Abstract

SHADINGER, DAVID ALLEN. An Analysis of Dialogistic Presence on Community College Web Sites in Nine Mega-States. (Under the direction of Dr. James E. Bartlett, II).

The institutional web site is ubiquitous and has emerged as nearly universal in its utilization as a recruiting and informational tool for the twenty-first century community college. Community colleges have embraced utilization of the Internet through the establishment of institutional web sites containing volumes of information, forms, and links. Researchers have uncovered an analogous trend among the single most influential set of prospective community college students - high school juniors and seniors. This Internet savvy community college target public prefers to find information on the Internet during their college search process.

Concurrently, many community colleges have included functions and links for their web site visitors aligned with Kent & Taylor's (1998, 2002) theoretical dialogic public relations categories of dialogic loops, ease of use, timeliness of information, encouragement of return visits. The individual dialogic loops utilized by community colleges are predominantly ones that facilitate the admissions, class registration, and financial aid processes, not necessarily the ones desired by potential students to develop a relationship with the institution during the college selection process.

This research found that when a community college used dialogic loops, they were highly likely to incorporate Kent & Taylor's (1998, 2002) other related dialogic functions to make it easy for a web site visitor to navigate the web site, encourage visitors to return to the web site, and provide current and/or recently updated information. When community colleges utilized the dialogic categories, they were also highly likely to provide multiple

functions and links in the newly defined category of passive information. Conversely, this research found no relationships between the various Kent & Taylor (1998, 2002) defined dialogic categories and the institutional attributes of full-time student enrollment, location of the campus as defined by the U.S. Census, or the time required to load the institutional web site's home page.

The results of this study show that community colleges are generally embracing the need for a web site and many institutions are incorporating dialogic loops on their institution web site. Unfortunately, community colleges do not appear to make efficacious use of their web site to encourage return visits or provide more, timely, and current information. Community colleges are falling short in their public relations efforts to develop the type of web-based, dialogic, communicative relationship sought by their key public - prospective students.

An Analysis of Dialogistic Presence on Community College Web Sites in Nine Mega-States

by
David Allen Shadinger

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APPROVED BY:

Dr. Diane Chapman	Dr. Pooneh Lari
Dr. Joseph Busby	Dr. James E. Bartlett, II Committee Chair

Dedication

In many ways the evolution of this dissertation has been a labor of familial love. My wife has literally never known a moment during our six years of marriage when I was not studying for class, researching a paper, organizing a presentation, bemoaning the challenges of undergraduate research coders, or sweating out the details of ANOVA's, MANOVA's, and multiple regression. Patricia, this is as much a treatise to your dedication and loving support as it is the fulfillment of university requirements. Your steadfastness and encouragement have been the essential underpinning that made this all possible. Man's best friend, Murphy, was always by your side and constant in his dedication and comfort throughout my educational endeavors and our relocation processes.

To my daughter Mae who once commented on my decision to become a full-time college instructor by asking, "What took you so long?" I can only offer the painfully trite comment, "Better late, than never."

To my late mother who always thought I should be a teacher and often commented that she thought I was a "late bloomer" – "I've figured it out Mom, and I've only passed my 58th birthday."

Biography

David Allen Shadinger is a teacher. He has always been a teacher, but he fought the notion of truly and formally being labeled a teacher for most of his adult life. Growing up watching his mother's daily struggles as a middle school home economics teacher only hardened his early resolve to avoid the profession. Many years later, for a short period between full-time jobs, David served as a substitute teacher, in classrooms from second grade through high school. Those brief experiences further solidified David's resolve that the challenges of the classroom were not for him.

With a Bachelor of Arts from Purdue University in radio and television and a Master of Arts in public relations from Ball State University safely tucked away, David spent nearly twenty-five years serving in a variety of public relations, advertising, marketing, and development positions. He worked in advertising agencies, not-for profit organizations, small businesses, and large corporations. For the first twelve of those years, he was a Scoutmaster and successfully built a strong and active Boy Scout troop. However, he never considered serving as a scout leader on the same plane with the teaching profession. Instead, David saw it as "giving forward" in response to his positive boyhood Scouting experiences. Years later, his understanding of those experiences would adjust.

During this same time period, as with most professionals in the communications field, David periodically found himself between jobs. To earn some extra money, he applied for a part-time, evening position with Indiana Wesleyan University's (IWU) fledgling MBA program. For the next eighteen years, teaching at IWU's various satellite campuses across northern Indiana would be the single constant in his professional life. During those years David still never considered teaching full-time as a viable career option.

One day in 2004, David's fiancée asked why he was not looking for a full-time college teaching position. Not fully appreciating the academic bias toward terminal degrees, David naively secured a full-time teaching position at a small private college in North Carolina. His eyes were eventually opened to the obligatory nature of an earned doctorate within the world of academia.

While teaching in North Carolina, a colleague recommended North Carolina State University's doctoral program in adult and community college education. David was attracted to the program's cohort structure, which appeared extremely similar to the Indiana Wesleyan University format he taught in for so many years. This document is the final installment of that higher educational chapter.

During the initial doctoral course, David was confronted with a number of interesting and enlightening realizations about himself and his career choices. One particular insight centered on his family's history with education – a topic he had never reflected upon. David's maternal grandfather taught at Bowling Green University and then at Purdue University. His maternal grandmother was an instructor at the John Heron School of Art. His mother had a 30+ year career as a home economics teacher. When David's father retired he taught for several years at Indiana Vocational Technical College, even though he had never previously worked in a formal classroom setting. In retrospect, a predisposition to teach seems almost genetic. Today, David is proud to be a third generation teacher.

Acknowledgements

To Diane Cassidy, Jeff Ford, and Gail Summerskill who each offered a listening ear and a sympathetic shoulder, I am forever in your debt. Your encouragement, understanding, patience, and collaboration have proven invaluable.

To my dissertation chair James Bartlett, your creative insights were crucial to the development of a dissertation topic that addressed my academic interests and career goals, while simultaneously satisfying departmental, college, and University requirements – a somewhat challenging feat.

To Dave Oehler who took a chance on the “older” instructor and then offered research analysis advice and guidance, I can not begin to thank you enough for your serenity, support, and insightful advice.

To Jolaine Zweirfel, your resourcefulness and assistance during the data gathering process made an arduous process, complicated by undergraduate coders, flow so much better.

To Dr. Philip Jeter who brought this North Carolina State University program to my attention, “Thank you” for thinking about me when you saw the announcement. It has been a wonderfully expanding experience.

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Chapter 1

Overview

Introduction

Prior to the introduction of the Internet, prospective students accumulated information during their college search process from brochures, view books, college fairs, and other similar institutional publications and events. However, according to Pegoraro (2006), “The advent of the Information Age and growth in the Internet has forced institutions to deliver the same information, if not augmented materials, via their websites to students who now surf for this information from the comforts of home” (p. 33). High school students desire Internet-based information and the institutional web site is the number one source for high school students during their search for college and university information (Goff, Patino, & Jackson, 2004). Additionally, prospective college students want the Web-based format to provide opportunities for dialogue with institutional representatives during the college search process (Noel-Levitz, 2006, 2007a, 2007b, 2008). The Internet is no longer sitting in the background as a supplementary recruiting material. According to Hingle, director of professional development for the National Association of College Admission Counseling, “For a great majority of students, [a school’s Web site] is going to be their first impression. This is going to be their handshake” (Carnevale, 2005, p. A25). Ancil (2008) reports that information obtained during a student’s college search is “largely provided electronically [through the Internet]” (p. 78). Clayton (2003) is even more vociferous, stating “The web has emerged as the single most important tool in the college search process" (para. 8).

Among the total pool of potential community college students, an important group is students age twenty-four and younger. This group comprises half of any given community college's student body. They take 70 percent of the classes, and "the enrollment figures in community colleges are affected most significantly by the number of recent high school graduates" (Cohen & Brawer, 2003, p.406). Researchers focusing on this group consistently report that high school students value the information gathered from web sites during the college selection and decision-making process (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001; Clayton, 2003; Noel-Levitz, 2006, 2007a). Prospective college students want to use the Internet and Web-based communications, and they expect to find electronic application forms, interactive financial aid calculators, along with request forms for information, meetings and visits on community college web sites (Noel-Levitz, 2007a).

The central function of a higher education institution's web site is to cultivate a two-way conversation, or dialogue, with prospective students (Hartman, 1998; Sutherland & Stewart, 1999). Four-year colleges and universities have recognized the desires of the marketplace and are using the recently emerging advances in Internet-based, two-way communications to build relationships with prospective students, including the use of blogs, pod-casts and instant messages (Kirp, 2003; Noel-Levitz, 2008). A Noel-Levitz (2008) survey described four-year institutions embracing and encouraging Web-based dialogue with prospective students.

Conversely, Peakow (2006) reported that most community colleges do not use the

Web to recruit students. This was affirmed by the Noel-Levitz (2008) research indicating that community colleges “were, in general, less likely to use e-recruiting [electronic] practices than were their counterparts at four-year institutions” (p. 2). According to a Noel-Levitz (2008) study, over 90% percent of four-year colleges purchase e-mail addresses for prospective students and more than 38% of four-year college’s request parents’ e-mail addresses to contact the individual and build a relationship. In a more recent Noel-Levitz (2009) report, 87% (n = 1,000) of the students surveyed were willing to share their personal e-mail address with a higher education institution. The obvious intent of these actions is to initiate and develop a level of communication, dialogue, and/or relationship with these targeted publics. Chapman’s (1981) model of student college choice further reinforces the perspective that communication with the institution is a singularly important factor for students and significantly contributes to the inclusion of an institution in the student’s choice set and also supports the eventual choice of which institution to attend.

Hossler & Gallagher (1987) synthesized previous research and identified that after an initial contact, prospective students were very likely to be involved in developing a relationship with a higher education institution. Kotler (1996) has reported in marketing research that higher education institutions should develop relationships with prospective students prior to meeting, admitting, or enrolling them in their institution. After using Kotler’s (1992, 1996) five level model of relationship marketing to study college web sites in Canada, Pegoraro (2006) reinforced Kotler’s comments, stating that higher education institutions “will need to adopt strategies to ‘court’ these consumers and create long long-lasting relationships" (Pegoraro, 2006, p. 2).

Relationship building through dialogue is the core of Kent & Taylor's (2002) explication of the dialogic theory of public relations and has been applied in a wide variety of web site research projects (Kent, M., Taylor, M., & White, W.J., 2003; Jo, S., & Kim, Y., 2003; Naude, A., Froneman, J., & Atwood, R., 2003; Perry, D., Taylor, M., & Doerfel, M., 2003; Taylor, M., & Kent, M., 2004; Yeon, H., & Choi, Y., 2005; McAllister-Greve, S., 2006; Capriotti, P., & Moreno, A., 2007; Bebbington, J., Brown, J., Frame, B., & Thomson, I., 2007). For all of the attention given to the Internet and its spectacular evolution, Kent & Taylor's (1998) statement that "the World Wide Web still remains underutilized by many organizations and under examined by scholars as a tool for building organizational-public relationships" (p. 322) is still valid, especially in higher education (Gower & Cho, 2001; Poock & Lefond, 2001, 2003).

Cohen & Brawer (2003) report that "during most of its history, the community college has been unnoticed, ignored by writers about higher education" (p. 35). The general subject of higher education web site utilization has also received very little research attention (Kent & Taylor, 1998; Gower & Cho, 2001; Poock & Lefond, 2001, 2003). In contrast to studies of public relations efforts and those concerning the technical aspects of organizational web sites, Poock & Bishop (2006) and McAllister-Greve's (2006) work are the only published research studies focusing on the public relations elements of community college web sites. While Poock & Bishop's (2006) qualitative study involved 24 students in focus groups at a single campus in North Carolina, McAllister-Greve's (2006) work utilized quantitative methodology and the limited population of New Jersey's 19 community college campus web sites. Consequently, no research project has yet been published that is generalizeable to the population of community colleges in the United States.

Problem Statement

Research has identified that community colleges are not utilizing their web site in a manner desired and preferred by high school age students during the college search process. As the group with the largest impact on community colleges, high school age students are extremely Internet savvy, value web-based information, and expect web sites to contain dialogistic public relations elements (i.e.: easy to use, current information, dialogue facilitating mechanism(s)). Concurrently, there is a dearth of information addressing how community colleges utilize their web sites.

Implementation of dialogue between prospective students and institutional personnel is an important public relations tool for community colleges in today's highly competitive marketplace. Without a dialogistic web presence, a community college cannot compete effectively and risks losing prospective students to more student (customer) sensitive and marketplace responsive institutions. Therefore, a study of community college web sites in the nine megastates is warranted to examine the extent of dialogistic public relations function implementation on community college web sites, along with the possibility of any relationships between the dialogistic functions and other institutional characteristics.

