community college (Bailey, 2012).

In addition to the transferring student population, another segment conspicuously absent from national datasets are students who are not continuously enrolled (those taking a year off) as well as students who maintain part-time enrollment (fewer than 12 credit hours). According to the Integrated Postsecondary Education Data System (IPEDS), students who fall outside the threshold of first-time, full-time freshmen are not calculated as part of institutional graduation rates (IPEDS, 2015). The IPEDS dataset was first conceived based on an assumption that traditional high school students attend one institution through graduation (Stuart, 2013). However, as suggested by recent trend data on part-time nontraditional students, this outdated model now excludes approximately 40% of the student population, those not considered traditional full-time students (Complete College America, 2011). The data relevant to online graduation rates are even more limited considering that IPEDS began tracking a limited number of distance education students as recently as the fall of 2012 (Lokken & Mullins, 2014). At present, there is a lack of accurate data on graduation rates by cohort. Overall, the extremely limited data on graduation rates for nontraditional online students supports the need for

additional research on this subject. Such research has implications for student retention and college completion rates.

Theories of Student Departure, Persistence, and Retention

This section provides an overview of theoretical models for student retention. Although many of the more prominent and influential models have historically been oriented around traditional residential students (Fike & Fike, 2008), it is necessary to borrow from the established literature as a way of understanding the topic at hand. This section relates these models to online instruction and nontraditional students.

Tinto's Theory of Student Integration

A prominent and foundational theory of student attrition is that of Tinto (1975, 1987, 1993). His theory can be used to predict the likelihood of a student's persistence based on two primary determinants: (a) influences occurring prior to college, including inherent student characteristics; and (b) influences that arise from experiences while attending college. Tinto's (1993) model weighs in heavily on student integration in both social and academic settings as a determining factor for student persistence. According to Tinto's (1993) model, three significant factors contribute to patterns of student departure: academic challenges, incongruence between anticipated and actual student goals, and an inability to integrate socially or academically. Tinto's theory is loosely based on the cultural rites of passage work by Van Gennep (1960). In Tinto's theory, as in Van Gennep's work, students must first attempt to disassociate themselves from their traditional social connections, such as family, in order to more effectually "transition" and adapt to the new social group or educational institution (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006). According to Tinto, the likelihood of student departure increases when students are unable to detach themselves from their former community and assimilate with the norms and

values of the new educational environment, ultimately creating quality interactions with fellow students and educators (Kuh et al., 2006). The emphasis on student interaction found in Tinto's (1993) model of institutional departure is premised on the assumption that students participate in college in a full-time residential capacity. For this reason, the model may not be well suited to the nontraditional part-time commuter population, and perhaps even less suited to those engaged in distance learning (Bean & Metzner, 1985; Park, 2007; Park & Choi, 2009). Tinto, however, refined his model in an effort to be more inclusive of nonresidential students by advancing that academic and social integration can also take place as part of the classroom experience (Tinto & Russo, 1994). However, his research is rather limited and focuses primarily on commuter students within the community college context.

Bean and Metzner's Model of Student Attrition

In response to the burgeoning nontraditional population in the 1980s, Bean and Metzner (1985) developed a model of student attrition that was more inclusive of students who identified as nontraditional. According to Bean and Metzner's definition, the category of nontraditional students included students who had one or more nontraditional characteristics: nonresidential, adult (24 years of age or older), and/or maintained part-time attendance. Much of Bean and Metzner's (1985) theory is based on the earlier work of Tinto (1993), particularly the emphasis on predicting persistence based on the "fit" between student and institution (Demetriou & Schmitz-Sciborski, 2011).

Bean and Metzner's (1985) model posits four sets of factors that impact student persistence: (a) academic factors such as enrollment status and course load; (b) demographic variables such as age, gender, and ethnicity; (c) environmental factors such as competing family commitments and employment status; and (d) stressors relating to academic and social

integration (Demetriou & Schmitz-Sciborski, 2011). Where Bean and Metzner's (1985) theory deviates from the research of Tinto (1993) is in its attention to the impediments faced by nontraditional students, which may influence their decision to depart from the institution. According to Bean and Metzner's (1985) model, a key difference between traditional and nontraditional students is that the latter are more impacted by external and environmental barriers such as employment, personal commitments, and finances, as opposed to the social integration considerations (e.g., relationships between peers and faculty) that tend to influence traditional students (Bean & Metzner, 1985). According to Kember (1989), Bean and Metzner's (1985) model had limited applicability to students engaged in distance education due to the inconsistency of definitions between distance learners and nontraditional students (Park & Choi, 2009).

Kember's Longitudinal Process Model of Drop-Out from Distance Education

A third model, Kember's (1989) model of drop-out, explains predictors of distance education students' lack of persistence in degree programs. This model takes a more longitudinal approach to explaining the variables and factors at play for distance education students. Like many other theorists of educational persistence, Kember's (1989) model is predicated on Tinto's (1993) earlier work on student integration. Kember's (1989) model builds on Tinto's (1993) research by acknowledging the impact of social and academic integration, but it also accounts for how these variables may be modified over time as a student faces multiple decisions regarding whether to persist or withdraw, especially during extended courses (Park & Choi, 2009). In this framework, Kember (1989) employs a broad definition of social integration for students engaged in distance education, which could include external motivating factors or support from personal relationships such as family, friends, co-workers, and employers. In the model, the concept of

academic integration is also expanded to include virtual academic support services and students' internal motivators. Kember does not account for nontraditional students' employment-related motivations (Levy, 2007). Kember's (1989) research ultimately found that there was only a minor or indirect relationship between the characteristics of a nontraditional distant education student and their intent to persist. Park and Choi (2009) reinforced these findings, in a contemporary corroboration, providing further evidence that nontraditional student persistence did not rely on individual characteristics.

Student departure continues to be a topic of interest and debate among researchers and educational practitioners (Park & Choi, 2009). While many of the more widely recognized models have developed a strong foothold in conversations about factors that contribute to student departure, these models are not without limitations. The models tend not to be entirely suitable for understanding nontraditional students' experiences in online learning (Akyol & Garrison, 2013), although they can lend a broad understanding of the challenges impacting student persistence.

Perhaps one of the more relevant challenges for educators is the "departure puzzle," or what Braxton, Sullivan, and Johnson (1997) identified as the incongruence between the amount of published literature and its utilization by educational practitioners (p. 107). This incongruence continues to widen as the population of nontraditional online learners expands and the literature surrounding this population does not keep up (Connors & Mick, 2007). The increasing mandates by accreditors, policy makers, and others to improve student completion rates justify the need for further research on nontraditional online learners' program completion. To date, the available research focuses more on individual courses than degree completion (Connors & Mick, 2007).

This study will hopefully contribute to the current research on nontraditional student use of online programming as a possible mechanism for successful degree completion.

Conclusion and Summary

This review of literature discussed research on the use of online programming, nontraditional students, and graduation rates, as well as relevant theoretical frameworks relating to student persistence. Overall, the research indicates that educational leaders face the imperative of continually redefining, restructuring, and reforming their established institutions in order to remain viable in a complex and competitive climate. Institutional sustainability depends on educational leaders' strategic responses to changing environmental and societal demands. Gee (2009) described the emerging higher education system as follows:

The modern university is a juggernaut, with little material resemblance to our ancient roots or nineteenth century pedigree.... In their wildest dreams, neither Aristotle nor James Morrill could have imagined schools the size of cities, complete with multibillion dollar budgets, high-rises, and medical centers (vii).

The literature suggests that higher education must continue to evolve in order to meet the dynamic needs of society, including improvements in access and degree completion. Based on the review of literature, distance education may offer a viable option for increasing the graduation rates of nontraditional students.

CHAPTER 3 METHODOLOGY

Introduction

The literature reviewed in Chapter 2 supported the general accord that there are no significant differences in learning outcomes between traditional face-to-face and online delivery models (Bell & Federman, 2013; Bernard, Abrami, Borokhovski, Wade, Tamin, Surkes, & Bethel, 2009; Means, Toyama, Murphy, Bakia, & Jones, 2009; Russell, 1999). The chapter also enumerated the value of online programming including its capacity for convenience, flexibility, and accessibility making it a logical mechanism to promote nontraditional student success. Per contra, the research surrounding student retention found online modalities to have higher rates of attrition as compared to their seated counterparts (Bollinger & Halupa, 2012; Lee & Choi, 2011); however, the lion's share of studies focused more on individual course completion rather than overall programmatic success (Bernard et al., 2009; Guri-Rosenblit & Gros, 2011; Hart, 2012; Husmann & Miller, 2001; Zhao, Yan, Lai, & Tan, 2005). This leaves room for plausible misgivings about how technology-mediated learning can impact graduation rates for nontraditional students. This study sought to augment the absence of research pertaining to the use of online programming as a mechanism for persistence (which includes degree attainment) for nontraditional students by using a longitudinal national data set for improved validity.

This chapter will describe the quantitative methodology that was used for the study, including the research design and data analysis procedures that were conducted. Additionally, this chapter will outline the survey instrument, population, data collection procedures, and limitations of this research. The purpose of this quantitative study is to examine whether the use of online programming can aid in improving graduation rates for nontraditional students. The

findings and subsequent data analysis contribute to further insight into how educational innovation can contribute to degree attainment outcomes for a growing nontraditional population. The study was guided by the following research questions and hypotheses:

RQ1: Are nontraditional students, as defined by Horn and Carol (1996), who engage in online learning more likely to attain a degree or remain enrolled as compared to those nontraditional students who do not?

H1o: Engaging in online learning is not a significant predictor of the likelihood of persisting for nontraditional students.