Purpose of Study

The purpose of this research is to investigate the utilization of dialogistic public relations functions on community college web sites and explore the relationship between the organizations' web site use of dialogistic public relationship functions and institutional characteristics of community colleges. This study explored these concerns through the examination of community college web sites utilizing the lens of dialogic public relations theory, informed by Scriven's consumer-oriented evaluation methodology.

Dialogistic public relations was initially conceived and elaborated by Pearson (1989a, 1989b) and refined by Kent & Taylor (1998, 2002) with an explicit orientation to the Internet and organizational web sites. Taylor, Kent & White (2001), Perry Taylor, & Doerfel (2003), Taylor & Kent (2004), Taylor & Perry (2005) and Kent, M. L., Taylor, M, & McAllister-Spooner (2008) all extended the theoretical foundation and began an expansion of inquiry into various professions and fields.

This research specifically replicated and extended portions of: McAllister-Greve's (2006) study of New Jersey community college web sites and Pegoraro's (2006) study of Canadian university web sites, informed by the Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) studies of prospective student preferences, relative to the student's personal searches for information during their college search process.

McAllister-Greve (2006) utilized and expanded Kent & Taylor's (personal communication, August 23, 2008) original survey for the web site evaluation portion of her study, including the categories of: ease of use, return visits, timeliness, usefulness of information and interactivity. Interestingly, Kent & Taylor's (personal communication, August 23, 2008) instrument labeled everything under the single title of dialogic features, whereas McAllister-Greve (2006) created a separate variable category of "Dialogic Loop" (p. 350). At least five years have elapsed since McAllister-Greve conducted her study, and in that time, the Internet has continued to evolve and institutional web sites will have undoubtedly been updated and adjusted. A casual review of community college web sites by this writer appeared to indicate a large increase in the number of possible dialogistic functions on institutional web sites, necessitating an update to the survey to reflect this expansion. In addition, the amount of information offered by higher educational institutions is extensive, and this study's focus on dialogistic web site functions, as opposed to those functions that do not encourage or initiate dialogue, appears to necessitate an adjustment in the variable categories to accommodate this evolutionary development, along with a possible adjustment in the name attached to the Usefulness of Information category (see Definitions section: Passive Information). The Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) studies ultimately provided a list of web site-based functions preferred by prospective college students, most of which were not included in either Kent & Taylor's (personal communication, August 23, 2008) original survey for web site evaluation or McAllister-Greve's (2006) research.

In many ways, Pegoraro's (2006) study mirrors McAllister-Greve's quantitative evaluation of institutional web sites. A major difference with Pegoraro's (2006) study is the marketing orientation and theoretical foundation based in Kotler's (1992, 1996) five level model of relationships. Most of the variables and categories in Pegoraro's (2006) survey instrument (content, navigation, technical) were similar to Kent & Taylor's (personal communication, August 23, 2008) in content and organization. In the interest of consistency with other research in the dialogic public relations field, Kent & Taylor's variable categories (ease of use, return visits, timeliness) were used. Review of the Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) studies also resulted in the elimination of the admission category in Pegoraro's (2006) study, as placing admissions in its own separate category was not supported by the Noel-Levitz results. Pegoraro's (2006) research also contains a category for design elements that was not addressed by Kent & Taylor (1998, 2002), and consequently is not included in this research.

The Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) studies specifically reported that prospective college students want Web-based information and dialogue facilitating mechanisms on the institutional web sites visited during their college search. This information, along with specifics from the various Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) research reports was used to update and expand the number of variables in the proposed survey instrument, especially in the categories containing dialogic web functions (see Definitions: Dialogic Functions) and non-dialogue generating features (see Definitions: Passive Information) which were not covered by the categories: ease of use, return visits, and timeliness.

Research Questions

Research questions for this study utilize textual content analysis to investigate the potential for relationships between the variables. According to Frey, Botan, Friedman, and Kreps (1991), "Textual analysis, like experimental and survey methods, can be used to answer the two major questions posed in communication research: What is the nature of communication, and how it communication related to the other variables?" (p. 203). The foundation for this inquiry was provided by Kent & Taylor's (1998, 2002) theoretical principles of dialogic public relations and Scriven's consumer driven evaluation theory.

Research Question 1. To what extent are dialogic loops available on community college web sites?

This question is assessed by comparing the functions available on a stratified random sample of megastate community college web sites, using Kent & Taylor's (1998, 2002) principles of dialogic public relations (timeliness, generation of return visits, ease of use, and dialogic feedback loop) to categorize the data. Kent and Taylor's original survey instrument was obtained for use as the base document for the further development of an appropriate survey instrument. To update Kent and Taylor's original instrument, the category of useful information was separated into two groups based upon the expectation of a response from a subject (community college), as a direct result of the utilization or activation of a singular web site function/link. The category of passive information was created to represent an individual web site function/link where a response is not anticipated or expected as a result of any activity. A dialogic loop is an individual web site function/tool where a response or exchange of information is anticipated, or expected, as a direct result of any use or activity.

To answer research question one, frequencies and percentages were used. To provide an overall description of the community colleges in the stratified random sample means, standard deviations, frequencies, and percentages were used.

The potential outcome of this inquiry is to show whether or not community colleges incorporate dialogic loops on their web site. If community colleges do use dialogic loops on their institutional web site, this inquiry will also show to what extent they are utilized.

Research Question 2. Are there a statistically significant relationships between the extent community colleges utilize dialogic loops and the community college attributes of full-time student enrollment, campus code (as defined by the U.S. Census), and web site load time?

To answer this question, a standard regression analysis was conducted. This question is assessed by comparing the availability of community college web site-based dialogic loops on an institutional web site with the institutionally reported student enrollment figures, U. S. Census determined campus code, along with the actual time required to load the institution's web site (as measured by a software application designed for that purpose). Correlations were used to determine whether relationships existed between the variables. To examine two continuous variables, Pearson's product moment correlation was utilized. Examination of any continuous and a categorical variables was also accomplished using Pearson's product moment correlations.

The potential outcome of this inquiry is to show whether or not there is a relationship between the existence of dialogic loops on an institution's web site and the various institutional characteristics (full-time students, campus code, and web site load time).

Research Question 3. Are there statistically significant relationships between the extent community colleges utilize any of the non-dialogic variable categories and the community college attributes of full-time students, campus code, and web site load time?

To answer this question, a multivariate analysis of variance (MANOVA) was conducted. To operationalize the data, the total responses for each category of non-dialogic web site functions were added together to create individual dependent variables (ease of use, return visits, timeliness, passive information). The institutional characteristics, or independent variables, (full-time students, campus code, and web site load time) were then used to explain the dependent variables.

The potential outcome of this inquiry is to show whether or not there is a relationship between the existence of non-dialogic functions on an institution's web site and/or institutional attributes.

Research Question 4. Is there a statistically significant relationship between the extent community colleges utilize dialogic loops and the non-dialogic variable categories?

To answer this question, a standard regression analysis was conducted. To operationalize the data, the total responses for each category of non-dialogic web site function were added together to create individual dependent variables (ease of use, return visits, timeliness, passive information). The independent variable (dialogic loops) was then used to explain the dependent variables (non-dialogic functions). Correlations were used to determine whether relationships existed between the variables. To examine two continuous variables, Pearson's product moment correlation was utilized.

The potential outcome of this inquiry is to show whether or not there is a relationship between the existence of dialogic loops on an institution's web site and the non-dialogic variable categories.

Significance of Study

A decade ago Newsom, Turk, and Kruckeberg (2000) commented, "it is virtually impossible to practice public relations today without using the Internet" (p. 399). As a result of the ubiquity of the Internet and institutional web sites, the issues of prospective student information needs and their preferred method of information delivery have become paramount. High school students are particularly oriented to using the Internet and institutional web sites during the college review and selection process (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001; Noel-Levitz, 2006; Noel-Levitz, 2007a, Noel-Levitz, 2007b). In spite of this published evidence, community colleges are less likely than four-year institutions to use their institutional web site for recruiting (Peakow, 2006; Noel-Levitz, 2008). Concurrently, the usability of any given web site is critical since the typical return on investment from a web site can be little as 50%, or as much as 200% to 400% (Yudkin, 2003). Return on investment is a classic business term, and while there has always been a level of tension when discussing business models in relation to academia, the reality remains that colleges and universities are in the 'business' of education and, therefore, must attract and enroll a certain number of students each year to remain fiscally viable (Cohen & Brawer, 2003). Increasingly, the effectiveness of the most desired informational communication mechanism for the most significant population of prospective students should be viewed as a critical investment. According to Cohen & Brawer (2003), community colleges have a broad impact on American higher education, local communities, and the general society. Consequently, the impact of a community college begins long before a student ever applies to the institution and will likely occur through the institution's web site.

Finding current, accurate and timely information is essential to the web site visitation experience for any prospective student (Noel-Levitz, 2007a, 2007b, 2008). According to Clayton (2003), prospective students have a low tolerance for difficult or confusing web sites and will exit a site quickly if they have trouble finding information.

Noel-Levitz (2009) reports that 85% of potential college students expect to find links on an institutions' web site to directly answer their questions. If the typical prospective student does not find the information they are seeking within the first few seconds, or clicks of the computer's mouse, they quickly decide to move to another web site (Clayton, 2003; Noel-Levitz, 2009; Poock & Lefond, 2003).

A key component in a dialogue between potential students and an institution could easily be the most sought-after form of communication – an e-mail. According to Noel-Levitz (2008), when potential students were asked for a preferred form of communication with a community college their first choice (78%) was an e-mail. Noel-Levitz (2008) also reported community colleges were well behind four-year institutions in using e-mail with prospective students, and their level of use had not changed in the two years between studies:

> Looking beyond the median [number of e-mails (eight for four-year institutions and two for community colleges)], the middle half of all respondents from the four-year public sector sent between four and 20 scheduled e-mails; . . . and between zero and four scheduled e-mails were sent by the two-year [community college] sector" (Noel-Levitz, 2008, p.4).

In today's globally competitive Internet environment, easily usable, web site-based dialogic loops combined with accurate and timely web site content are necessities which could dramatically impact the potential relationship between a community college and a potential student (Noel-Levitz, 2008). Viewed from another perspective, because simply maintaining a Web presence has assumed precedence, the dialogic potential of the Internet and organizational web sites is far from being realized (Curtain and Gaither, 2004). The Internet and an institutional web site are critical elements in a comprehensive public relations effort.

Public relations in the twenty-first century is about "creating, maintaining, and repairing strategic relationships" (Heath & Coombs, 2006, p. 4). The basis of this research inquiry is Kent & Taylor's (1998, 2002) theory of dialogic public relations and its applicability to web site-based dialogic communication and relationship building activities. Study of Kent & Taylor's dialogic public relations theory in tandem with the concepts of web site usability and institutional characteristics, informed by Scriven's consumer driven evaluation theory, should provide support for implementation of the theories and their attendant concepts, as well as, setting the stage for future research.

Research Design

This chapter presents an overview of the research design, a description of the population, the sampling procedure the process used to develop the research instrument, the data collection process, and data analysis including the applicability of content analysis.

This study uses a non-experimental design, which according to Sproull (2002) is a research design where the researcher does not introduce the experimental; however, the researcher is able to control what is observed, "who or what to measure, when the measurement takes place and what to ask or observe" (p. 153). This research incorporates Kent & Taylor's (1998, 2002) theory of dialogic public relations with the concept of Web usability. Figure 1 provides a graphic overview of the process, with expert review at two points in the research process. The rows of Figure 1 delineate the steps of the instrument development process. The second and third rows show the steps of the pilot test process and any necessary revisions and re-testing that might be necessary to adjust the instrument before conducting the study. The fourth level of Figure 1 identifies the final steps before implementation of the study and coding of the selected community college web sites. The last two levels represent the data analysis process, discussion, and conclusions to be derived from the study.

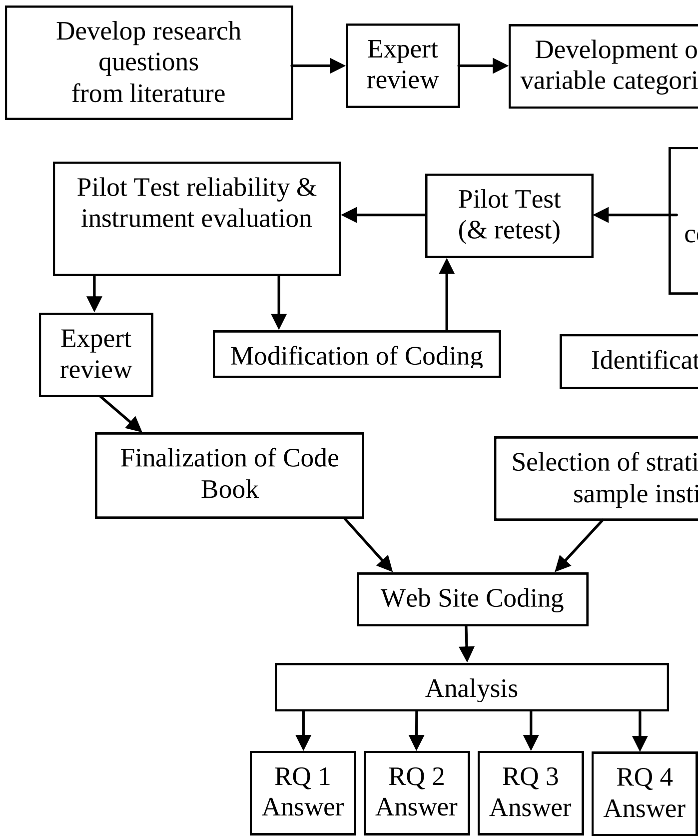

Figure 1. Research Design

Institutional Review Board

This study does not involve any human subjects and the totality of the information gathered for analysis in the study is a matter of public record. Consequently, the Institutional Review Board (IRB) at North Carolina State University responded that their approval was not needed to complete this research (see Appendix D).