H1a: Engaging in online learning is a statistically significant predictor of the odds of persisting for nontraditional students.

RQ2: Are there differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional?

H2o: Students in categories of traditionality do not differ significantly in their likelihood of persisting.

H2a: Students in categories of traditionality differ significantly in their likelihood of persisting.

Research Methodology

There are three methodologies used in research studies: quantitative, qualitative, and mixed-methods. A quantitative methodology was used to test the hypotheses and address the outlined research questions. Quantitative data represents a more reliable and objective research method than qualitative studies. Educational research has a fundamental purpose of adding to the current base of knowledge (Creswell, 2013). While there are many suitable approaches for

educational research, a quantitative research methodology was adopted to effectively address the overarching research questions and determine if any potential relationships exist between online programming and degree attainment.

According to Creswell (2013), quantitative research is best suited for aggregating and analyzing numerical data as well as examining variables in contrast. In quantitative studies, statistical analysis restructures a complex problem to a limited number of variables. Researchers using quantitative methodologies utilize a sample population that would be representative of the larger population, the subjectivity of the researcher is reduced, and the collected data is less detailed than qualitative data, which may result in missing a desired response from participants (Landrum & Garza, 2015). Quantitative methodologies provide a means to collect data from a larger sample pool through the use of scale-based survey data collection method or through archival data (Shahzad & Khan, 2014). This type of methodology includes the collection of data objectively for information about associations, similarities, or forecasts that remove subjectivity from data collection and information about relationships, comparisons, or predictions (Gravetter & Wallnau, 2009, 2013). According to Sukamolson (2007), quantitative studies are generally conducted by collecting empirical data, measurements, and models, and then determining whether the relationships between or among variables are significant through statistical testing. As the study sought to determine the relationship between the use of online learning and the likelihood of persisting or obtaining degrees for nontraditional students, it required the use of a quantitative methodology. The use of quantitative methodologies has been applied to a variety of longitudinal studies focusing on degree attainment (An, 2012; Astin, 1996; Astin & Oseguera, 2005; Ishitani, 2006; Layne, Boston, & Ice, 2013). Layne et al. (2013) applied a quantitative methodology to their longitudinal study of online learners by using multiple regression to

analyze student characteristics and their potential relationship to degree attainment. In a comparable study on student retention, Wladis, Wladis, and Hachey (2014) used a quantitative methodology to conduct logistic regression analysis and significance testing to determine the role of enrollment choice as a retention factor for online education. For the purpose of this research study, a quantitative longitudinal methodology was adopted in order to similarly examine the potential relationship between and among variables (Creswell, 2013).

Research Design

This study sought to investigate the relationship between online programming and persistence for the nontraditional student population. Additionally, the study sought to determine whether engagement in distance education is a significant predictor of persistence based on four classification strata of students: traditional (zero characteristics of non-traditionality), minimally nontraditional (one characteristic), moderately nontraditional (two or three characteristics), and highly nontraditional (four or more characteristics). A non-experimental, longitudinal research design was employed using the Beginning Postsecondary Students of 2004-2009 provided by National Center for Education Statistics (BPS:04/09). The research design is appropriate for this study as it allows the researcher to examine the relationships between the study variables of online learning participation and persistence (Gravetter & Wallnau, 2009, 2013). Based on the first research question, the relationship between participation in online learning and the dependent variable of persistence will be examined which requires binomial logistic regression analysis to identify.

The longitudinal or retrospective panel design offers a suitable framework to investigate comparisons between nontraditional students who participated in online learning versus those who did not. Menard (2002) has suggested that longitudinal design maintains two primary

purposes: “to describe patterns of change and to establish the direction and magnitude of causal relationships” (p. 3). More specifically, and of particular interest to this study, a longitudinal research design allows for the investigation of multiple dimensions for groups and variables over time to further understand possible relationships (Terenzini, 1982). The study will assume the scaled model and definition of nontraditional students, offered by Horn and Carroll (1996), and published through the National Center for Educational Statistics. Traditional students will be classified based on the absence of nontraditional demographic characteristics.

Instrumentation

As the researcher utilized archival data for data analysis, no actual survey instrument was used for data collection. The archival data was previously collected through a survey and compiled by the National Center for Education Statistics (NCES). Created to fulfill a congressional mandate, NCES is cited as “the primary federal entity for collecting, analyzing, and reporting data related to education in the United States and other nations” (Wine, Janson, & Wheelless, 2011). More specifically, the study utilized data from the 2004 Beginning Postsecondary Student Longitudinal Study (BPS:04/09), a dataset intended for public access. According to the NCES Full-Scale Methodology Report (2011), respondents to the BPS:04/09 study consisted of students who (1) were first enrolled in a postsecondary institution (United states or Puerto Rico) during the 2003-04 academic year (including nontraditional students), (2) eligible for 2003-04 National Postsecondary Student Aid Study (NPSAS:04), and (3) whose attendance could be verified through the first initial follow-up for the study (BPS:04/06) (Wine et al., 2011). The dataset was derived by assembling information and records from the NPSAS:04, student surveys and interviews, and institutionally reported data. Data collection for this survey extended over a six-year span and involved three points of contact with participants:

year one (academic year 2003-04), year three (academic year 2005-06), and year six (academic year 2008-09). A total of 18,610 potential participants met the criteria and were identified to take part in the study. Of these, 16,680 met the threshold for data (student interview and/or administrative sources) to be considered respondents (90% of eligible population); 15,160 completed a partial or full interview (81% of the total eligible population). Data were obtained through self-reported web-based surveys, telephone, and web-based interviews as well as institutionally reported data (Wine et al., 2011; see Table 6 for a comprehensive list of the data sources for the BPS:04-09 dataset).

Throughout the six-year lifespan of the study, participants were surveyed on items pertaining to postsecondary persistence, educational goals, degree completion, and employment. Specifically, participants were asked to report on their demographic characteristics and pre-college background; persistence and enrollment patterns; financial standing and assistance status; academic and social experiences; and employment characteristics during the survey window. Due to its comprehensive design and broad reach, the BPS:04/09 dataset offers an extensive array of variables on items that correspond to the research questions and study framework thus making it a suitable instrument for this study.

Description of Variables

The variables associated with the research questions are classified as dependent and independent variables. The dependent (outcome) variable for the study is persistence (if the student remained enrolled at the conclusion of the six-year span of the survey instrument or if the student achieved their educational goal within the six-year span of the survey instrument). As such, the dependent variable is a binary variable, with 0 representing having not graduated and no longer enrolled within the six-year span, and 1 representing having attained a degree or remained enrolled within the six-year span of the survey. Independent (predictor) variables included participation in online learning (if the student reported

Table 6

Data Sources Used in the Development of the BPS:04-09 Dataset

Type of Data Source	Data Source	Description
Institutional	Student Records	Data derived from institutional registrar and financial aid records at the institution(s) students are currently attending
NCES Derived	BPS Student Interview	Data from students via web-based or interviewer-administered questionnaires
	NPSAS Student Interview	Data collected from the National Postsecondary Student Aid Study
	Integrated Postsecondary Education Data System (IPEDS)	U.S. DoE and NCES database of descriptive information about colleges and universities
National	Central Processing System (CPS)	U.S. DoE database of federal financial aid applications for the 2003-04 academic year
	National Student Loan Data System (NSLDS)	U.S. DoE database of federal Title IV loans and Pell grants
	National Student Clearinghouse (NSC)	A central repository for all data pertaining to postsecondary enrollment, degree, and certificate records
Third Party Entity	SAT File	Student Scholastic Aptitude Test data from the College Board
	ACT File	Student ACT data from American College Testing Program

Note. Adapted from Choy and Berkner (2008).

enrollment in any type of online learning or enrollment in online courses during the initial 2003-04 data collection point) and demographic variables used to classify students in a traditional to nontraditional continuum. The first independent variable of engagement in online learning is a binary variable, with 0 representing having not engaged in online learning, and 1 representing having engaged in online learning during the initial 2003-04 data collection point. The second independent variable of engagement in online learning for all courses during the initial 2003-04 data collection point is a binary variable, with 0 representing having not engaged in fully online learning, and 1 representing having engaged in fully online learning during the initial 2003-04 data collection point. The third independent variable of traditionality is a categorical variable, with the classifications being based on defining characteristics discussed below: traditional (zero characteristics), minimally nontraditional (one characteristic), moderately nontraditional (two or three characteristics), and highly nontraditional (four or more characteristics). According to the literature, definitions of nontraditional students can vary widely. Most focus on age as the standard defining characteristic, however, this criterion alone does not account for the diversity that exists within the population. Therefore, this study adopted a broader and more nuanced definition of a nontraditional student as supplied by NCES sponsored publications (Choy, 2002; Horn & Carroll, 1996). According to Horn and Carroll's (1996) nontraditional construct, the following demographic characteristics were used to determine nontraditional status: (1) delayed enrollment into postsecondary education; (2) part-time attendance; (3) financial independence; (4) full-time employment while enrolled; (5) dependents other than a spouse; (6) was a single parent; (7) lacks a standard high school diploma. To further examine the differences within groups, a continuum model developed by Horn and Carroll (1996) was used to stratify the nontraditional population. This method was adopted as an attempt to acknowledge the

recommendation of Stanescu, Iorga, Monteagudo, and Freda, (2015) to not treat the nontraditional population as a homogeneous group (Philibert, Allen, & Elleven, 2008). Students meeting one or more of the seven characteristics were further categorized as minimally (one characteristic), moderately (two or three characteristics), or highly (four or more characteristics) nontraditional (Horn & Carroll, 1996). Post hoc comparisons were made based on the three-scaled construct by comparing individual regression analyses. Traditional students were defined based on the absence of nontraditional demographic characteristics. Student data from the BPS:04/09 survey were used to examine the outlined student characteristics, participation in online education, and enrollment/degree status at the point of the study's conclusion in 2009. Table 7 outlines the variables related to the study including descriptions provided by the BPS:04/09 study casebook and the traditionality categories, identified as the student risk index, devised by Horn and Carroll (1996).