Limitations

Coder experience. The researcher enlisted undergraduate students for web site observation and coding. While the students had extensive experience with computers and the Internet they were completely unfamiliar with research methods or processes. Frey, Botan, Friedman, and Kreps (1991) point out that "closed end check lists and predetermined categories" (p. 116) are the more usual and acceptable approach for textual analysis – exactly the methodology used throughout the data gathering process for this research. Coder training was also a key element of the data gathering process.

> Good coding or recording instructions should contain:
>
> - a prescription of the characteristics of the observers (coders, judges) employed in the recording process
> - an accounting of the training these observers undergo to prepare themselves for the task
> - a definition of the recording units including procedures for their identification

- a delineation of the syntax and semantic of data language (variables, categories) including, when necessary, an outline of the cognitive procedures to be employed in placing data into categories
- a description of how data sheets are to be used and administered (Krippendorff, 1980, p. 174).

A pilot test was used to gain an understanding of potential coder issues and identify areas where a difference of perception might lead to interpretational differences and questions of appropriate coding for response items where coding was not specific or abundantly clear. Coder training was used to minimize the potential for miscoding data and maintaining a strong level of inter-rater reliability (See Appendix B).

Lack of Users. Web site content, usability, and institutional characteristics were coded by undergraduate research assistants and actual user testing was not conducted. As a result of this limitation, correlations between community college web site visitor usability and other evaluations cannot be made. Very little research has been conducted in this area and therefore future research could extend knowledge of the theoretical applications.

Environmental Dynamics. Web site analysis occurs at one specific point in time. The Internet and institutional web sites are dynamic entities and as such comparable research may discover varying results. Additional research is necessary to appropriately determine tendencies or developments over longer periods of time.

Instrumentation. While the instrument is grounded in theory and based on several previously tested instruments, the pilot test was the first application of the entire instrument.

Although major portions of the research instrument were modified from the dialogic scale developed by Kent & Taylor (1998), along with Pegoraro's (2006) usability scale, and pre-tested in a pilot study, there may still be limitations to the study resulting from the inclusion of variables and categories which could be subjective in nature.

Methods. This study used content analysis which produces data that is descriptive, not explanatory, in nature. While this is a valid form of inquiry additional research is needed to determine the reasoning behind many of the anticipated findings of this study. Cause and affect cannot therefore be determined with this line of inquiry. Because of the dynamic nature of the Internet and institutional web sites there may be functions and features relating to usability and dialogic public relations that were overlooked in the development of the instrument. Future research should review developments in these areas and make appropriate adjustments to the elements studied and the content of the evaluative instrument.

Source. On-line research is also limited in the hypothesis and conclusions that can be drawn from the resulting data and analysis. While on-line research is relatively efficient and cost effective direct user studies could offer greater understanding of web site visitor perceptions, needs and desires and provide public relations practitioners more in-depth knowledge concerning Web-based functions, services, devices, and other dialogic elements. Studying attitudes toward the availability of dialogic loops, actual dialogic exchanges or the extent of exchanges when dialogic loops are present could provide further insight into more appropriate and effective web site functions. Especially telling might be the study of admissions and recruiting efforts and the relationship of institutional web site dialogic loops to admissions and enrollments. Evaluating the impact of dialogic loops on other important publics (current students, community leaders, etc.) could also provide valuable direction to an institution's public relations efforts.

There are intrinsic limitations to this research design and analytic approach. It was selected because it provided an efficacious method of inquiry into the questions of usability and dialogic public relations functionality on community college web sites. This is one of the first studies to focus specifically on community colleges and whether they provide usable web sites that incorporate the dialogic functionality desired by one of their most important publics (high school seniors and juniors searching for college information).

Delimitations

Stratified Random Sample. Kaid & Wadsworth (1989) caution that when using content analysis researchers "must devise a method of obtaining a sample which is (1) representative of the universe from which it comes and (2) of sufficient size to adequately represent that universe" (p. 201). This study utilized a stratified random sample drawn from a list of community college web sites located in the nine megastates. Care was taken to assure that the institutions included in the stratified random sample approximated the same proportion that each state represents in the overall population. Taking a stratified random sample approach is considered an "excellent" investigative method (Sproull, 2002, p.115). While the data is expected to be generally applicable to all community colleges located in the nine megastates, the possibility exists that community colleges outside of the stratified random sample may have different environments, publics, and issues that create conditions significantly different from the surveyed web sites.

Generalizability. The study is limited to community colleges in the nine megastates and as a result the findings are not applicable to other institutions of higher education, such as four-year institutions. The study may provide findings which only apply to the studied web sites, thus the results may lack relevance to community college web sites outside of the study or those outside of the geographic limitations of the nine megastates.

Time. Time is also a limiting factor in two considerations. First, the Internet is expanding and changing at an exponential rate that renders it nearly impossible for a single individual to maintain full and current knowledge of developments, features, functions, and utilizations. Second, the complete study will be conducted within a limited time frame (less than one year) and the situational reality used as the basis for the study may change substantially due to the dynamic nature of the communications medium.

Summary

The institutional web site is ubiquitous and has emerged as the pre-eminent recruiting and informational tool for the twenty-first century community college. As the single most influential set of potential community college students, high school juniors and seniors have repeatedly indicated they prefer to find information on the Internet during their college search process. This same set of prospective college students has also indicated a strong desire for two-way communication with college-based representatives; with a willingness to engage in dialogue via web-based functions and processes. Very little research or literature exists addressing community colleges and more specifically their utilization of institutional web sites.

Chapter 2

Literature Review

Introduction

Increased competition, reduced funding, changing marketplaces, and new forms of technology have all combined to create a very different higher education marketplace in the 21st century. Community colleges have traditionally relied on the secondary schools and business retraining initiatives within their regionally defined service areas to supply the customers for their services (Cohen & Brawer, 2003). As a result, community colleges have not been as focused on communication methods that could reach beyond the confines of their traditionally defined geographic service area, and which could also provide an effective means to build relationships with target audiences close to home (Peakow, 2006; Noel-Levitz, 2008).

In the twenty-first century: well over 100 million Americans are on the World Wide Web, more than fifty percent of all households have a computer, and Internet access can be found in more than 80 percent of those homes with a computer (U.S. General Accounting Office, 2001). Concurrently community college enrollments continue to grow and competition between all institutions of higher educational for students and resources is at an all time high (Cohen & Brawer, 2003). Community colleges are under intense pressure to utilize every instrument at their disposal to communicate with their target publics as effectively, efficiently, and appropriately as possible. Hossler (2005) reported that since the mid-1980's higher education institutions have increasingly implemented public relations techniques and operated under a marketing model, which has "helped to transform the college matriculation decision among potential students so that a college degree is becoming one more commodity to be purchased" (p. 146) and the Internet is where an increasing portion of those activities were initiated or conducted. Klassen's (2002) research into Web-based recruiting activities found "the data suggest that top-ranked schools enjoy an 'interactive edge' by offering Web sites suitable to creating and sustaining effective relationships with their students" (p. 84).

In this environment the higher education web site is more than just another communications tool. It is also a valuable source for recruiting, building relationships, and maintaining an appropriate flow of information to and from the local community, prospective students, the media, donors, alumni, and many other important publics. As the general consuming public becomes increasingly conversant and comfortable with the Internet, the expectations for access and information continue to grow and public relations efforts assume a greater value to an organization. Hartman (1997) stated, "the Internet affords a prospective student with unlimited and uncontrolled access to both formal and informal information about any institution" (p. 23).

As the challenge of effective utilization of the Internet quickly tops the list of necessary communication vehicles for all of higher education competition between institutions continues to increase and the number of Web-based, degree granting institutions is expanding. The State of College Admission (SCA) (2006) annual report stated that "colleges received nearly half (49 percent) of all applications online, and increase of 43 percent in 2004 and 35 percent in 2003" (p. vi). SCA reported eight separate Web-based features were offered by more than 50% of the reporting institutions (State College of Admission, 2006, p. 13). Initially the State College of Admission (2006) list appears to indicate institutions are using the Internet appropriately in the recruiting and admissions process. Unfortunately, only one feature on the State of College Admission (2006) list involved any form of dialogue, or two-way communication; "Online admission chat room, 29%" (p. 13).

With direct academic, on-line competitors such as Strayer University, The University of Phoenix, American Intercontinental University, and Walden University, along with "the rise to prominence of schools like Hamburger U. [McDonald's Corporate training headquarters] – not your father's higher education, certainly but an accredited institution nonetheless …illustrate(s) a much larger phenomenon … American higher education is being transformed by both the power and the ethic of the marketplace" (Kirp, 2003, p. 2). In the current marketplace the value of a web site in the college selection process is well known and widely acknowledged (Stoner, 2001). To insure their competitiveness community colleges must use their web pages in the most efficacious manner possible to communicate with all of their publics, but most especially high school age prospects.

Change has been slow in the decade since Kent & Taylor (1998) made the declaration that "for all of its public relations potential, the World Wide Web still remains underutilized by many organizations and underexamined[sic] by scholars as a tool for building organizational-public relationships" (p. 322). Most community colleges still do not use the

Web to recruit students (Peakow, 2006; Noel-Levitz, 2008). This lack of effort is exacerbated by the reality that for 25% percent of prospective community college students an electronically submitted application is their first contact with the institution (Noel-Levitz, 2008). At four-year, public institutions this statistic is 30%, representing an even larger raw number of student utilizing Web-based tools for direct communication and feedback. According to Noel-Levitz (2008) the resulting impact of this type of shift should cause re-evaluations and re-alignments of recruiting efforts and strategies. Whether such a shift occurs and to what extent remains to be seen.

The focus of this literature review is an area where little research data currently exists – community college web sites, specifically from the perspective of dialogic public relations theory and research indicating the Web information desires of high school age prospects. As of this writing only four research studies of higher education web sites have been published: McAllister-Greve's (2006) doctoral dissertation marrying quantitative methodology and dialogic public relations theory in a usability study of the 19 New Jersey community college campus web sites; Poock & Bishop's (2006) qualitative study using focus groups with 24 students, from a single North Carolina community college campus; Pegoraro's (2006) investigation of 47 Canadian colleges; and Kang & Norton's (2006) quantitative study of 129 top ranked United States universities. McAllister-Spooner (2008) reported negative reactions to the lack of dialogic communication features on New Jersey-based community college web sites. Pegoraro (2006) emphasized the lack of dialogue generating functions on an institutional web site creates "missed opportunities to build relationships with prospective students, a critical issue in the increasingly competitive market of higher education" (p. 52). By contrast Kang and Norton (2006) reported that highly ranked universities are outstanding at creating usable and informational web sites to provide the information expected by students.

A prime example of the disparity between institutions Internet-based efforts is encapsulated in the Noel-Levitz (2008) results reporting more than 80% of four-year public institutions purchase lists of e-mail address for prospective students and barely 10% of community colleges make a similar purchase. Building dialogic relationships with prospective students, especially through the Web, appears to have become an important focus of public relations efforts in selected segments of higher education.

Literature Review – Process. The initial step for this review was to research text books in the public relations field, as well as the scholarly literature pertaining to community college public relations. Previous editions of Cutlip, Center, & Broom's texts are highly regarded among public relations texts and considered to be the essential study guide for the Public Relations Society of Americas' national accreditation examination. Grunig's (1992) concept of symmetrical public relations provided the starting point for the discussion of a relevant public relations theory for this review and his texts have competed with Cutlip and Center's for almost three decades. While not as overtly scholarly in approach, Seitel's (2007) seventh text edition continues its decade long tradition of presenting examples of the best and most current case studies, ethics discussions, and practical workplace examples. Each of these texts contained additional literature suggestions and references. Where the subject matter of the references appeared appropriate, those publications were also reviewed.

After using the classic public relations texts as a starting point, an electronic literature search was conducted using the NC Live, Academic Search Premiere, and Google Scholar database search programs. The initial research efforts into the topics of community colleges and their public relations efforts utilized the following search terms in a variety of combinations: “public relations,” “higher education,” “colleges, “community college,” “marketing,” “promotion,” “recruiting,” “student,” “dialogic,” “dialogistics,” “dialogic theory,” and “public relations theory.” On the subject of community colleges and their use of web sites the following terms were used in a variety of search combinations: “community college,” “junior college,” “college,” “web site,” “web site,” “web page,” “Internet,” “World Wide Web,” “promotions,” “advertising,” “marketing,” “higher education,” and “home page.” When a relevant article was discovered the abstract was reviewed and, if it was found to be appropriate, then the full article was reviewed. Any references that appeared appropriate to this investigation were also researched and the same procedure implemented.

Public relations is the touchstone for this effort and the review emanated from that perspective. Dialogic public relations theory and articles authored by Kent & Taylor (1998, 2002) were tied directly to higher education, community colleges, and web site analysis. The additional information on higher education evolved from the research into the interplay between academic administration and public relations. During the search for material in the area of higher education, the material concerning high school students, and their search for an appropriate post-secondary school experience, led to several recent national surveys on student web site information preferences from Noel-Levitz (2006, 2007a, 2007b, 2008, 2009).

Higher Education – A Perspective

Utilizing public relations in higher education is not a new issue, but it is still not universally embraced or acknowledged. Schoenfeld (1954) pointed out the critical need for management to be concerned about their public relations efforts because "our institutions of higher education are beset with uncertain enrollments and revenues, emotional attacks on teachers and doctrines, and the squeeze between the necessity of great achievement and the possession of limited resources for that achievement." (p. xiv). Those concerns have not changed appreciably in the intervening five plus decades. Grabowski (1981) addressed the long-term, pervasive, and continuing concerns using marketing terms to highlight the necessity for all levels of a higher educational institution's management and instructional staff to participate in the institution's promotion activities and efforts. He blamed the woes of higher education on economic and societal factors, plus the realization that no one had a plan or was even remotely prepared to change their direction based on the trends. He also pointed to the sudden decline in enrollments and financial difficulties of higher education institutions in the late 1970's as a prime example of how academic institutions fell on hard times. In the late 1970's, the Internet was in its infancy and public relations, while a solid and growing field, had not reached the high level of acceptance it currently occupies today. Even in the 21st century, there are organizations where public relations is still a foreign concept, or at best an "ugly step-sister."

In deference to the lack of understanding in some quarters of academia, Grabowski (1981) used easily understood marketing terms to describe the efforts required for colleges and universities to survive. His explanations also correspond directly with traditional public relations concepts, including: “understanding of people’s wishes and problems,” “a series of exchange relationships,” “a matching process of identified needs to an institution’s goals and capacity,” “a managed, controlled, planned, ongoing activity, designed to implement the purposes of the organization,” “a perspective that permeates every aspect of the organization” (Grabowski, 1981, p. 4). While marketing and public relations appear to have only recently been openly welcomed into the academic administration suite, and repeated calls for a more business-like approach to the management of higher education continue to be held somewhat at bay, the reality remains that if an institution concentrates entirely on what it can do, as opposed to what the marketplace desires, the results will mirror what any other business might experience - if customers do not buy, the organization will die.

Sands & Smith (1999) consider the true issue to be a debate between whether the institution should be driven by mission or marketing. “Most often stated as an either-or proposition, this debate immediately pits the faculty and its leadership, who have responsibility for the curriculum and academic program of an institution, against the administrative staff charged with marketing it” (Sands & Smith, 1999, p. 43). Allen (1978) posited that faculty and staff very often believe the purpose of an institution is to serve their needs. The reality of all organizations is that the synergy of interdependence is what drives success. Historically higher education institutions evolved a ‘town and gown’ persona transcending their academic regalia to hold themselves apart from the social concerns and economic realities of the general population (Martin, Smith, & Phillips, 2005). According to Johnson (1978), in higher education the faculty and staff need “to realize they are like a cottage industry – seemingly self-sufficient and autonomous but very much dependent upon the whole institution and external market realities” (p.4). With the constant challenges of student recruiting and retention, added to the declining financial support from most funding sources, the message is starting to slowly sink in as the marketplace changes.

The marketplace, however, bears little resemblance to the operation of higher education institutions in the United States. In a free-market system, increased demand would cause businesses to expand or to raise their prices; either action usually attracts new customers. By 2002 the most selective higher education schools in the United States rejected seven out of every eight applicants, nearly all of whom were qualified for admission to the institution (Kirp, 2003). In 2008 the numbers for fall admissions increased to more than nine out of ten applicants being denied admission to those same highly selective four-year institutions (Pope, 2008). In addition, the 2008 admission numbers for all American higher education institutions nearly matched the acceptance levels of the previous 20 years, where roughly 70 percent of all college applicants were accepted (Pope, 2008). Instead of an adjustment to expand capacity and serve more students, or a noticeable tuition (price) increase, many four-year educational institutions reacted to the explosive enrollment growth by increasing entrance requirements.

Unfortunately, the question about whether students are specifically looking on the Internet for a community college or a 4-year institution is not addressed in the available research (Noel-Levitz, 2006, 2007a, 2007b, 2008, 2009; Laanan, 2003; Bers & Galowich, 2002; Poock & Lefond, 2001; Christiansen, Davidson, Roper, Sprinkles, and Thomas, 2003). Until additional research is available, the assumption must be made that currently available research addressing student Internet searches for college information is equally applicable to all levels of higher education.

Finance Characteristics of Higher Education. Higher education has multiple audiences demanding its collective attention: students, parents, alumni, local businesses, public officials, and funding sources (state legislatures, foundations, private donors, federal programs, etc.) (Cohen & Brawer, 2003). Many states tie the funding for community colleges to student enrollment, calculated through the use of FTE's (Cohen & Brawer, 2004). Competition between and among institutions of higher education, two-year and four-year, along with the lower cost per student served by community colleges brings more scrutiny and concurrently a greater challenge to recruit students with more severely restricted operating budgets.

After the initial contact, recruiters have long known that institutions need to initiate two-way communications "which allow dialogue and personal contact … as an important follow-up mechanism" (Rinnander, 2009, p. 58). Consequently, the need exists to understand how institutional web site expenditures are impacting community colleges' competition for their major target audiences: traditional college age students (ages 17-22, especially high school seniors & juniors) and non-traditional students (adult students, over age 25) (Miller & Pope, 2005). The near ubiquity of the Internet, demands for increased accountability by funding sources, and intense market intrusion by for-profit higher educational institutions are forcing higher education institutions to re-think their strategic marketing, promotional and public relations efforts.

According to St. John & Parsons (2005), changes in funding have significantly changed higher education and institutions are now “competing for students and using marketing strategies to achieve their enrollment goals” (p. 146). This is the second major adjustment in the past thirty years higher education has made relative to recruiting, admissions, and marketing. In the late 1970’s, institutions were faced with falling enrollments and instituted “enrollment management” (Hossler, 1984; Paulsen, 1990) techniques while publicly embracing the various concepts of “strategic marketing” (Kotler & Fox, 1985). Additional efforts were made during the same period to attract non-traditional students throughout academia (Frances, 1990; Hauptman, 1990) with a significant shift in enrollment toward more career-oriented fields. In a very business-like approach, higher education was able to affect an increase in “demand for their educational products, by trading increases in expenditures for increases in revenues” (Paulsen, 2001, p. 237). Paulsen (2001) explained that marketing actions and the resulting enrollment increases illustrated the economic theory of monopolistic competition where tuition and student enrollment decisions were directly impacted by the dual forces of increased tuition (costs) and increased applications (demand) (see Appendix C).

Utilizing a classic analytic approach equating higher education with a business model, Rothschild & White (1995) meticulously reviewed the interplay of students and institutions where costs neatly offset (i.e.: gross tuition and financial aid grants balance out), and all players in the market are fully informed about expectations and outcomes. Human capital is enhanced through the education received, financial aid grants provided by the institution, and peer effects through quality inputs to student learning. However, academia neither operates in a perfect world, nor according to a true business model. "Education is not selling widgets that can be easily changed to meet the market's needs … Education is mission driven precisely because its mission is *not* business; it provides higher education as a social institution" (Anctil, 2008, p. 4).

Conventionally a level of tension exists when discussing business models in relation to academia, yet the business reality remains; colleges and universities must attract and enroll a certain number of students each year to remain fiscally viable (Cohen & Brawer, 2003). The last forty years of the twentieth century witnessed a combination of issues and influences turning higher educational institutions away from their traditional foci on social and educational issues towards a more business-like orientation (Bok, 2003; Kirp, 2003; Slaughter & Leslie, 1997). On several levels academia can be viewed as a for-profit operation, but educational products are not sold using standard profit-margins, or in a customary business-like manner. Institutions are targeting the identical set of potential students, and just as businesses must react, so too must educational institutions react and adjust to the marketplace (Berry & George, 1978). Conventional higher education marketing utilizes asymmetrical communications, placing the buyer at the mercy of the educational, nonprofit (seller) institution in both a legal and an economic sense (Hansmann, 1980). Consequently, higher education operates in a "trust market" where the institution is duty bound to earn the confidence of the customer (students, parents, donors, etc.) while also remaining "attentive to the market and employ[ing] sound marketing practices to determine current market demands and how to address, deliver, and satisfy them" (Anctil, 2008, p. 5). According to Winston (1999), higher education is a "one-shot investment expenditure," and "People investing in human capital through purchase of higher education don't know what they're buying – and won't know what they have bought until it is far too late to do anything about it" (p. 15). Predictably the purchase of an intangible like education is, therefore, dependent on marketplace trust in its product.

Hansmann (1980) further explicates the central economic and legal trait of a nonprofit as a "non-distribution constraint" where institutions must contain costs and live within their means for long-term survival, instead of having to produce or return a profit to an "owner." Hansmann (1980) also conceptualized two major revenue streams in his seminal article on nonprofits: charitable donations and commercial profits. Traditional nonprofit, higher education institutions have donative and commercial (tuition, housing, food service, etc.) revenues giving them the ability to subsidize their customers (students) such that costs can, and do, exceed sales revenues by a substantial amount. Institutions vary greatly in their donative revenues which directly impact an institutions' ability to restrict, expand, or be more selective in enrollment. Winston and Zimmerman (2000) predict traditional colleges and universities will soon reach a point where 85 percent of their revenues derive from donative sources, causing an escalation of the often noted reality that wealthy institutions will become even more competitive and the less affluent ones will become less attractive to prospective students. Nearly universal Internet access and the ubiquity of institutional web sites will only exacerbate the situation (Klassen, 2002).

Higher education utilizes both revenue sources and can subsequently be uniquely labeled a donative-commercial non-profit organization. The fundamental differentiation for academia is its' historic application to subsidize the customer (student), essentially selling the educational service/product below cost. While immediate life-style adjustments for, and expenditures by, college students are readily evident, the long-term impact of higher education is fuzzy and not realized for an extended period of time after graduation. In that sense, post-secondary education is typically a once-in-a-lifetime expenditure, more similar to an appendectomy than a haircut (Litten, 1980, Winston, 1988). Ultimately, higher education is an atypical enterprise, and while there are a number of mutual similarities between higher education and a business, it is simply different.

Higher education is essentially made up of internal commercial, fundraising, not-for-profit, and service operations that utilize peer-effect technology, resulting in increased competition for quality customers. Wealthier schools also have more resources and larger donative bases which normally cause the generation of excess demand and the tightening of admissions selectivity; which interestingly leads directly into a cycle of increased demand. A generally accepted purpose of selectivity is to improve student quality, which is also cyclical, as it leads to improved student educational outcomes (quality) and increased admission demand from higher quality students. As St. John & Paulsen (2001) comment, "If there is further expansion of responsibility center management … and of related incentive-based budget models, then market forces will be more deeply embedded into governance and budgeting" (p. 555). The bottom line in this competition cycle is that community colleges, especially those with mandated open door admission policies, are in the unenviable position of coping with increasing demands for service and inadequate levels of resources, especially when it comes to competition in recruiting and admissions.

Higher Education Promotional Expenditures. Traditional academia's marketing behavior is also very telling. For-profit institutions rely heavily on marketing strategy and tactics, along with advertising, the numbers are staggering. According to *The Chronicle of Higher Education*, advertising expenditures for the University of Phoenix were over $142 million between September 2005 and 2006 (as cited in Anctil, 2008). While the rising cost of Internet advertising is a growing concern at for-profit institutions, spending by Phoenix is comparable to advertising giants like Ford and General Motors (Blumenstyk, 2006). Additionally, the University of Phoenix utilizes a call center with an estimated four thousand personnel to follow up inquiries and is working on International expansion plans (Blumenstyk, 2006).