Population

Data used to conduct the statistical testing of the hypotheses was supplied directly from the National Center for Education Statistics through their open access website. Developed to be nationally representative of first-time beginning students, the study entitled 2004/09 Beginning Postsecondary Students Longitudinal Study (BPS:04/09) was used to obtain appropriate student information relevant to this research study. The sample populations for the BPS:04/09 was extracted from those who participated in the 2004 National Postsecondary Student Aid Study (NPSAS:04) and included all students from institutions that were eligible to award federal aid as authorized under Title IV of the Higher Education Act. It is important to note that unlike many federally reported datasets, the sample population cohort did not omit those students who delayed postsecondary enrollment following high school or GED completion (a common characteristic of nontraditional students), and therefore is inclusive of the desired population. A total of 16,680 respondents were included in the BPS:04/09 dataset representing 1,360 postsecondary

Table 7

Dependent and Independent Variable Descriptions: BPS:04/09 Survey

Variable Name	Variable Type	Variable Description
Dependent		
PRATT6Y	Binary	Indicates whether the respondent had attained any certificates or degrees and/or was still enrolled at any postsecondary institution as of June 2009
Independent		
DISTEDUC	Binary	Indicates whether the respondent took distance education courses for credit during the 2003-2004 academic year
DISTALL	Binary	Indicates whether the entire program that the respondent took was taught through distance education during the 2003-2004 academic year
RISKINDEX	Categorical	Represents an index of risk based on the sum of seven possible characteristics that may adversely affect persistence and attainment

Note. National Center for Education Statistics, BPS04/09 Codebook.

institutions from all sectors. Based on this broad sample size it is believed that the study population is fairly representative (see Table 8 for number of institutions by institutional type included in the BPS:04/09 study). The data file contains information collected on over 1,500 variables under the topic subheadings of enrollment history, enrollment characteristics, employment, and background. For the purposes of this study, the population universe included all students, including the subcategory of nontraditional students or specifically those who met one or more of the following criteria at the time of the initial base collection year: (1) delayed enrollment into postsecondary education; (2) part-time attendance; (3) financial independence; (4) full-time employment while enrolled; (5) had dependents other than a spouse; (6) was a single parent; and/or (7) lacks a standard high school diploma.

Sample Size Calculation

Sample size was calculated through power analysis using the G*Power 3.1.7 software (Faul, Erdfelder, Buchner, & Lang, 2013). The power analysis was conducted using the established guidelines in Lipsey and Wilson (2001) for binomial logistic regression with an alpha of 0.05, a power of 0.80, a medium effect size (odd ratio = 1.72), and two-tailed test. From the input parameters, the computed minimum sample size is 177. This means that to achieve the power of 0.80 for the statistical test, the minimum number of observations should be 177.

Data Collection Procedures

This study is a quantitative ex post facto study using a secondary dataset supplied by the National Center for Education Statistics. All information provided by NCES is part of the public domain and therefore no additional permissions or restricted-use licenses were required. Data were extracted from the government website and the appropriate statistics were run through PowerStats. These web-based applications are provided by NCES and hosted on their online site as a mechanism to calculate statistics and compare variables over time for many of the NCES datasets including the BPS:04/09.

Table 8

NPSAS:04 Institution Sample Sizes and Yield 2004

Institution Type	Sampled Institutions	Eligible Institutions	Eligible Institutions that Provided Enrollment lists		
			Number	Unweighted Percent	Weighted Percent
Public					
Less-than-2-year	70	60	50	76.6%	74.3%
2-year	380	380	320	85.4%	77.6%
4-year non-doctorate-granting	130	130	110	85.1%	70.3%
4-year doctorate –granting	230	230	200	86.3%	87.1%
Private Nonprofit					
2-year or less	70	70	70	89.0%	92.6%
4-year non-doctorate-granting	280	270	220	81.9%	78.1%
4-year doctorate –granting	220	220	170	77.7%	80.8%
Private For-profit					
Less-than-2-year	170	160	140	84.0%	82.3%
2-years or more	110	110	90	84.4%	88.2%
Total	1,670	1,630	1,360	83.5%	80.0%

Note. Table adapted from National Center for Education Statistics Full-scale Methodology Report.

Data Analysis and Procedures

This section outlines the statistical methods and procedures used to analyze the data from a secondary dataset. PowerStats, an online statistical software package, was used to calculate the appropriate statistics to test the hypotheses using the BPS:04/09 data file. As outlined in the previous section, the sample population for the study was comprised of 16,680 respondents to the BPS:04/09 survey, which more than meets the required computed minimum sample size. Because this was a public-use dataset, only aggregation results are available. Within the outlined sample, a total of 5,789 respondents reported data on the variables of degree attainment status and all seven traditionality indicators. Of this base population, 3,746 students were identified as traditional and 2043 students were identified as nontraditional using the inclusion or absence of demographic variables outlined by Horn and Carroll (1996). The nontraditional population was further stratified to create inter-group comparisons. The first group was labeled minimally nontraditional and was comprised of students who met one nontraditional criterion (n=676). The second group was labeled moderately nontraditional and was comprised of students who met two or three nontraditional criteria (n=629). The third group was labeled highly nontraditional and was comprised of students who met four or more nontraditional criteria (n=738). The larger nontraditional composite including the smaller nontraditional stratified subgroups were separated based on participation in online learning as reported by the initial 2004 study checkpoint findings. Comparisons based on the dependent variable of degree attainment/persistence were made. It should be noted that the previously cited life circumstances of nontraditional students can have an impact on enrollment behavior causing extended timeframes for degree completion. As an example, one of the distinguishing characteristics of nontraditional students includes part-time enrollment and depending on the intensity of this behavior, degree attainment could be

delayed significantly. Therefore, in referencing one of the recognized limitations of the BPS:04/09 dataset (narrow six-year reporting period) this study considered continued persistence as a counterpart to degree attainment. The data in this study was analyzed by using descriptive statistics, standard was be used to test for statistical significance of the predictor variable to the outcome variable. The bivariate dependent variable is enrollment or graduation status (either they remained enrolled/graduated or are no longer attending and did not graduate) and the factors of interest in terms of the independent variables are whether or not the student engaged in distance learning and the extent of distance learning. For the first research question, only nontraditional students (students with at least one nontraditional characteristic) were included in the analysis. For the second research question, both traditional and nontraditional students were included in the analysis, with the dependent variable being persistence or graduation status, and the independent variables being whether or not the student enrolled in at least one or all online courses in academic year 2003-04, and the classification of traditionality: traditional (zero characteristics), minimally nontraditional (one characteristic), moderately traditional (two or three characteristics), and highly traditional (four or more characteristics). The statistical tests followed a confidence level of 95%, which means that a predictor was considered statistically significant only if the alpha value was 0.05 or lower.

Ethical Considerations

Data supplied by NCES is part of the public domain and student records are not attached to any form of identifier such as name, social security number, or personal contact information to ensure confidentiality. All data is secured and housed remotely by the federal government and accessed only in aggregate form for data analysis by supplied statistical analysis software. Permission to perform this study was obtained from the East Carolina Institutional Review Board

(IRB) following a detailed review of the research study proposal to ensure that compliance regarding human subjects was followed.

Summary

This chapter described the data, variables, and research methodology and design that were used in the examination of persistence for nontraditional students who engaged in distance education. The study utilized a secondary analysis of the BPS:04/09 survey results, a comprehensive longitudinal dataset produced by the National Center for Education statistics and made public through their open access website. Particular attention was paid to outlining the student population and its representative nature. Additionally, the chapter demonstrated the relevance of using a binary logistic regression as the primary data analytic technique and including descriptive statistics, standard deviations, and frequencies where appropriate. Theoretical propositions and existing literature were used to inform the selection of independent variables included in this investigation. The goal of this study was to provide empirical data to help educators and administrators make informed decisions about the role of online programming and more especially as it relates to post-secondary persistence. The findings of the study will be presented in the following chapter.

CHAPTER 4: RESULTS

The methodology chapter introduced the analysis plan for this study, which involved the built-in data analysis function on [the NCES website], PowerStats. All data have been collected and stored by NCES and made available in aggregate form for public use through their website. Without unrestricted access to the dataset, the only way to analyze the data provided by NCES is through the PowerStats web analytics, which also contains variable documentation. This chapter will provide an overview of the research questions, the analyses output from the NCES website, and interpretations and implications of the results.

The purpose of this quantitative study was to examine whether the use of online programming can aid in improving persistence and degree attainment for nontraditional students. The findings and subsequent data analysis will provide a deeper understanding of how educational innovation can potentially contribute to degree attainment outcomes for a growing nontraditional population. The following research questions and hypotheses guided the study:

RQ1: Are nontraditional students, as defined by Horn and Carol (1996), who engage in online learning more likely to attain a degree or remain enrolled as compared to those nontraditional students who do not?

H1o: Engaging in online learning is not a significant predictor of the likelihood of persisting for nontraditional students.

H1a: Engaging in online learning is a statistically significant predictor of the odds of persisting for nontraditional students.

RQ2: Are there differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional?

H2o: Students in categories of traditionality do not differ significantly in their likelihood of persisting.

H2a: Students in categories of traditionality differ significantly in their likelihood of persisting.