Businesses in highly competitive markets usually expend about 20 percent of their annual budgets on marketing related activities, including advertising. Unfortunately, hard statistics are not available for the field of nonprofit higher education; however, knowledgeable authorities place academia's similar expenditures near 5 percent of the annual budget (Strout, 2006). That level of spending would seem overstated when Noel-Levitz (2008) reports "one-third of respondents (37 percent) indicated they are now spending $25,000 or more to maintain their admissions Web presence" (p. 1). It would appear extremely challenging for the individual local community college to compete head-on with the blitzkrieg-style promotional efforts of the larger for-profit institutions and only spend pennies on the dollar by comparison. The for-profits are targeting niche markets and siphoning away critical elements of the traditional community college's market with a savvy combination of advertising and web sites, a combination that community colleges could readily imitate. Advertising by itself is of negligible value; however, when it is combined with appropriate Web-based content and feedback through a dialogic web site experience, the possibility of creating a committed customer is greatly enhanced (Saeed, Hwang, & Grover, 2002; Bodkin & Perry, 2003).

Community colleges have decades of experience and know what communications tools work and which do not – in yesterday's marketplace. The institutional web site has no comparable, historical track record, and assumptions based on print, face-to-face and telephone contact simply do not have much relevance (Abrahamson, 2000). Nielsen (2000a) echoes many other Web researchers in stating "if you simply repurpose ideas that work well in the physical world, you will always have an also-ran Web site …. Web sites will remain unnecessarily complex for many years to come because they will continue to attempt to *paper over* [italics added] an underlying reality that is not Internet-centric" (p. 382-3).

Often, the approach is to create an electronic copy of the recruiting brochure, or the IT department just treats the web site like the installation of another piece of software. Unfortunately, neither approach is appropriate, and both endeavors end up frustrating the web site visitor and being counter-productive for the institution (Spool, 1999; Abrahamson, 2000; Nielsen, 2000a).

Printing, mailing, and travel costs continue to rise, while community college budgets are tight and funding is shifting away from state and federal government support to more market-sensitive sources. In pointing out that the Internet is a more cost effective marketing tool, Klassen (2002) commented that “with the help of the Internet, it is possible for small, relatively unknown businesses to successfully compete with large, established corporations” (p. 84). Faculty members at colleges and universities teach that advertising and strategic marketing is directly linked to a positive return on investment (ROI). Administrators may have heard the web site/Internet lesson from their faculty, but they are still not embracing the message. It comes as a surprise to some higher education administrators to learn that some successful Web marketing efforts started with budgets under $5,000 (Han & Richard, 1999). Conversely, Blankenhorn reported large businesses regularly plan annual budget expenditures in the neighborhood of $3 million for marketing (as cited in Klassen, 2002). A business can spend upwards of $10,000 per month to garner as many as 500,000 individual Web visits of a home page each month (Boyce, 2000). Academia’s promotional needs may be much more modest in scope than a corporate giant or even a startup consumer product-based business, but their expenditures are still extremely limited.

According to Noel-Levitz (2008), 53 percent of public, four-year institutions spend $25,000 or more per year to maintain their institutional web site while only 24 percent of community colleges report similar financial expenditures (p. 8). It is interesting to note significant increases between the 2006 and 2008 reports, in the category indicating web site expenditures, in excess of $100,000 annually; community colleges rose from zero percent to 12.2% and four-year, public institutions rose from 1.5% to 6.3% (Noel-Levitz, 2008, p.8). According to a recent study by Eduventures (2009), higher education web sites are only allocated 12 percent of the admissions' department annual budgets, an estimated average of $61,500 per institution. The Eduventures (2009) report states:

> Given that we know the admissions Web site ranks as the most important channel through which colleges communicate with prospective students, we would expect institutions to be apportioning a relatively large share of their admissions marketing budget to the Web site. The data suggests this is not currently the case (p. 1).

A prime example of the disparity between institutions and their Internet-based efforts is encapsulated in the Noel-Levitz (2008) study where more than 80% of four-year public institutions report purchasing lists of e-mail addresses for prospective students and barely 10% of community colleges report a similar purchase. Building dialogic relationships with prospective students, especially through the Web, has become an important focus of public relations efforts in higher education.

When everything else in the marketplace is equal, and it rarely is, the impact of promotional expenditures can have a dramatic, positive affect on an institution.

Unfortunately, the economic theory of monopolistic competition also explains that marketing expenditures eventually reach a point of zero return on investment, especially as competitive institutions achieve promotional and programmatic parity. Investigating new communication methods and staying abreast of the marketplace and potential students' needs and desires would appear to have merit.

For-Profit Higher Education Market Intrusion. For-profit institutions are quickly chipping away at higher education's sacred territory by meeting the needs of the customer and suddenly institutions like the University of Phoenix, Walden University, DeVry University, and American InterContinental University are serious competition in almost every market, nationwide. (Anctil, 2008). Their primary course offerings are specially focused evening or weekend programs that attract nontraditional students with families, along with employed career workers. This change in approach translates into real enrollments of proportionally more minorities and women at for-profit's and should provide a wake-up call to traditional higher educational institutions concerning responsiveness to the marketplace (Kinser, 2006). In 2004 for-profit institutions reportedly enrolled 5.1 percent of all college level students (Carnevale, Foster & Read, 2007). Two years later, more than 908 for-profit institutions enrolled over 8 percent of all college level students eligible for financial aid (Carnevale, Foster & Read, 2007). Blumenstyk (2006) reported that the University of Phoenix was the largest online educational institution with an enrollment of more than 300,000 students. For-profit operations have grown to the point of serving more than a million students in the "parallel postsecondary universe" of information technology education; preparing them for specialized careers with certification in fields such as software engineering for Cisco or Microsoft products (Ruch, 2001; Winston, 1999).

At for-profit institutions, advertising and the Internet are only parts of the product differentiation. The utilization of chat environments, bulletin boards, and e-mail has substantially changed the way adult students perceive and participate in the higher educational environment.

Cultural Lag and Cultural Learning. In addition to their concerns about utilization of web sites, Kent & Taylor (1998) also observed that while organizations may offer dialogic loops on their web site they may not maintain adequate resources to support the inquiries generated through the institution's site. Kent & Taylor (1998) also express concern that "although direct access to key members of an organization might represent the most dialogic and egalitarian means of providing publics with access to an organization, such an approach might create more public relations problems than it solves" (p. 327). Inadequate internal support may stem from a lack of understanding for the potential students, their expectations, and/or the level of effort necessitated by the expansion of communication channels engendered by the Internet and an institutional web site. According to Esrock and Leichty (2001), inadequacies or differences in responses by differing parts of an organization are indications of a "cultural lag" caused by a delay in "cultural learning." Ogburn (1964) described cultural lag as the delayed adjustment by one part of a culture to a change in the overall environment than is exhibited by another segment of the same culture. Esrock and Leichty (2001) tied the two concepts together, stating:

> A "cultural lag" exists when the existing norms and practices of a culture create social and cultural dislocations because they are incompatible with the outcomes fostered by a new technology. A period of difficult "cultural learning" often ensues as the society or social group develops new practices and institutions to deal with the unintended consequences of the new technology. p. 2

It is possible that an institution's web site "cultural lag" may result in poor or non-existent communications with potential students through the Internet; inadequate or missing dialogue functions on the institution's Web site; and/or inadequate, inappropriate, or non-existent staff to respond to web site generated e-mail inquiries.

Community College Changes. Between 1970 and 2003, the post-secondary population in the United States increased by more than half and most of that growth was simply absorbed by community colleges (Cohen & Brawer, 2003). During this period, national attention re-focused on community colleges (Gilroy, 2005) as their mission was reasserted to embrace any person who wanted to continue his/her education, regardless of station, ethnicity or educational status (American Association of Community Colleges, n.d.). Today community colleges enroll over 30 percent of all undergraduates and nearly half of all first- and second-year college students (Cohen & Brawer, 2003; Kirp, 2003).

Unlike the selective institutions that tightened admission requirements, community colleges embraced the continued influx of students while developing alternative sites, distance education options, and a plethora of instructional choices to meet the growing demand for services (Bailey and Smith Morest, 2004; Cohen & Brawer, 2003). Community colleges are being faced with “evolutionary shifts” in their orientations, operations, and offerings (Bailey & Averianiva, 1998). With the massive increases in enrolments, constantly tightening financial resources, and new strategic directions, the future appears quite challenging for community colleges (Evelyn, 2004).

Community college administrators are aware of the need for new approaches to their financial situation and have identified the significant trends impacting their institutions, including the need for adaptive and responsive programs meeting marketplace needs (Dowd, 2004). The limited resources of community colleges are always stretched severely and recruiting students is a ‘rough and tumble’ business where competition can come from State universities, private colleges, other regional community colleges, and for-profit entities.

Being responsive to community needs has always been the hallmark of community colleges and that has never been more evident or more challenging than in today’s marketplace. Adaptation through active participation and awareness of the dynamics of the marketplace is the key. Unfortunately, higher education is generally slow to react to marketplace changes.

Community colleges are shifting their focus to address marketplace needs in training verses the academic concerns of transfer students (Bailey & Averianiva, 1998; Williams, 1993; DiCroce, 2005). Concurrently, the possibility exists that demand for degrees from community colleges will increase as an initial step towards bachelor’s degrees (Borden, Brown, and Garver, 2005). The publics of community colleges are no different from the everyday consuming public in their desire for quality, service, efficiency and personalization in their interactions with community colleges (Association of Community College Trustees, 2005). Community colleges, however, fall in the bottom of the marketplace when considering alumni wealth, educational product, tuition/price, donative resources, physical plant, image, reputation, and, most especially, competition for students (Paulsen & Smart, 2001).

Concurrently, with university facility expansions, economy and financial pressures, public and legislative demands for increased efficiency, and new competitors in the education marketplace, community colleges can expect more competition from state universities, private colleges, other regional community colleges, and for-profit entities (Cohen & Brawer, 2003; Kirp, 2003; Ruch, 2001; Winston, 1999).

Communications Convergence

The affect of the Internet is profound, and it is leading to a convergence in the basic nature of communications. The opportunity afforded by the Internet for organizations to communicate directly with customers, potential customers, and interested individuals is unprecedented in human history. A study of the Internet's influence on the field of public relations, commissioned by the Institute for Public Relations and WORLDCOM Public Relations Group, examined how public relations professionals were quickly adjusting to the new medium. One of the study's conclusions was that "one of the greatest advantages of the Internet as a public relations medium is the reality it has … to provide direct and immediate access to specific target audiences, thus bypassing journalists and traditional news media" (Wright, 2001, p. 36). The era of mass media's control of the worlds' communications is quickly evaporating.

In previous eras, communication between the various publics of an organization was influenced and, in many cases, completely controlled by the very communication channel that carried the information: newspapers, television stations and networks, radio stations, and networks, etc. The publishers of information distributed messages to audiences, controlling the entire communication process. The effective use of communications mediums, or channels, becomes even more evident when viewing how the traditional print, radio and television mediums have morphed. Experts on new media, Pavlik & McIntosh (2004), call the change a “convergence,” defined as “the coming together of computing, telecommunications, and media in a digital environment. Convergence and the changes it is bringing are fundamentally changing many aspects of mass media and communication” (p. 19).

Today traditional news media have embraced this ‘brave new world’ and are busily adapting. Visiting any major metropolitan newspaper’s web site will dramatically demonstrate how the one dimensional world of newsprint has “morphed into three-dimensional, multilevel, content” (Cutlip, Center, and Broom, 2006, p. 254). Previously, target markets, audience members, or publics had only limited methods of communication between themselves and the actual source of the communicated information. In a stark divergence from the traditional communications scenario Alan Elsner quotes a 2004 Democratic Convention Blogger:

Audiences in the age of convergence can communicate via e-mail, online forums,

> and other interactive media more easily and quickly than those who create and publish mass communication content. In addition, they can also create mass communication content themselves and reach far larger audiences for much lower costs than they could have with traditional media (as cited in Cutlip, Center, and Broom, 2006, p. 253).

The revolution of Internet-based communication and the convergence of communication mediums have forever altered the process of communicating with an organization's publics. While humans can present information in many modes, computing systems and the Internet can achieve a synergistic combination of data, voice, and audio that produces an optimum persuasive impact, including one major advantage of all other media - interactivity (Fogg, 2003).

A consideration for Internet savvy administrators is the research showing that college students find Internet sites more trustworthy and convincing than the general adult population (Metzger, Flanagin, & Zwarun, 2003). "[Higher education's] enrollment targets are teenagers who grew up with MTV and computers and adapted to the Internet immediately," observed Abrahamson (2000, p. 6). The issue of "Web credibility is mostly uncharted territory;" however, "people will spend more time on a site they find credible; they'll subscribe to its services, buy its products, use its chat rooms, tell their friends about it" (Fogg, 2003, p. 176-177).