Chapter 4 addresses these research questions and hypotheses by describing the results of the study, which used logistic regression analysis.

Summary of Demographic Information and Study Variables

The study comprised 16,680 respondents, who were post-secondary students from the United States and Puerto Rico. The sample was designed to be nationally representative of first-time post-secondary students who had enrolled during the 2003–04 academic year. This study utilized a complex survey design, with student eligibility determined in two stages. The initial population was determined by including all students who had participated in the 2004 National Postsecondary Student Aid Study (NPSAS:04). The BPS:04/09 is a subset of the NPSAS:04 and included only students who had successfully completed interviews for both studies. The second stage involved an examination of the data to resolve any data that had been categorized incorrectly. The NCES statistical analysis software allowed for the removal of any missing data. Due to the complex sampling design, the data were weighted to adjust for unequal probabilities of selection and nonresponse. Of the 16,680 participants in the study, 42.6% were male and 57.4% were female. The participants were 61.7% White, 13.5% Black, 15.0% Hispanic, 5.1% Asian or Pacific Islander, .7% American Indian or Alaska Native, and 4.1% identified as multiracial or “other” (see Table 9).

Table 9

Percentage Distribution of Beginning Postsecondary Students' Gender and Ethnicity: 2003–04

Race/Ethnicity	Men	Women	Total
All Students	42.6%	57.4%	100%
White, non-Hispanic	43.8%	56.2%	61.7%
Black, non-Hispanic	38.1%	61.9%	13.5%
Hispanic	39.4%	60.6%	15.0%
Asian/Pacific Islander	48.3%	51.7%	5.1%
American Indian or Alaska Native	39.3%	60.7%	0.7%
Multiple races/other	45.4%	54.6%	4.1%

These data are similar to the 2003 survey results nationally reported by NCES in the Integrated Postsecondary Education Data System (IPEDS) for gender (42.6% male, 57.4% female) and for the race/ethnicity of White, non-Hispanics (62.0%). However, the data are not entirely comparable for other race/ethnicities (11.8% Black, 9.7% Hispanic, 5.8% Asian or Pacific Islander, 1.0% American Indian or Alaska Native, 6.3% unknown) as seen in Table 10.

The study discussed the students' traditionality, as defined by Horn and Carroll (1996), and investigates how distance learning may potentially influence their persistence or degree attainment. A student's traditionality was determined based on how many of the following student characteristics (risk index items) a student maintained: (a) aged 25 years or older; (b) delayed enrollment in postsecondary education; (c) maintained part-time attendance; (d) was financially independent; (e) maintained full-time employment; and/or (f) had dependents. Traditional students, characterized by the absence of all risk index items, made up 45.4% of study participants. The sample included 18.1% minimally nontraditional students, who only possessed one of the risk index characteristics; 16.8% moderately nontraditional students, who possessed two to three of the risk index characteristics; and 19.7% highly nontraditional students, who possessed four to seven of the risk index characteristics; these figures added up to a total nontraditional student base of 54.6% (see Table 11).

The data are markedly inconsistent with the literature of the 2002 and 2003 periods, which indicates that 73% of students are categorized as nontraditional (Choy, 2002; Complete College America, 2011; Horn & Carroll, 1996). A likely explanation for the discrepancy is the composite variable used as part of the BPS:04/09 study. Missing data in any one of the seven individual variables used in the aggregate traditionality variable (Risk Index and Nontraditional Indicators 2003–04) would cause an exclusion of data, resulting in disparate findings. Students

Table 10

Comparison of Nationally Reported Data for NCES BPS:04/09 and IPEDS (2003)

Race/Ethnicity	NCES	IPEDS	Difference between NCES and IPEDS
Men	42.6%	42.6%	0.0%
Women	57.4%	57.4%	0.0%
White, non-Hispanic	61.7%	62.0%	0.3%
Black, non-Hispanic	13.5%	11.8%	1.7%
Hispanic	15.0%	9.7%	5.3%
Asian/Pacific Islander	5.1%	5.8%	0.7%
American Indian or Alaska Native	0.7%	1.0%	0.3%
Multiple races/other	4.1%	6.3%	2.2%

Table 11

Percent Distribution of all 2003–04 First-time Students' Traditionality Ranking

Traditionality Populations	Total Population
Traditional (0 characteristics)	45.4%
Minimally Nontraditional (1 characteristic)	18.1%
Moderately Nontraditional (2–3 characteristics)	16.8%
Highly Nontraditional (4–7 characteristics)	19.7%

with missing data were excluded from the dataset and did not impact overall findings of this study.

Another target variable in the study was whether a student had utilized distance learning during his or her post-secondary enrollment. According to the data, 90.76% of students never took a distance-learning course, and 9.2% of students took at least one distance learning course. Of those who took at least one distance learning course, 37.0% were traditional students, 18.3% were minimally nontraditional students, 19.1% were moderately nontraditional students, and 25.7% were highly nontraditional students. For students who had taken at least one course via distance learning, 2.8% took all courses via distance education in academic year 2003-04. Of these, 32.7% were traditional students, 12.1% were minimally nontraditional students, 20.4% were moderately nontraditional students, and 34.7% were highly nontraditional students. See Table 12 for the student distribution by traditionality and enrollment in online courses. Table 12 highlights the relatively narrow sample size of postsecondary students enrolled in online courses during the 2003–04 academic year, which suggests a potential limitation for reflecting the population mean. While the reported findings may be reflective of online enrollment in 2003, research by the Babson Survey Research Group and the Sloan Consortium call attention to a 261.5% increase in online enrollment between 2003 and 2012, the most recently reported national data point. This increase indicates the growing prevalence of online enrollment.

The measure of the students' traditionality was determined through the risk index and nontraditional indicators. The mean traditionality measure was 2.78 (SD = 1.63) indicating that many students in the sample were moderately nontraditional, or met two or three criteria for nontraditional student status. In terms of degree attainment or persistence, 63.5% of the total population attained a degree or remained enrolled, and 35.5% had no degree and were also no

Table 12

*Student Population by Risk Index and Nontraditional Indicators 2003–04, Distance Education**2004: Took Courses and Distance Education 2004: Entire Program*

Traditionality Categories	Distance education 2004: Took courses (%)	Distance education 2004: Entire program (%)	Total Population
Total Population			3746.3
Yes	9.23%	2.83%	
No	90.76%	97.16%	
Traditional			1703.4
Yes	7.50%	2.04%	
No	92.49%	97.95%	
Minimally Nontraditional			676.3
Yes	9.34%	1.90%	
No	90.65%	98.09%	
Moderately Nontraditional			628.7
Yes	10.51*%	3.43%	
No	89.47%	96.56%	
Highly Nontraditional			737.9
Yes	12.03%	4.98%	
No	87.96%	95.01%	

Note. * $p < .05$.

longer enrolled. Table 13 provides the percentage breakdown of groupings for the independent and dependent variables in the study.

Table 14 summarizes the breakdown of the different sample groups of students in terms of the number of students who enrolled in distance education course(s) during the 2003–2004 academic year (distance education 2004: took courses) and the number of students who took all courses through distance education during the 2003–2004 academic year (distance education 2004: entire program).

For the student population classified as traditional, fewer students who took distance education course(s) during the 2003–2004 academic year attained or persisted toward a degree (74.9%) compared to those who did not take distance education courses (78.5%). Greater numbers of traditional students who took all courses through distance education during the 2003–2004 academic year attained or persisted towards a degree (82%) compared to those who did not take all courses through distance education (78.2%).

For the student population classified as minimally nontraditional, a greater number of students who took distance education course(s) for credit during the 2003–2004 academic year attained or persisted toward a degree (67.1%) compared to those who did not take distance education courses (60.8%). There were also a greater number of minimally nontraditional students who attained or persisted toward a degree among those who took all courses through distance education during the 2003–2004 academic year (63.1%), as compared to those who did not take all courses through distance education (61.4%).

For the student population classified as moderately nontraditional, a greater number of students who took distance education course(s) for credit during the 2003–2004 academic year attained or persisted toward a degree (61%) compared to those who did not take distance

Table 13

Percentage Breakdown Independent and Dependent Variable Groupings

Variable Type	Variable Name	Label	Percentage	
Dependent Variable	Degree attainment or persistence	Attained, still enrolled	5.3%	
		Attained, not enrolled	44.2%	
		No degree, still enrolled	14.0%	
		No degree, not enrolled	35.5%	
		Missing	0.0%	
Independent Variables	Engagement in Online Programming. Distance education 2004: Took courses	No	90.8%	
		Yes	9.2%	
		Missing	0.0%	
	Engagement in Online Programming. Distance education 2004: Entire program	No	97.2%	
		Yes	2.8%	
		Missing	0.0%	
	Traditionality		Traditional	45.5%
			Minimally Nontraditional	18.1%
			Moderately Nontraditional	16.8%
			Highly Nontraditional	19.7%

Table 14

*2009 Persistence and Attainment 6-year Total by Risk Index and Nontraditional Indicators**2003–04, Distance Education 2004: Took Courses and Distance Education 2004: Entire**Program*

Variable Name		Attained or persisted (%)	No degree, not enrolled (%)	Total
Total Population	Risk index and nontraditional indicators 2003–04 = Totals Estimates			
	Total	64.5	35.5	100
	Distance education 2004: Took courses			
	No	64.8	35.2	100
	Yes	62	38.0	100
	Distance education 2004: Entire program			
	No	64.8	35.2	100
	Yes	56	44.0	100
Traditional (0 value)	Risk index and nontraditional indicators 2003–04 = Totals Estimates			
	Total	78.3	21.7	100
	Distance education 2004: Took courses			
	No	78.5	21.5	100
	Yes	74.9	25.1	100
	Distance education 2004: Entire program			
	No	78.2	21.8	100
	Yes	82	18.0	100

Table 14 (continued)

	Variable Name	Attained or persisted (%)	No degree, not enrolled (%)	Total
Minimally NT (1 value)	Risk index and nontraditional indicators 2003–04 = Totals			
	Estimates			
	Total	61.4	38.6	100
	Distance education 2004: Took courses			
	No	60.8	39.2	100
	Yes	67.1	32.9	100
	Distance education 2004: Entire program			
	No	61.4	38.6	100
Yes	63.1	36.9	100	
Moderately NT (2-3 value)	Risk index and nontraditional indicators 2003–04 = Totals			
	Estimates			
	Total	52.1	47.9	100
	Distance education 2004: Took courses			
	No	51	49	100
	Yes	61*	39	100
	Distance education 2004: Entire program			
	No	52.2	47.8	100
Yes	47.8	52.2	100	
Highly NT (4+ value)	Risk index and nontraditional indicators 2003–04 = Totals			
	Estimates			
	Total	46.3	53.7	100
	Distance education 2004: Took courses			
	No	47.1	52.9	100
	Yes	40.7	59.3	100
	Distance education 2004: Entire program			
	No	46.9	53.1	100
Yes	33.8	66.2	100	

Note. *p<.05.

education courses (51%). However, fewer moderately nontraditional students who took all courses through distance education during the 2003–2004 academic year attained or persisted toward a degree (47.8%) compared to those who did not take all courses through distance education (52.2%).

For the student population classified as highly nontraditional, fewer students attained or persisted toward a degree among those who took distance education courses during the 2003–2004 academic year (40.7%) compared to those who did not take distance education courses (47.1%). There were also fewer highly nontraditional students who took all courses through distance education during the 2003–2004 academic year who attained or persisted toward a degree (33.8%) compared to those who did not take all courses through distance education (46.9%).

Results and Analysis

Research Question 1

RQ1: Are nontraditional students, as defined by Horn and Carol (1996), who engage in online learning more likely to attain a degree or remain enrolled as compared to those nontraditional students who do not?

H1o: Engaging in online learning is not a significant predictor of the likelihood of persisting for nontraditional students.

H1a: Engaging in online learning is a statistically significant predictor of the odds of persisting for nontraditional students.

A logistic regression analysis was then performed to determine whether enrollment in online courses had an influence on persistence for the overall population of nontraditional students. The independent variable of engagement in online program had two measures: (a)

“distance education 2004: took courses” representing if the respondent took any distance education courses during the 2003–2004 academic year; and (b) “distance education 2004: entire program” for if the respondent took all courses through distance education during the 2003–2004 academic year. The reference groups for the participation in online learning were “yes” to either measures above. This analysis addressed Research Question 1. I used a level of significance of 0.05 in the logistic regression analysis. Enrollment in online courses demonstrated an influence on persistence or degree attainment for the overall population of nontraditional students if the *p*-value was less than or equal to the .05 significance value.

Table 15 summarizes the detailed logistic regression results for Research Question 1. The resulting logistic regression analysis showed that the independent variable distance education 2004: entire program ($X^2(1, N = 16,680) = -2.43, p = 0.02$) had a significant influence on the dependent variable of degree attainment or persistence. This implies that the persistence of the overall population of nontraditional students was significantly related to students taking or not taking all courses through distance education. For the aggregate nontraditional population, taking one or more (but not all) courses in an online format did not yield an indication of influence that was statistically significant ($X^2(1, N = 16,680) = 1.82, p = 0.08$); therefore, just taking a course in a given academic year does not have a significant influence on the dependent variable of persistence. However, there is evidence that taking all courses via distance education does impact persistence.

After performing the logistic regression analysis, I then examined the odds ratio of the significant independent variable to determine change in the likelihood of degree attainment for a one-unit increase in the value of the independent variable. The findings show that the odds of persisting toward a degree decrease by 49.0% for those students who take all courses via distance

Table 15

Logistic Regression Results of the Effects of Enrollment in Online Courses on Nontraditional

Students' Degree Attainment

	Odds Ratio	Lower 95%	Upper 95%	t	p	beta
Distance education 2004: Took Course	1.33	0.98	1.81	1.82	0.08	0.29
Distance education 2004: Entire Program	0.51	0.30	0.88	-2.43	0.02*	-0.67

Note. Likelihood ratio (Cox-Snell) = 0.003; Dependent variable: Degree Attainment or Persistence; *p<.05.

education. Therefore, nontraditional students who complete all courses through distance education (the reference group is “yes”) had a lower chance (0.51 times lower) of persisting toward a degree than those who did not complete all courses through distance education. Based on this result, I rejected the null hypothesis for Research Question 1 that “Engaging in online learning is not a significant predictor of the likelihood of persisting for nontraditional students,” in favor of the alternative hypothesis. The alternative hypothesis, “Engaging in online learning is a statistically significant predictor of the odds of persisting for nontraditional students” is supported.

Research Question 2

RQ2: Are there differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional?

H2o: Students in categories of traditionality do not differ significantly in their likelihood of persisting.

H2a: Students in categories of traditionality differ significantly in their likelihood of persisting.

I performed separate logistic regression analyses to determine whether enrollment in online courses had an influence on persistence for the different nontraditional sub-populations (minimally nontraditional, moderately nontraditional, and highly nontraditional) to conduct inter-group comparisons. I conducted these analyses to determine whether there were differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional (0 risk index characteristics), minimally nontraditional (1 risk index characteristic), moderately nontraditional (2–3 risk index characteristics), and highly

nontraditional (4 or more risk index characteristics). The separate analyses were then compared to determine differences and similarities.

As in the analysis for research question 1, the independent variables of engagement in online program had two measures: (a) “distance education 2004: took courses,” representing if respondents took distance education courses for credit during the 2003–2004 academic year; and (b) “distance education 2004: entire program,” for if the respondent took all courses through distance education during the 2003–2004 academic year. I used a level of significance of 0.05 in the logistic regression analysis.

Table 16 summarizes the logistic regression results for the population of students classified as traditional. The resulting logistic regression analysis showed that neither of the independent variables of “distance education 2004: took courses” ($X^2(1, N = 16,680) = -1.45, p = 0.15$) and “distance education 2004: entire program” ($X^2(1, N = 16,680) = 1.53, p = 0.13$) had a significant influence on persistence. This means that the persistence of the student population classified as traditional was not significantly affected by their engagement or enrollment in online courses.

Table 17 summarizes the logistic regression results for the population of students classified as minimally nontraditional. As before, none of the independent variables had a significant influence on persistence (“distance education 2004: took courses”: $X^2(1, N = 16,680) = 1.17, p = 0.24$; “distance education 2004: entire program”: $X^2(1, N = 16,680) = -0.51, p = 0.61$). Therefore, the persistence of the student population classified as minimally nontraditional was not affected significantly by their engagement or enrollment in online courses.

Table 18 summarizes the logistic regression results for the population of students classified as moderately nontraditional. The findings showed that the independent variable of

Table 16

Logistic Regression Results of the Effects of Enrollment in Online Courses on Persistence for

Traditional Students

	Odds Ratio	Lower 95%	Upper 95%	t	p	beta
Distance education 2004: Took Course	0.71	0.45	1.13	-1.45	0.15	-0.34
Distance education 2004: Entire Program	1.75	0.85	3.59	1.53	0.13	0.56

Note. Likelihood ratio (Cox-Snell) = 0.001; Dependent variable: Degree Attainment or Persistence; *p<.05.

Table 17

Logistic Regression Results of the Effects of Enrollment in Online Course on Persistence for

Minimally Nontraditional Students

	Odds Ratio	Lower 95%	Upper 95%	t	p	beta
Distance education 2004: Took Course	1.37	0.81	2.35	1.17	0.24	0.32
Distance education 2004: Entire Program	0.80	0.34	1.88	-0.51	0.61	-0.22

Note. Likelihood ratio (Cox-Snell) = 0.002; Dependent variable: Degree Attainment or Persistence; *p<.05.

Table 18

Logistic Regression Results of the Effects of Enrollment in Online Course on Persistence for

Moderately Nontraditional Students

	Odds Ratio	Lower 95%	Upper 95%	t	p	Beta
Distance education 2004: Took Course	1.99	1.21	3.27	2.73	0.01*	0.69
Distance education 2004: Entire Program	0.44	0.17	1.13	-1.72	0.09	-0.82

Note. Likelihood ratio (Cox-Snell) = 0.008; Dependent variable: Degree Attainment or Persistence; *p<.05.

“distance education 2004: took course” ($X^2 (1, N = 16,680) = 2.73, p = 0.01$) had a significant influence on the dependent variable of persistence. However, there was no evidence that persistence was significantly impacted by the independent variable “distance education 2004: entire program” ($X^2 (1, N = 16,680) = -1.72, p = 0.09$). This means that the persistence or degree attainment of the student population classified as moderately nontraditional was affected significantly if the respondent took distance education courses during the 2003–2004 academic year but not all enrolled courses.

The odds ratio corresponding to the “distance education 2004: took course” variable was 1.99. This result implies that, for moderately nontraditional students, taking courses in distance education had a positive influence on the likelihood of continued persistence. Specifically, the findings show that the odds of attaining a degree or persisting toward a degree are increased by 99.0% for those students who took an online course during the 2003–2004 academic year.