One additional area to consider is how Web searches are conducted. Many times someone searching on the Internet may not know the official name of an institution, or the correct name he or she is seeking. He or she may actually be looking for a common misspelling of the name. Web analysis software can be used to determine the key words most commonly used to find a site, along with which search engines and directories are also being used for word searches (Young, 1998). Knowing this information is a vital part of any public relations program's feedback and on-going evaluation process.

While pockets of non-connected persons exist in the United States, a majority of the American population has Internet access (U.S. General Accounting Office, 2001). The expansion of the Internet has surpassed the growth rate of any previously introduced electronic medium, such as the telephone (Berthon, Pitt, & Watson, 1996). In the United States, an estimated 41 percent of adults aged eighteen and older used the Internet in the third quarter of 1998, nearly two times as many as in the same time frame in 1996 (Pew Research Center for the People and the Press, 1999). Direct, two-way communication is now possible world-wide, 24-hours a day, making public relations a central player in the dialogic relationship building and Web communications process of any organization.

There is a caveat to all of this technology and connectivity. If a community college's target audience encompasses significant levels of low-income families and the prospective student is a first generation college student, the impact of the Internet on the college's recruitment efforts could be greatly reduced, if not rendered completely inconsequential among that specific sub-set of the total target population. A growing volume of research indicates a direct correlation between the lack of Internet access in the prospective student's home, low levels of Internet use at any location, low levels of household income, and low levels of family member education (National Telecommunications and Information Administration, 2000; Resta, 1994). As recently as 2005, high-speed Internet access was only available in 11.4 percent of households reporting an income of $29,900 or less, yet it was available in 62 percent of homes with income levels of $100,000 or more (U.S. Government Accountability Office, 2006). In addition, according to a recent study by the Pew Internet & American Life Project on information technology, the Internet has not shattered any barriers between groups in connection with race, gender, age or income and it is most likely to enhance the existing mass media, rather than replace them (Goldsborough, 2004). A convergence is happening, but identifiable segments of the population are either not being affected or are simply being ignored. Some advocates for the disadvantaged have warned of the possibility that Internet resources could become “engines of inequality” if all students lack equal access (Gladieux & Swail, 1999a). Other researchers have posited that low-income students’ utilization of an Internet college search process has lagged, is burdensome, and provides numerous disincentives (Gladieux & Swail, 1999b; Jackson, 2003; Resta, 1994; Wright, Stewart, & Burrell, 1999). In addition, simply having computers in a school, especially a low-income school, does not guarantee students have access (Gladieux & Swail, 1999a). In fact, the number of computers with Internet access is decreasing in low-income schools (Fox, 2005).

Web Site Usability. The time spent visiting and navigating a web site is directly tied to whether the user is able to achieve his or her objective or obtain whatever he or she is seeking. Usability is defined by Brinck, Gergle, & Wood (2002) as “the degree to which people [users] can perform a set of required tasks" (p. 2). According to a study by Scapin et al. (2000) another working definition for web site usability is "any statement ensuring some adequacy of a particular user interface for a web site with respect to a particular context of use where a given user population has to fulfill interactive tasks within a given system" (as cited in Pegoraro, 2006). Nelsen (2000) posits usability as the essential element which dictates ease of web site use and success. Measurement of web site usability is the challenging issue. Newness of the Internet and the time required to develop, implement, analyze, and comment on research has led to only a few diverse efforts from a wide variety of perspectives, targeting an equally wide assortment of objectives. A variety of factors have been identified by human computer interaction researchers Misic and Johnson, (1999), Kim, Shaw and Schneider (2003), Vander Merwe and Bekker (2003), and Hassan and Feng (2005) (as cited in Pegoraro, 2006) for use in the evaluation of web site design quality, including: interface, loading speed, navigation, functionality, content, reliability, technical, and audience relevance. While there is tremendous similarity in many of the factors identified by the particular studies, Pegoraro (2006) cited Aladwani and Palvia (2002) and Ferre, Juristo, Windl, and Constantine (2001) in noting, "The studies included in each review had a different scope and proposed somewhat different sets of Web site usability guidelines and utilized different terminology hence, there is no consensus on how to measure Web site usability" (p. 46). In an attempt to evolve a usability evaluation structure, Pegoraro (2006) compared six benchmarking research efforts and their evaluation criteria. Five main variables (content, design, navigation, technical, and admissions) were identified as common to most studies and, consequently, used for further investigation. Several charts were developed from the literature review to determine whether or not the major research and reference sources confirmed the applicability of the five variables.

High School Students' Internet Expectations

A community college's key target audience is high school students (Cohen & Brawer, 2003), and these prospective students value the Internet when making a decision about their future education (Poock & Lefond, 2001; Stoner, 2001). The community college web site is a critical introductory step in the communication process with prospective students. Initiating a dialogue with prospective students is the central objective of an institution's web site (Hartman, 1998). Of particular interest to community colleges should be the research showing the essential role of the Internet in the decision making process for high school students with intentions to continue their education (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001). In one study of Internet usage by prospective college-bound students, a majority of the respondents indicated using the Internet during their college search (Strauss, 1998). While Poock & Lefond's (2001) study was extremely limited in scope and sample size, the researchers did discover that nearly all of the college bound high school students in their investigation relied upon the information found on web sites during their college search and application process.

Nearly all high school students have access to the Internet, either through school or at home, and a majority of high school seniors use the Internet during their college search (Strauss, 1998). Nearly 75% of high school students use the web sites to gather information and answer questions about colleges and universities (Noel-Levitz, 2006). At the same time, today's high school senior is most often a "secret shopper," or a web site "lurker," until very late in the traditional college decision and application process. Direct communication with an institution usually does not occur until after the student has already trimmed their list of potential schools. As Chapman (1981) points out, the institution's communication efforts directly affect the student's decisions. Research in the college choice field indicates this process can start with students before they ever reach high school; initial consideration of colleges is not unlikely in the seventh grade (Cabrera & La Nasa, 2000; Hossler, Braxton & Coopersmith, 1989). The college search usually occurs during the last three years of high school, and actual selection takes place during the final last two years (Cabrera & la Nasa, 2000; Chapman, 1981; Hossler & Gallagher, 1987; Jackson, 1982; Litten, 1982). Consequently, it is critical for institutions to provide the most casual, prospective student visitor with sufficient information to engage and encourage them to contact the institution, complete an application, or visit the campus. Realizing that the various Web-using publics of a community college are also empowered consumers is important. If the community college administration does not realize the Internet has changed the dynamics of the customer/college relationship, it is going to be very surprised when it discovers the customer is in the driver's seat (Breckenridge, 2001). Nielsen (2000a) supports this view, stating, "The Web is the ultimate consumer empowering environment. He or she who clicks the mouse gets to decide everything. It is so easy to go elsewhere; all the competitors in the world are but a mouseclick [sic] away" (p. 9).

Major program descriptions must also be written attractively, and the benefits of each institution must be supplied because students may not have direct contact with an institution until after they have applied. Therefore, they may miss essential messages about "affordability, value, outcomes, and student fit" (Noel-Levitz, 2007b, p. 7). The number one piece of information students seek on a college web site is cost. "Students have repeatedly ranked tuition cost calculators and financial aid estimators as the top two activities they wish to complete on college Web sites" (Noel-Levitz, 2007b, p. 6). In turn, providing these services can become additional opportunities for an institution to strengthen its image in the prospect's mind.

According to the Noel-Levitz (2006) report, students are very savvy Web users and appreciate a well-designed, visually pleasing web site that does not rely on overly exciting technical features or flashy animation. Students indicated more interest in content (having access to enough of the proper information), and they also wanted to be able to find information easily and absolutely expect clean, clear and fast navigation throughout the web site (Noel-Levitz, 2006). In the Noel-Levitz (2006) survey, students also indicated that asking for more information was their most popular activity, with 72% of students who searched college web sites submitting an inquiry form and 50% of students completing an online survey. The report also listed the activities that students indicated they would most like to do on a college web site. The top responses were:

1. Use a financial aid estimator – 90%
2. Use a tuition calculator – 88%

3. Complete an online application – 86%
4. Fill out a campus visit request – 84%
5. RSVP for events online – 75%
6. Submit an inquiry form – 73%
7. Complete an online survey – 72%
8. Use instant message with a counselor – 70% (Noel-Levitz, 2006, p. 3).

By their very definition, activities are interactive; however, most of the students' desired activities on an institutions' web site can also lead directly to dialogic relationship responses from an institution's staff, providing the technical infrastructure is available.

The types of information high school students wanted was also rated, using a Likert-type scale where 1 was not at all valuable and 5 was extremely valuable. The most desired information categories and ratings were: scholarship information, 4.63; tuition and fees information, 4.61; Academic programs/majors, 4.53; financial aid information, 4.48; careers or internship information, 4.28; and housing/residence life, 4.01 (Noel-Levitz, 2006).

A fascinating finding in both the 2006 and 2007 Noel-Levitz reports is the interest and willingness of high school students to receive instant messages from college representatives. At the same time, there was a drop in the number of students who would consider sending an instant message to a college representative, from 77% of the students in 2006 to 61% in 2007 (Noel-Levitz, 2007b). The response was nearly identical for students who would consider reading and responding to an instant message from a college representative, 73% in 2006 and 72% in 2006 (Noel-Levitz, 2007b). Fifty-eight percent of the students surveyed in 2006 and 59% of the students surveyed in 2007 indicated a willingness to receive calls from a college on their cell phones (Noel-Levitz, 2007b). Forty-four percent of the students in both survey years indicated a willingness to consider accepting text messages from a college representative (Noel-Levitz, 2007b). Blogs are another of the Internet-based communication tools available to institutions; however, students did not show very much interest in reading blogs from an institution prior to admission. It is interesting to note that 90% of the students who did read blogs said they would do so again, and most of the interest appears after admission to an institution. This overall student interest in immediate, two-way communications ties in well with the previous section on public relations and dialogistic relationship building.

According to Noel-Levitz (2007a), the latest “thing” in the electronic communication evolution is the virtual world of social networking, where students have flocked to web sites like Facebook and MySpace to communicate with friends, encounter new ‘virtual’ acquaintances, and possibly conduct business. Even though a number of higher education institutions have established a presence in one or more of the social networking environments, students do not indicate a strong desire or interest in being solicited in this manner and most do not search for institutional information using the social networking sites (Noel-Levitz, 2007b).

It seems that in spite of their nearly overwhelming embrace of anything electronic, prospective college students continue to exhibit some traditional tendencies. In both 2006 and 2007, the Noel-Levitz (2007) survey reported 57% of high school students would prefer to visit a web site over reading brochures, while the remaining 43% expressed a preference for printed material. Fifteen percent of the students indicated they would drop a college from consideration if the institution's web site was ineffective at providing answers to their questions. Conversely, only 17% of the students surveyed said they really did not care about a college's web site, because it was not their primary source of information. Fully 68% of the surveyed students preferred to get their information from a web site, but indicated they would also call and read brochures to get answers to their questions. The bottom line for the Noel-Levitz (2007a) report is encapsulated in their admonition for colleges to, "focus the majority of your efforts strengthening the experiences prospects have on your campus Web site" (p. 6). The college administrator needs to remember the web site is simply one more tool, possibly the emerging, preeminent tool, and it needs to be an integral part of the public relations process.

Public Relations

Like any growing and emerging field, public relations has had its problematic and challenging moments, not the least of which was the modern days press agent approach of the "notorious … master publicist" P. T. Barnum (Seitel, 2007, p. 27). As a direct result of his promotional exploits, his obituary in the London Times labeled him, "a harmless deceiver" (as cited in Lattimore, Baskin, Heiman & Toth, 2007, p.22). One of Barnum's unfortunate and lingering legacies is the pervasive belief that public relations practitioners are fast-talking, hucksters who bend the truth, obscure unpleasant realities, and play "fast and loose" with the facts (Lattimore, Baskin, Heiman & Toth, 2007, p. 22). Conversely, Ivy

Lee’s early work for a group of secretive, domineering railroad owners and for John D. Rockefeller’s Standard Oil of New Jersey strikebreaking efforts were groundbreaking, with Lee’s insistence on truth and honesty in corporate communications to the press (Heath & Coombs, 2006; Lattimore, Baskin, Heiman & Toth, 2007; Seitel, 2007).

In his position as the vice president of AT&T, Arthur Page is credited by public relations historian Karen Miller Russell as the first practitioner to promote the concepts of relationship building and two-way communications. He also engaged:

> Columbia University social scientist Paul Lazarsfeld to conduct regularly scheduled research with customers, employees, and other key publics to assess AT&T’s standing among those groups [using the] feedback to encourage organizational change and to fine-tune messages regarding the company’s identity (Lattimore, Haskin, Heiman & Toth, 2007, p.29).