Table 19 summarizes the logistic regression results for the population of students classified as highly nontraditional. The resulting logistic regression analysis showed that neither the “distance education 2004: took courses” ($X^2 (1, N = 16,680) = -0.22, p = 0.82$) variable, nor the “distance education 2004: entire program” ($X^2 (1, N = 16,680) = -1.04, p = 0.30$) had any significant influence on the dependent variable of persistence. Therefore, the persistence of the student population classified as highly nontraditional was not significantly affected by their engagement or enrollment in online courses.

Based on the results of the logistic regression analysis, I rejected the null hypothesis for Research Question 2 that “Students in categories of traditionality do not differ significantly in their likelihood of persisting,” in favor of the alternative hypothesis. The rejection of the null hypothesis was solely due to the findings of students classified as moderately nontraditional. The alternative

Table 19

Logistic Regression Results of the Effects of Enrollment in Online Course on Persistence for

Highly Nontraditional Students

	Odds Ratio	Lower 95%	Upper 95%	t	p	beta
Distance education 2004: Took Course	0.94	0.55	1.62	-0.22	0.82	-0.06
Distance education 2004: Entire Program	0.61	0.24	1.56	-1.04	0.30	-0.49

Note. Likelihood ratio (Cox-Snell) = 0.003; Dependent variable: Degree Attainment or Persistence; *p<.05.

hypothesis, “Students in categories of traditionality differ significantly in their likelihood of persisting,” is supported. Specifically, persistence of the population of students classified as moderately nontraditional was positively affected by taking a distance learning course. For other student populations (traditional, minimally nontraditional, and highly nontraditional), engaging in distance-learning courses did not have an influence on persistence.

Evaluation of Findings

The purpose of this study was to examine the relationships among student characteristic variables, distance learning, and persistence outcomes. The results of the logistic regression analysis showed that there was an indication of influence between persistence and distance learning among the overall population of nontraditional students. Specifically, nontraditional students’ overall persistence was negatively related to their completing all courses through distance learning in 2003–2004. This finding aligns with the theory discussed in the literature review regarding the effects of distance learning on nontraditional students.

Although this study found that, for nontraditional students, there was an indication of influence between distance learning and their persistence, it was also found through further logistic regression analyses that, when testing each type of student (traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional), taking all courses through distance learning did not have a significant influence on persistence. The apparent discrepancy between the findings for Research Questions 1 and 2 is likely due to inadequate sample sizes. For each sub-population of nontraditional students (minimally, moderately, and highly nontraditional), the effect of taking all courses through distance learning was negative, but not significant at the 0.05 level. However, when aggregating all these students in a larger sample (as in Research Question 1), the effect became statistically significant.

The findings from the logistic regression on moderately nontraditional students revealed another statistically significant relationship. Specifically, moderately nontraditional students who took a course through distance learning had a higher probability of persisting than those who did not take a course through distance learning.

Although it does not appear that the use of online courses can be associated with an increase in the rate of persistence for all students categorized as nontraditional, the evidence presented through the analysis of the data provides reason to believe that it may have some impact on student outcomes such as persistence and degree attainment (positive and negative). The following chapter will include a discussion on the implications of these results and offer recommendations based on the findings of this study.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this ex post facto study was to investigate whether enrollment in online courses (including all courses) would impact persistence for nontraditional students by comparing two groups of nontraditional students, those enrolled in online courses and those enrolled in traditionally face-to-face courses. The literature pertaining to distance education supports the general consensus that there are no significant differences in learning outcomes between traditional face-to-face and online models (Bell & Federman, 2013; Bernard, Abrami, Borokhovski, Wade, Tamin, Surkes, & Bethel, 2009; Means, Toyama, Murphy, Bakia, & Jones, 2009; Russell, 1999), and furthermore, that online modalities offer a level of accessibility for nontraditional students (Aslanian & Clinefelter, 2012) which may allow individuals the opportunity to enroll (or stay enrolled) in postsecondary education. However, the research on online learning also indicates higher rates of attrition as compared to traditional face-to-face offerings (Hart, 2012; Leeds, Campbell, Baker, Ali Brawley, & Crisp, 2013; Xu & Jagers, 2011). This leaves room for concern regarding the role online programming can play in degree completion for nontraditional students, as well as regarding whether the opportunities online education presents for nontraditional students can offset the increased rates of attrition attributed to online learning.

This study used existing data from the National Center for Education Statistics (NCES), specifically, public-use data files from the Beginning Postsecondary Students of 2004–2009 Longitudinal Study (BPS:04/09), located on their open-access website. Data supplied by NCES contained student characteristic and demographic data relevant to answering the research questions outlined by the study. A total of 16,680 participants met the threshold of appropriate data to be considered a respondent; 3,746 had reported data for all study variables, including

each of the seven nontraditional indicators. Data analyses, such as binomial logistic regression modeling and descriptive statistics, were conducted using PowerStats, the statistical analysis software supplied by NCES.

This study paid particular attention to nontraditional students by examining student levels of traditionality, as defined by Horn and Carroll (1996), to determine whether the number of nontraditional characteristics is related to degree attainment through online modalities. An intended function of this study was to provide educators and administrators in higher education with additional data to assist in a broader understanding of technology-mediated education, especially as it relates to degree attainment. This chapter first summarizes the results of the data analysis as presented in Chapter 4; it then discusses these results in depth. Finally, the chapter details the limitations of the study, as well as implications, recommendations for practice, future research, and conclusions.

Summary of Findings

Research Question 1

Are nontraditional students (as defined by Horn & Carol, 1996) who engage in online learning more likely to attain a degree or remain enrolled as compared to those nontraditional students who engage only in face-to-face learning? To answer this question, I conducted a logistic regression analysis using data from the National Center for Education Statistics (NCES) to estimate the probability that the persistence or degree attainment of the overall population of nontraditional students was significantly related to whether students took courses through distance education.

Using a level of significance of 0.05 and a *t* statistic of 1.96, the null hypothesis, “engaging in online learning is not a significant predictor of the likelihood of persisting for

nontraditional students,” was rejected in favor of the alternate hypothesis. The logistic regression analysis revealed that, for the overall population of nontraditional students, there was a statistically significant influence between enrolling in fully online degree programs and persistence ($X^2(1, N = 16,680) = -2.43, p = 0.02$). Overall, nontraditional students who completed all of their courses through distance education had a lower chance (51% lower) of persisting toward a degree than those who did not complete all of their courses through distance education. In contrast, the results for nontraditional students who engaged in one or more online courses (but not all courses) proved not to be statistically significant.

Research Question 2

Are there differences in persistence outcomes for students engaged in distance education based on the following classification strata: traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional? To answer this question, I conducted several individual logistic regression analyses, estimating probabilities to measure the relationship between students’ persistence and their level of online learning, for students in each of the traditionality classifications.

Using the BPS:04/09 dataset, the results in this study were mixed in regard to the relationship between the traditionality categorization of students and persistence. Of the four sub-populations, three of them appeared to show a positive influence with persistence by looking at the descriptive statistics (traditional students taking one or more courses, minimally nontraditional students taking one or more courses and fully online programs, and moderately nontraditional students taking one or more courses); however, only moderately nontraditional students who took one or more online courses (but not all online courses) showed a relationship that was statistically significant at the 0.05 level. Specifically, moderately nontraditional students

who enrolled in one or more online courses (but not all online courses) were 1.99 times more likely to remain enrolled or attain a degree ($X^2 (1, N = 16,680) = 2.73, p = 0.01$). Given the significant relationship in at least one of the four sub-populations, the null hypothesis was rejected.

Discussion of Findings

The Beginning Postsecondary Students of 2004–2009 Longitudinal Study (BPS:04/09) dataset from the National Center for Education Statistics (NCES) was chosen because it was designed to be nationally representative of postsecondary students and key education issues (Wine, Janson, & Wheelless, 2011). Other contributing factors in the selection of this data source were the rather significant population from which it was drawn and the comprehensive list of variables available; a total of 16,680 respondents representing several cohorts of students were followed over a 6-year period and provided information on more than 1,500 variables.

Results of the descriptive statistics for the variables used in this study revealed the dataset to be fairly representative of demographic information pertaining to gender and race/ethnicity, although there were with slight discrepancies in the populations categorized as Black (+/- 1.7%), Hispanic (+/- 5.3%), Asian or Pacific Islander (+/- 0.7%), and American Indian or Alaska Native (+/- 0.3%) when compared to nationally reported data during the same period (see Table 10). More surprising was the variance in the ratio between traditional and nontraditional students. Within the BPS:04/09 dataset, a total of 55.6% of respondents met at least one of the seven characteristics outlined by Horn and Carroll's (1996) definition of a nontraditional student and were therefore characterized as such. These results are inconsistent with the nationally reported postsecondary nontraditional student distribution of 73% circulated by NCES during this same time period (Choy, 2002). One possible explanation for the discrepancy may be the BPS:04/09

variable used as part of this study. The independent variable, Risk Index and Nontraditional Indicators 2003–04, is a composite variable derived from seven different variables within the BPS:04/09 study: delayed enrollment (DELAYENR>0); no high school diploma (HSDEG=2,3,5); part-time enrollment (ATTNSTAT>3); financially independent (DEPEND=2); have dependents (DEPANY=1); single parent status (SINGLPAR=1); and working full-time while enrolled (JOBENR=3). Respondents were included only if they provided information for all source variables; all others were excluded. The significant discrepancy could be a result of missing data in one or more of the required fields, thus limiting the dataset population.