Public Relations in Higher Education. Schoenfeld (1954) summarized the importance of public relations to higher education and the ubiquity of responsibility throughout the institution by stating, “Public relations consequently become [sic] in a real sense a required state of mind and an indispensable tool of the academic administrator, as well as a balanced way of life, at once responsible and responsive, for his entire institution” (p. xiii). The classic and accepted definition of public relations was originally stated in the 1954 edition and repeated in Cutlip and Center’s (2006) current text: “Public relations is the management function that establishes and maintains mutually beneficial relationships between an organization and the publics on whom its success or failure depends” (p. 5). This traditional definition relies heavily upon management as its central focus. In addition, publics are any person or group of people who affect an organization, or who simply by their interest in the organization are affected in any manner by the organization (Seitel, 2007; Cutlip, Center, and Broom, 2006). The universality of these definitions infers that every level of organizational administration must consider and act on the organizations' public relations issues. James Grunig set forth the symmetrical model of public relations that has been debated as the most appropriately ethical approach to public relations (Grunig & White, 1992). Ledingham and Bruning (2000) delineated the discussion surrounding the dialogic and relationship building points, providing direction and clarity to the on-going public relations discussion, especially as it related to Grunig's model. Cancel, Cameron, Sallot, and Mitrook (1997) demonstrated in their research that public relations is based in relationships with a foundational base in contingency issues. As a result, Grunig has acknowledged the movement in public relations thought and concurred, saying that he had "moved toward such a theory in developing the new two-way model of excellent, or dialogic, public relations" (Grunig, 2001, p. 29).

The moral and ethical goal for both the public relations professional, and the management of an organization, is to build and maintain the necessarily, "mutually beneficial relationships" between an organization and their publics. To express this more succinctly, the essence of public relations is "human relationships" (Marlow, 1996). Botan (1992) has suggested the slightly revisionist perspective that public relations is the negotiation of group relationships using the tools of communications. As the public relations field matures and the scholarly literature develops, it is clear that relationships and relationship building are at the core of dialogic communications and central to both public relations theory and practice.

Public relations provides an appropriate perspective from which to view institutional web sites because of the confluence of five societal factors: expansion of large institutions, the public's increased media consciousness, accelerated societal changes and confrontations, the rapidly expanding pressure of global media and public opinion, and the explosive influence of the Internet (Cutlip, Center, & Broom, 2006; Seitel, 2007). Public relations practitioners have also identified a media "convergence" being caused by the Internet, which is radically changing how they communicate with their publics. The Internet's "rapidly advancing technology requires new knowledge and skill sets in a "cyberworld" without borders and with an insatiable appetite for access, exchange, news and information" (Cutlip, Center, & Broom, 2006, p. 254). Not only is communication on the Internet faster and reaching a larger audience, it is completely changing how messages reach the consuming public. "One of the greatest advantages of the Internet as a public relations medium is the reality it has … to provide direct and immediate access to specific target audiences, thus bypassing journalists and traditional news media" (Wright, 2001, p.36). This side-step to the traditional communication process also offers the possibility of directly negotiating relationships between and among groups and individuals.

Guidelines for an organization's efficacious use of the public relations process are summed up in Ball State University Professor Melvin Sharpe's five principles of "the public relations process:”

> The public relations process: Honest communication for credibility, Openness and consistency of actions for confidence, Fairness of actions for reciprocity and good will, Continuous two-way communication to prevent alienation and to build relationships, Environmental research and evaluation to determine the action or adjustments needed for social harmony. (as cited in Seitel, 2007, p.5-6).

All of these points and concepts are critical to the effective implementation of any organizational public relations effort, including the proper design and utilization of a community colleges’ web site.

Public Relations and the Internet. Research addressing the Internet and public relations mirrors the issues about web page construction information in general: it looks at what practitioners expect in the way of technical advice. It also covers the appropriate software techniques for providing one-way information flow (Kent, Taylor, & White, 2003). Focusing on corporations and their efforts at social responsibility, evaluating media relations, reviewing target audiences, and generally examining the web site content of corporate Internet pages has engaged a number of researchers (Callison, 2003, Esrock & Leichty, 1998, Esrock & Leichty, 1999, Esrock & Leichty, 2000). Public relations practitioners have long acknowledged the value of the Internet as a communications medium, and some research has viewed the perceptions of practitioners towards web sites as communications tools (Hill & White, 2000; Johnson, 1997). Porter & Shallot (2003) studied the role of the public relations practitioner and how the Internet is causing functional adjustments and re-defining the responsibilities and general character of the field. Internationally focused studies have looked at the evolving Web-based public relations efforts and corporate, or non-governmental, utilization (Shim, 2002; Naude, Froneman, & Atwood, 2004).

Other public relations research has sought to determine the extent of relationship building realized through the web sites of presidential candidates (McKeown & Plowman, 1999). In an allied vein, Motion (2000) adopted a marketing perspective to examine electronic relationships, and Callison (2003) investigated how corporations were using their web site as a media relations tool.

“The key for public relations is that the new technology promotes interactive communication, the essence of building and maintaining relationships” (Cutlip, Center, and Broom, 2006, p. 254). If public relations on the Internet hopes to be anything more than just another technological marketing tool of monologic communication, it must initiate and maintain dialogue between the various targeted publics.

The authors of *Effective Public Relations*, long considered the ‘Public Relations Bible,’ affirm the Internet’s importance to the field of public relations by clearly stating, “In public relations, to paraphrase the words of a song, it’s the information highway or no way” (Cutlip, Center, & Broom, 2006, p. 252). Public relations practitioners realize the importance of the Internet and the critical value of the organizational web site to connect with its various publics and promote the web site as a vital component of any efficacious public relations effort. (Seitel, 2007; Cutlip, Center, & Broom, 2006; Heath & Coombs, 2006). Kirp's (2003) comment gives emphasis to institutional web site evolution and its dialogic potential, stating, "Nearly all [four-year] colleges are relying on the Internet, and the easily modifiable code of Web pages enables institutions to have interactive relationships with prospective students, a considerable … advance over one-way communication" (p. 18).

The community college web site is a critical communications tool in the higher education recruiting battle, and college bound high school students trust the information they find on web sites more than do their parents (Noel-Levitz, 2006). In addition, while nearly 60 percent of students report their parents and family members may assist with the college search, only 6% of students report that parents or family members are doing most of the search work (Noel-Levitz, 2007a, p.5). Students return to an institution's web site multiple times looking for new information and additional facts with which to make a college choice (Christiansen, D. L., Davidson, C. J., Roper, C. D., Sprinkles, M. C., & Thomas, J. C., 2003). To be competitive and attractive, a web site must receive regular updates, and the responsible Webmaster must remember to focus on the needs and the desires of a wide variety of constituent publics (Williams, 2000).

Public Relations Theory. In his treatise, calling for the field to remember the "public in public relations research," Karlberg (1989, p.1) took an historic look at symmetrical communications, from Plato through Habermas, and the field of public relations. While expressing support for the concept of dialogue in public relations, Karlberg (1989) also called for more research to solidify the discursive tie between organizations and their publics. During the same time frame, public relations practitioners recognized the need for a more theoretical approach to their craft (Botan & Hazelton, 1989). Eventually, public relations scholars turned to the sciences for an appropriate grounding for their work (Grunig & White, 1992). The lack of research in public relations has plagued practitioners as the field evolved and failed to adequately define any mutually agreeable approach (Bruning & Ledingham, 2000). However, Grunig's (1989, 1992) work with public relations theory has provided focus for the field.

Grunig's *Excellence Theory* (1989, 1992) offered one of the first public relations theories for scholars and practitioners, utilizing two-way symmetrical communications as a model. Using dialogue as a theoretical basis for ethical public relations was initially proposed by Pearson (1989a, 1989b) as a way to understand communicative relationship building, as opposed to simple monologic communications. Others have extended Grunig's work, with Kent & Taylor (1998, 2002) proposing a theory of dialogic public relations that is eminently applicable to use on the Internet, through organizational web sites. Communicating in an ethical and honest manner is essential for an organization to develop and maintain any positive level of relations with its publics. It is also essential in dialogic public relations. Possessing and implementing a feedback mechanism is central to the concept of dialogue and essential to strategic public relations efforts, especially in relation to questions of reciprocal group adaptation, conditional interactions, technology, and communications (Johnson, 1997). At the same time, the need for feedback, or interactivity, is also a limitation to both dialogue and the development of any effective relationship building effort.

Relationship management theory has emerged as the preeminent approach to further evolve the theory of dialogic public relations (Broom, Casey & Ritchey, 1997, Ledingham & Bruning 1998, 2000). Even though true dialogue is not universal or predominant between organizations and their publics, the strong contention exists that dialogue is beneficial for both sides of the dialogue – publics and organizations (Kent & Taylor, 1998, 2000; Grunig, 2001; Heath, et al., 2006). The value of dialogue is sought as a long-range benefit for relationships between both parties. “Building relationships through this type of approach [dialogue] can strengthen external relations and create situations where both organizational and community interests are advanced” (Bruning, Lagenhop, & Green, 2004, p. 129). Among the areas where dialogue and dialogic public relations theory have been used to broaden investigations are reputation management and rhetoric (Heath, 2001, 2006; Surma, 2006), loyalty & affiliation communications (Kinser & Fall, 2006), and professional public relations working relationships (Chia, 2005). Botan & Taylor (2004) used what they called a co-orientation methodology in recognition of the value of both publics and organizations in course of developing and maintaining a public relationship. Kent & Taylor’s (1998, 2002) proposal of a dialogic public relations has coalesced, focused, and invigorated the discussion of public relations theory, especially as public relations is practiced through organizational web sites on the World Wide Web. An additionally supportive argument for the utilization of dialogic public relations theory in today’s marketplace was also proposed by L’Etang & Pieczka (2006).

Creating true dialogue, a communication of understanding between parties, recognizes the needs of a consuming public and is much more than simply conversing and receiving feedback (Leeper, 1996). The original use of the term dialogue in concert with public relations is generally attributed to Sullivan (Lerbinger & Sullivan, 1965) and referred to the rights of individuals along with the need to recognize the rights and values of an organization. Without actual dialogue, public relations on the Internet is relegated to simple process functionality. "The Web provides public relations practitioners an opportunity to create dynamic and lasting relationships with publics; however, to do so requires that dialogic loops be incorporated into Web pages and Webbed communication" (Kent & Taylor, 1998, p. 325-326). Kent & Taylor (1998) first proposed using dialogic relationships as an appropriate theoretical public relations approach for the Internet and web sites. Taylor, Kent and White (2001) used dialogic communication as the foundation of an investigation into relationship building by activist organizations, and then Kent & Taylor (2002) further refined the concept as a public relations theory. Dialogic public relations and its efficacious integration with an organization's web site should incorporate the following five principles: a dialogistic communications loop, encouragement and motivation for visitors to return, appropriate and valuable content, service and support of visitors' interests, and effective and efficient interface functionality (Kent & Taylor, 1998).

Dialogic Public Relations Theory. Kittle & Ciba (2001) report nearly every higher educational institution had created and posted a web site by 1997. Unfortunately, just because a higher education institution has a web site does not mean the correct elements are available on the site or that the resources are present to adequately maintain or service it (Kent & Taylor, 1998). Higher education has also traditionally adopted the attitude that "their product or service is inherently desirable. They find it hard to believe that anyone would turn them down" (Kotler & Andreasen, 1987, p.45).

Dialogic theory as it relates to public relations was initially conceived by Pearson (1989a) in his dissertation on ethical communication. Kent & Taylor (1998, 2002) further evolved the concept and defined it as a two-way theoretical model designed to help organizations build relationships to serve both the organization and their relevant publics (Kent & Taylor, 1998, 2002). According to McAllister-Spooner (2008), Kent and Taylor were responding "to the recent theoretical shift to the relational approach to public relations theory development" (p. 2). As Kent & Taylor (1998) conceived and articulated the practical side of the emerging issue, "the Web provides public relations practitioners an opportunity to create dynamic and lasting relationships with publics, however, to do so requires that dialogic loops be incorporated into Web pages and Webbed communication" (p. 325-326). According to Gronroos (1990), building a relationship helps both students and higher education institutions achieve their individual goals and "is done by a mutual exchange and fulfillment of promises" (p.5). As conceived by Kent & Taylor (1998), incorporating dialogic public relations into an institutional web site requires the implementation of five principles: a dialogistic communications loop, encouragement and motivation for visitors to return, appropriate and valuable content, service and support of visitors' interests, and effective and efficient interface functionality.

Figure 2 provides a simple diagram of the dialogistic Web communication process. According to Noel-Levitz (2009,) "The majority of [prospective] students said that if a college's Web site content did not meet their expectations, they would be disappointed or even consider dropping that college from their search" (p. 1). The overlapping area between the two ovals in Figure 2 indicates the possibility that a web site might contain one or more elements of one set of attributes and/or one or more attributes of the other set, potentially resulting in inadequate feedback and web site visitor disappointment. Kent & Taylor (2002) summarized the issue very succinctly, "The implications for public relations are clear. At the very least, successful organizations consider the needs of publics" (p. 26).