Results of the descriptive statistics for the study population also revealed that only 9.24% of all respondents reported enrolling in one or more online courses during the 2003–04 academic year. This finding is inconsistent with research conducted by the Babson Survey Research Group, which reported that 11.65% of the postsecondary student population participated in online learning in 2003 (Allen & Seaman, 2013). The reason for this inconsistency in online learning participation is unknown, other than the fact that reported data came from two different sources. Aside from discrepancies in the data, the relatively small proportion of students engaged in online learning is likely due to the time period in which the data were gathered. Kurshan (2015) noted that in 2003, only 81% of postsecondary institutions offered at least one online course, and while offered, student participation or limited sections may have resulted in lower overall enrollment. According to a more recent study conducted by the Sloan Consortium in 2012, over 99% of all public institutions include online offerings, and a majority of institutions within all other segments (private and for-profit) report that they offer some type of online opportunities as well (Allen & Seaman, 2013).

Radford and Weko (2011) outlined supporting evidence that the growth in online programming across the varied educational sectors is due, in part, to an expanding nontraditional student population. The findings of this study align with the literature and highlight that nontraditional students participated in online offerings at a higher rate than their traditional counterparts (7.72% vs. 4.34%). Of the nontraditional student population who engaged in online learning, the largest share was attributed to those classified as highly nontraditional (25.7%). (see Table 12.) While the highly nontraditional subset had a higher online participation rate, they also experienced the lowest rates of persistence and degree attainment (see Table 14.) This finding was also anticipated based upon studies pertaining to nontraditional attrition (Berman, Gross, Berry & Shuck, 2014; Markel, 2015). The root cause of this attrition, however, is not clear. The large gap in attrition could be attributed to compatibility issues with technology-mediated education, or it may speak to the elevated attrition that has been associated with the competing commitments of nontraditional students—especially for highly nontraditional students.

Overall, findings from this study showed that there was an indication of influence between persistence or degree attainment and online learning among the overall population of nontraditional students. More precisely, the indication of influence between nontraditional students' overall persistence or degree attainment with engagement in online learning was statistically significant, albeit negatively related, with students' completing all courses through online learning ($\chi^2(1, N = 16,680) = -2.43, p = 0.02$). This finding was not entirely unexpected and agrees with a number of previous studies regarding attrition in online learning environments (Aragon & Johnson, 2008; Diaz & Cartnal, 2006; Lee & Choi, 2011; Levy, 2007), though none of the referenced studies were specific to nontraditional students. In terms of the current study, the odds of persisting or attaining a degree decreased by 49.0% for nontraditional students who

enrolled in fully online programs, as compared to nontraditional students who were enrolled in seated or hybrid programs.

One possible cause of attrition among online learners is a lack of social or academic integration on the part of the student. According to both Tinto (1975) and Kember (1995), failure to integrate academically or socially weighs heavily on the ability for a student to persist. Willging and Johnson (2009) highlight the tendency of online programs, as a delivery model, to foster a sense of isolation in students and hinder their formation of strong or meaningful social relationships. Parallel conclusions were drawn by Wuensch, Aziz, Ozan, Kishore, and Tabrizi (2008) in a study designed to investigate student perceptions of face-to-face and online courses at 46 colleges and universities. Wuensch et al. (2008) found that while online courses offered more flexibility to students, they fell short in areas related to communication and other meaningful interactions—a significant limitation for academic and social integration. Another possible internal factor leading to an increased attrition rate may be a result of a mismatch in learning style. Online programs tend to require students to be self-directed and independent (Allen & Seaman, 2006; Simpson, 2013). Learner autonomous environments, such as online, may not be an appropriate learning environment for all students, thus, potentially leading to higher rates of attrition for some. While many students with alternate learning styles may be able to adapt for a small number of online classes, fully online programs may prove to be problematic.

Other possible reasons for the higher departure rate could be factors external to the student, such as work, family, or other commitments commonly associated with nontraditional students. In a meta-analysis of dropout research in online learning, Park (2007) recognized the significance of external factors for nontraditional students, and identified time conflicts, family issues, and financial burdens as being some of the most significant contributing factors for

attrition. External demands, such as those previously noted, can be particularly challenging, primarily because the institution has little control over these variables (Park, 2007). Many nontraditional students who self-select enrollment in online programs, do so, because they do not have the external support mechanisms needed to attend a more traditional face-to-face program (Giancola, Munz, & Trares, 2008; Pontes & Pontes, 2012), potentially putting them at higher risk of attrition. While online programs may not require the same synchronous meeting times as face-to-face programs, they require an equal amount of student commitment and support which can be affected by competing external factors. Findings from a study conducted by Willging and Johnson (2009), offered varying reasons for online student departure, but highlighted external factors such as job-related issues and family or scheduling conflicts as being particularly relevant for nontraditional students.

In relation to the traditionality subpopulations (traditional, minimally nontraditional, moderately nontraditional, and highly nontraditional), the only statistically significant influence between persistence and online participation was in the case of moderately nontraditional subpopulation of students who took one or more online classes (but not all online courses). Specifically, the findings of the study indicate that the odds of remaining enrolled or attaining a degree for students characterized as moderately nontraditional who took a distance learning course increased by 99.0% compared to those students who did not take distance learning courses, all else being equal ($X^2(1, N = 16,680) = 2.73, p = 0.01$). In terms of this study, a logical conclusion could be drawn that online learning offers moderately nontraditional students the ability to remain enrolled and obtain a degree to such an extent that it compensates for the known increase in attrition likelihood that is commonly attributed to distance education. Research by Muller (2008) and Pontes and Pontes (2012) supports the idea that online programming offers

nontraditional students opportunities to continue their educations by removing some of the common impediments. After all, nontraditional students were the intended population for whom distance education was initially created (Schlosser & Simonson, 2009).

The results of the individual logistic regressions for each traditionality subpopulation did reveal a positive relationship for traditional students taking all online courses, minimally nontraditional students taking either one or more courses or all online courses, and moderately nontraditional students taking one or more courses online during the academic year 2003-04; however, only the results for the latter group were statistically significant at the at the 0.05 level. Small sample sizes of the subpopulations likely undermined the possibility of a statistically significant result for all other noted populations. While the population universe for the dataset was 16,680, Table 12 outlines the sample size for each traditionality subcategory by participation in distance education, highlighting how little online participation data were available.

The lack of statistically significant findings for the subpopulations of nontraditional students is consistent with Kember's (1989) finding that, for nontraditional students engaged in distance education, there was only a minor or indirect relationship between their characteristics and their intent to persist. In a similar study, Park and Choi (2009) reinforced these findings, providing further evidence that nontraditional student persistence does not rely on individual characteristics, or in this case, perhaps not even on a number of characteristics.

Overall, the logistic regression analyses indicated that, among the total population of nontraditional students enrolled in fully online programs, there is a negative relationship between persistence and distance learning. However, when students are further stratified by traditionality, the degree attainment/persistence results of the BPS:04/09 were less clear. Study results found that there were no statistically significant influences (positive or negative) with enrollment in all

online courses during the academic year 2003-04, for each of the noted subpopulations. Moderately nontraditional students, on the other hand, experienced a higher probability of persisting or attaining a degree by enrolling in some portion of online learning. Based on this finding, I surmise that moderately nontraditional students, falling relatively lower on the traditionality continuum, may be attempting to assimilate to the conventional molds established for more of a traditional postsecondary student population. Much like their younger traditional counterparts, they may be successfully embracing some measure of technology-mediated education, but, given the findings, only relative to a limited number of courses. The findings of the study suggest that there is a relationship between traditionality and online participation—the more nontraditional the student, the higher the rate of online participation. While moderately nontraditional students seem to find a successful balance based on their limited number of nontraditional characteristics, highly nontraditional students experience far less favorable outcomes. Highly nontraditional students, on the other hand, seem to recognize their nontraditionality and the number of characteristics that set them apart from the more traditional population. Their aim is to accomplish their postsecondary goals without compromising the responsibilities that give rise to their highly nontraditional status. Highly nontraditional students are seeking alternatives that allow them to attend college alongside personal obligations. This seems to be evidenced in their disproportionately high rates of participation in online learning but, at the same time, it may also be the cause of their higher rates of attrition as well. These speculations should be empirically tested through future studies.

The results of the current study do suggest that some portion of online learning can be beneficial for a certain percentage of nontraditional students. Patel and Patel (2006) offer a justification for this finding by explaining that the hybrid model (a combination of seated and

online learning) offers multiple modalities to a body of students with potentially diverse learning styles, thus improving educational outcomes. A parallel finding has been made through a meta-analysis of online learning studies conducted by the U.S. Department of Education for K–12 students. The USDoE determined that “Instruction combining online and face-to-face elements had a larger advantage relative to purely face-to-face instruction than did purely online instruction” (Means, Toyama, Murphy, Bakia & Jones, 2009, p. xv). It is worth noting that the differences in student populations (K–12 vs. postsecondary) may raise concerns about generalizability; however, the similarities among the educational findings are certainly worth noting.

Limitations

The current study has several limitations that deserve consideration before any findings are put into practice. First, a critical limitation of this study was the narrowed sample size as a result of filtering the BPS:04/09 dataset by the outlined study variables. The BPS:04/09 dataset was fairly comprehensive, with 16,680 respondents; however, the decision to include only a small number of specified variables produced a raw number of results that were decidedly small (see Table 12). Specifically, the traditionality variable (Risk Index and Nontraditional Indicators 2003–04) relied on composite data from seven separate variables representing the seven traditionality characteristics outlined by Horn and Carroll (1996). Missing data in any one of the noted variables resulted in the elimination of the respondent, and therefore reduced the sample size. Of the 16,680, only 5,789 supplied enough data to be included in the study. Due to the potentially limited online offerings in 2003–04, only 346 students reported participation in online courses, and 106 were enrolled in fully online programs. A later study may yield a larger population and more significant findings.

The narrowed sample size also speaks to the second limitation of the dataset. At the time of the initial data collection period in 2004 (representing the 2003–04 academic year), online learning opportunities were somewhat limited, the technology was fairly restricted, and institutions may not have had integrated student and faculty support surrounding online offerings. In the present study, results included only a small portion of students engaged in online learning, and findings may not be fully representative of the current capacity that is offered by the modality in its current state. Perna (2007) offers a cautionary note about the timeliness concerns with using existing datasets and the need to ensure that the results are generalizable within current contexts.

The dataset also had several other limitations. For instance, there is reason to believe, based on the typical college registration process, that participants' self-selection into online learning courses may lead to self-selection bias or generalizability concerns. In addition, the dataset was limited by the methods and measures of the BPS:04/09 study. As is the case with most studies involving existing datasets, the current study was constrained to using data and constructs as defined by the initial study investigators (Bryan, Day-Vines, Holcomb-McCoy & Moore-Thomas, 2010; Kluwin & Morris, 2006). For example, the distance education variables (Distance education 2004: Took Course and Distance education 2004: Entire Program) only measure whether a student has taken either (a) one or more courses or (b) all courses through online learning, leaving room for speculation about the effects of online course-taking intensity. Another limitation is that although the aggregate form data outlines where students are on the traditionality continuum based on the number of characteristics they have, it cannot distinguish which characteristics those are. These demographic variables may provide insight into how specific traditionality factors may be associated with persistence through online learning. Finally,

the dataset used in this analysis was limited by the censoring of data as a result of the six-year time frame for the BPS:04/09 longitudinal study. This means that the dataset may not account for degree completion or attrition outside of the original study window, which may have an impact on the findings.

Implications and Recommendations for Policy and Practice

Through this study, I sought to investigate whether participation in online learning would impact the likelihood of student persistence for nontraditional students, and additionally, whether the level of traditionality had any significance for these findings. The literature surrounding postsecondary education continues to detail the rising nontraditional population (Choy, 2002; Complete College America, 2011), and as a result, institutions are looking for ways to meet market demand but still maintain an ever-watchful eye on student retention and degree attainment. The findings of this study have practical implications for administrators and other educational stakeholders looking to develop a better understanding of nontraditional students and their persistence toward degree attainment in an online academic environment. This information has the potential to inform strategic planning, curricular design, and pedagogical practices, advising strategies, and technology procurement and planning, among other activities.

For many higher education institutions, online programming has become a common solution to a number of challenges, and is often considered of critical strategic importance for institutional sustainability (Allen & Seaman, 2011). However, the results of this study suggest that institutions need to acknowledge that a one-size-fits-all approach to online offerings may not be advisable, and furthermore, that the nontraditional population as a whole is diverse in its composition. Institutions may be well served by developing mechanisms to enable a deeper understanding of their student populations, including outside factors such as those that are

identified by the traditionality model, as these factors could hinder student engagement or success. One recommendation would be to focus on the collection and analysis of student demographic data prior to enrollment, and use this data, in part, for the student advising process. Ultimately, this information should inform a more holistic approach to educational advising, inclusive of not only which academic offerings are appropriate for degree attainment, but also their delivery method.

Research has indicated that a lack of faculty support can impact student success in online programs (Allen & Seaman, 2008; Graham & Jones, 2011; Orr, Williams, & Pennington, 2009; Tabata & Johnsrud, 2008). A study by the Babson Research Group indicated that only 30% of chief academic officers have confidence that faculty members subscribe to the legitimacy of distance education and support institutional efforts to offer this modality (Allen & Seaman, 2014). It is therefore recommended that evidenced-based research be shared with all stakeholders, including faculty, regarding the educational merits of online programming as it relates to particular populations. Research by Wang (2012) further underscores the need for cohesive and collaborative support from institutional partners for productive online programs. Regular and ongoing training and support in technology and instructional methods should also be considered.

Institutions and policy-makers looking to proactively support online persistence should recognize the inherent differences between online learning and traditional face-to-face offerings and develop policies and practices that are responsive to the varying nontraditional virtual student. Educational institutions may be able to leverage the results of this study to differentiate policies specific to online participation, such as determining potential online enrollment thresholds for groups who exhibit characteristics that put them at risk for lower persistence. In

addition, the findings may provide justification for supplementary resources or additional intervention strategies that are specific to the nontraditional virtual learner. Furthermore, it is recommended that regular and ongoing evaluation of distance education student outcomes such as degree attainment be given priority as part of institutional planning. Anderson (2011) has commented that “As the nature of Internet users evolves, so do their demands and expectations from e-learning”; therefore, in all likelihood, student outcomes may logically shift as well (p. 247). Online courses and programs are an attractive option for institutions, but the findings of this research study suggest that intuitions may need to be cautious and deliberate in the offerings specifically as it relates to nontraditional students.

Recommendations for Future Research

Research in higher education often neglects the nontraditional segment (Cruce & Hillman, 2012). In a comprehensive review of higher education literature, Donaldson and Townsend (2007) identified that only 1% of scholarly articles included adult or nontraditional students specifically. Furthermore, research dedicated to online learning outcomes rarely extends beyond individual course completion to look more directly at a holistic measure of student success such as degree attainment. This dearth in relevant data also extends to national and longitudinal datasets containing distance education data by cohort. There is little guidance surrounding the role of online programming in degree attainment for nontraditional students. This current study attempts to raise questions related to nontraditional student persistence and technology-mediated education. Based on this study, the following recommendations for future research have been identified.

First, further examination should be conducted using a newer dataset once it becomes available. Preferably, the study should be replicated using the Beginning Postsecondary

Students: 2012–2017 longitudinal dataset (BPS:12/17), although alternate datasets should also be investigated. The BPS:12/17 dataset follows approximately 25,000 respondents for a six-year period and includes additional variables related to the index of risk and nontraditional students as well as student online course-taking habits and preferences. Noted increases in online enrollments year over year (Allen & Seaman, 2013) may yield a larger subpopulation sample with the BPS:12/17, and therefore, an increased likelihood of significant findings may be possible. The current study was limited by the timeline of available data.

A second recommendation would be to conduct the data analysis with authorized restricted use of the dataset from NCES. Restricted use of any of the NCES datasets allows the researcher to access individually identifiable information, which provides the opportunity for more granular analysis of the data. For example, restricted use would allow the researcher to conduct an investigation on whether specific traditionality characteristics could impact persistence for nontraditional students engaged in online learning, rather than simply the number of nontraditional characteristics they exhibit. In addition, further research should be done on whether a student's number of online courses may contribute to persistence. It would be beneficial to understand specific thresholds for each nontraditional subpopulation.

Third, it may be worthwhile to develop additional research to determine what role, if any, support services may play in successful degree attainment outcomes for nontraditional students. Many of the attributes that characterize nontraditional students can also be obstacles to academic progress, yet support structures tend to vary widely among colleges and universities. The availability of such supports may serve as an important factor in nontraditional persistence. The current study was limited by the availability of relevant institutional data and was unable to determine what, if any, institutional resources were available for nontraditional students engaged

in online learning. Finally, even though the preponderance of online enrollments are at the undergraduate level (Radford & Weko, 2011), it may be worthwhile to gain a broader perspective by extending this study to include graduate programs.

Summary and Conclusion

Through this research study, I sought to gain a deeper understanding of nontraditional student populations, their enrollment patterns in online programming, and what effect those enrollment patterns may have on student persistence. This study utilized a nationally representative dataset, specifically the Beginning Postsecondary Students of 2004–2009 Longitudinal Study (BPS:04/09), to analyze the relationships among student characteristic variables, distance learning, and persistence/degree attainment outcomes. Results from logistic regression analysis indicated that participation in all online courses during the 2003-04 academic year by the composite nontraditional population may influence a decreased probability of persistence. Further research involving traditionality sub-populations, however, indicated that moderately nontraditional students had a higher probability of persisting when enrolled in a limited number of online courses.

From a practical standpoint, the results of this study demonstrate that there is a substantive relationship between online programming and degree attainment for nontraditional students. While results of this study only determine an influence, and additional research is needed to confirm a causal relationship, it does offer a legitimate contribution to the growing body of research on technology-mediated education for nontraditional students. There are a number of economic studies that suggest students who exhibit many of the nontraditional characteristics that tend put them at risk, may experience the greatest benefits from attaining a postsecondary degree (Baum et al., 2013; Brand & Xie, 2010; Hout, 2012). Results of this study

provide general information to institutions looking to improve graduation rates for their nontraditional populations by potentially leveraging online learning.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
Office
4N-70 Brody Medical Sciences Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 ·
www.ecu.edu/irb

Not Human Subject Research Certification

From: Social/Behavioral IRB
To: [Lisa Nuesell](#)
CC: [Crystal Chambers](#)
Date: 6/14/2016
Re: [UMCIRB 16-000816](#)
Social/Behavioral IRB

On 6/14/16, the IRB Staff reviewed your proposed research and determined that it does not meet the federal definitions of research involving human participants, as applied by East Carolina University.

Therefore, it is with this determination that you may proceed with your research activity and no further action will be required. However, if you should want to modify your research activity, you must submit notification to the IRB before amending or altering this research activity to ensure that the proposed changes do not require additional UMCIRB review.

The UMCIRB appreciates your dedication to the ethical conduct of research. It is your responsibility to ensure that this research is being conducted in accordance with University policies and procedures, the ethical principles set forth in the Belmont Report, and the ethical standards of your profession. If you have questions or require additional information, please feel free to contact the UMCIRB office at 252-744-2914.