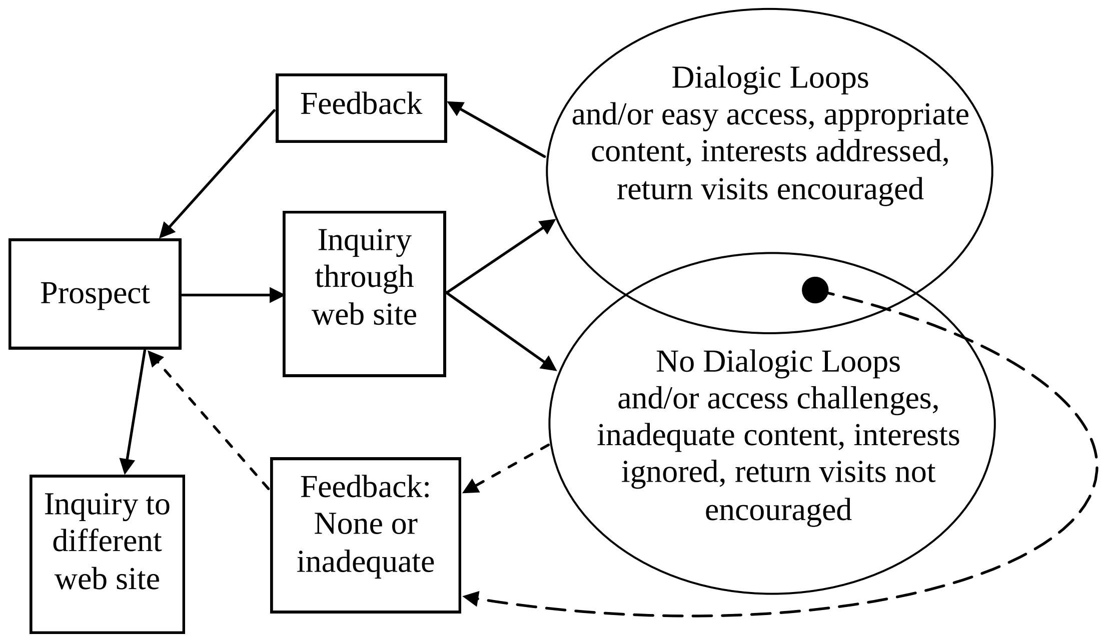

Figure 2. Dialogic Web Communication Process

Kent & Taylor (2002) further argued that enhanced public satisfaction with the institution, improved levels of accountability, and augmented input to institutional functioning are all possible outcomes of web site-based dialogic public relations efforts. "Although 'dialogue' cannot *guarantee* ethical public relations outcomes, a dialogic communication orientation does increase the likelihood that publics and organizations will better understand each other" (Kent & Taylor, 2002, p. 33).

Building relationships is key to the development of a strategic public relations effort, particularly when the issues of communications, technology, reciprocal group adaptation, and conditional interactions are involved (Johnson, 1997). An essential difference "embedded in the [public relations] tactic itself" is the communications function of feedback (Johnson, 1997, p. 233). The existence of an integral feedback process sets the Web apart from all previous forms of communication and formalizes a new theoretical dynamic to the public relations practitioner. Inherent with this dynamic is the dual necessity for an organization to provide both a responsible individual to address the inquiries generated through the organization's web presence and for someone with the necessary communications and public relations skills to appropriately respond to the public's inquiries (Kent & Taylor, 2002).

Paralleling this function is the imperative to address the needs and interests of the organization's publics. The web site content must also be correct, current and appropriate, or as Breckenridge (2001) comments, "Every stitch of communication should be useful, interesting, and valuable to users – not superfluous or to the point of clutter" (p. 95). A web site that contains too many graphics or “flashy” visual elements can discourage visitors with unnecessary features that slow the site’s functionality, operations, and loading speed (UC Regents, 1996). Content is key, and the lack of it may cause prospective students to “eliminate an institution due to lack of awareness or accurate information (Hossler & Gallagher, 1987). The web site must also encourage visitors to return. Web sites are visited because they have something of value for the visitor and are easily accessible (Elmer, 1997). Keeping information current and maintaining “value” for the visitor is extremely important to the development of relationships and the encouragement of dialogue. The public relations practitioner must maintain a focus on these goals throughout the development, implementation and maintenance of the Web environment. Implementing a public relations strategy utilizing FAQ’s (frequently asked questions), blogs, forums, question and answer services, easily accessed information, referrals, links, and access to experts is central to motivating return visits to a web site (Kent & Taylor, 1998). One caveat to providing visitors with links to additional information sources is to make sure the links do not dissuade, distract, or prevent the visitor from returning to the original web site, and actually encourage interaction or dialogue with the institution.

The ease with which a visitor can navigate a web site is critically important and involves how easy or difficult it is to find and access information (Nielsen, 2000b). Nielsen (2000b) also states that from the initiation of a web site administrators must make the effort to review web site performance and make adjustments to consistently improve the sites’ usefulness, effectiveness, ‘stickiness’ and overall performance. Soliciting feedback at all points throughout the process, working it back into the research step, and re-starting the planning and implementation processes are central to web site performance.

Evaluation Theory

Stufflebeam & Shinkfield (2007) comment that, "*Evaluators can choose from a defensible range of evaluation approaches. Evaluators should employ professional standards to ensure and assess the quality of evaluation approaches and particular evaluations"* (p. xxix, emphasis in original). Initially evaluation theory and methodology evolved from the study of education programs.

Stufflebeam & Shinkfield's (2007) *Evaluation Theory, Models, & Applications* provides an extensive overview of the topic area while also serving as a handbook for students, clients, theorists, and practitioners. In explicating the fundamentals of evaluation theory and methodology, the authors heavily reference their participation on, and leadership of, the 1994 Joint Committee on Standards for Education Evaluation. Concurrently, the authors provide numerous examples in an effort to enhance understanding and applicability of evaluation theory to such diverse fields as housing and community development.

The second section of the text provides identification, analysis, and Stufflebeam & Shinkfield's (2007) professional opinions on the twenty-six most currently prominent program evaluation approaches, five of which are designated as pseudo-evaluations (noted previously in the Public Relations section) and eventually dismissed.

Specifically, the authors reviewed the predominant methodologies, including: Stake's responsive approach, Scriven's consumer-oriented approach, Stufflebeam's CIPP

Model, the case study approach, and experimental design. After reviewing each evaluative approach, Scriven's consumer-oriented evaluation methodology appeared to offer the most applicable and appropriate methodology for this proposed dissertation research.

Scriven's Consumer Oriented Evaluation. Scriven's (1967) classic definition of this methodological activity was especially resonant as he reasoned making informed judgments and objective assessments of value was the primary responsibility of the evaluator. In addition to providing the field with the definitive labels of "formative" and "summative" in a critique of Cronbach's (1963) work, Scriven proffered that evaluation:

> Consists simply in the gathering and combining of performance data with a weighted set of goal scales to yield either comparative or numerical ratings, and in the justification of (1) the data-gathering instruments, (2) the weighting, and (3) the selection of goals (Scriven, 1967, p. 40).

Scriven's consumer-oriented methodology is especially appropriate for this research based on its pragmatic orientation to consumer desires. In this research, the end consumers are prospective college students who desire dialogistic (two-way) communications with a higher education institution, principally through the institution's web site (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001; Clayton, 2003; Noel-Levitz, 2006, 2007). Concurrently, an additional user group exists for the information generated by this research – community college administrators. This second group wants and needs to attract prospective college students to their respective institutions. Other affected groups exist, but they are not central to this research, including: institutional staff, parents, high school counselors, etc. Engaging the two key target audiences are accomplished in this study by taking the results of the various studies (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001; Clayton, 2003; Noel-Levitz, 2006, 2007) and addressing the stated interests of the prospective students through the several key concepts of Kent & Taylor's (1998, 2002) dialogistic public relations theory.

Accordingly, Stufflebeam & Shinkfield (2007) summarize Scriven's argument whereby evaluators must "compare the observed outcomes to the assessed needs of the consumers" (p. 375) to effectively sort the desirable from the unwanted outcomes.

> Scriven has identified the key methods of evaluation as scoring, ranking, grading, and apportioning and had noted that the logic of evaluation involves gathering and summarizing facts; collecting, clarifying, and verifying relevant values and standards; and synthesizing evidence and values into evaluative conclusions (Stufflebeam & Shinkfield, 2007, p. 368).

The key value or principle of interest is the concept of effective and appropriate customer service toward the prospective college student through the implementation of dialogistic (two-way) communication functions on community college web sites.

Stufflebeam & Shinkfield (2007) report that many in the field of evaluation have suggested the area of values analysis is so "primitive" compared to the areas of quantitative and qualitative analysis that the evaluative researcher should strictly focus on reporting "solid findings …. [and] leave matters of synthesis and interpretation of findings to the evaluation's client" (p. 608). The authors respectfully disagree and believe that effective evaluation “requires values analysis” (Stufflebeam & Shinkfield, 2007, p. 608). Pragmatism in orientation occurs because of the directly applicable nature of the anticipated findings relative to the explicitly stated desires of the prospective students along with the ever increasing student enrollments and the continually expanding financial needs of higher education institutions. In a similarly supportive and pragmatic position, Stufflebeam & Shinkfield (2007) “posit that the essence of a professional evaluator’s role is to conduct quantitative analysis, qualitative analysis, and synthesis toward the goal of reaching bottom-line, value- and evidence-based judgments and, as warranted, providing actionable recommendations” (p. 608).

Patton’s Utilization-Focused Evaluation (UFE). Patton’s utilization-focused methodology is an eclectic evaluation approach, which has “no commitment to any particular evaluation philosophy, methodological approach, or social mission” (p. 229) and includes several other respected advocates, including: “Alkin (1995), Cronbach and Associates (1980), Davis and Salasin (1975), and the Joint Committee on Standards for Educational Evaluation (1994)” (Stufflebeam & Shinkfield, 2007, p. 233).

Particularly attractive in Patton’s approach is the expressed intent to evaluate a program’s merit drawing upon whatever model(s) and approach(s) facilitate achievement of a client’s objectives or goals while providing for relevant results and meaningful analysis (Patton, 1997). “Those who follow the UFE pattern are disinclined to be concerned primarily with the needs of decision makers; rather, they stress procedures and processes that enhance the usefulness of the evaluation to an identified group of stakeholders" (Stufflebeam & Shinkfield, 2007, p. 432).

Several additional key points to Patton's methodology were summarized by Stufflebeam & Shinkfield (2007), including: identifying users to be served, audience engagement in agenda setting, pragmatic orientation, and utilizing any appropriate evaluative approach. Stufflebeam & Shinkfield (2007) propose that all of the pertinent stakeholders to an evaluation should become an integral part of the process, especially as it relates to "clarifying decision rules, criteria, and weights for criteria" (p. 608).

Although direct contact with the ultimate users (prospective college students and community college administrators) will not occur within the context of the project, the care being taken to fairly represent their interests is incorporated in Patton's (1997) admonition that evaluators must consider the issues and concerns of the end user, use their best judgment to select an appropriate evaluation methodology, and be "adaptive in finding ways to design evaluation that incorporate these diverse interests" (p. 383).

Additional Evaluation Theory Considerations. At its foundation, evaluation theory and methodology are integrally woven with confronting social issues, along with attempting to identify and correct social ills. In this research, there is no political or social agenda, only the identification of dialogistic communication functions on community college web sites to address the stated desires of a key target audience.

An important limitation to this approach could occur if, instead of using research findings to define client direction, higher education administrators were introduced into the process. The process would experience limitations if the administrators were replaced frequently during the process and/or they somehow corrupted the process, affected the methodology, or the information collection process. In addition, the evaluator must be vigilant to maintain basic professional standards and requirements, in an effort to avoid questions of validity, reliability, or applicability.

As the UFE approach applies to this research, the end consumers are prospective college students, and the targeted users are community college administrators who either oversee the development and maintenance of their institutional web site, or who supervise the admissions and recruiting processes. The wants and desires of prospective college students, as surveyed by Noel-Levitz (2006, 2007a, 2007b, 2008), are very specific when considering what types of communications functions higher education institutions should make available, especially on their institution's web site.

The appropriateness of a quantitative evaluation approach to the dissertation research ultimately resides with the foundation established through the comparable works of Kent, Taylor & White (2001), McAllister-Greve (2006), and Pegoraro (2006). In this research, Kent & Taylor's (1998, 2002) theory determining the existence of dialogic, web site-based functions is particularly quantitative in nature. Qualitative and mixed methods approaches could definitely be considered in a future project; however, the existing referenced research utilizes quantitative methodology and is appropriate and attractive for extension.

The likelihood that community college administrators will embrace public relations theory or any other concepts relating to their web site is addressed in other sections of this document. It is also documented that community colleges have traditionally not effectively utilized their web sites to develop relationships or communicate dialogistically with their key target audience of prospective students (Kent & Taylor, 1998; Gower & Cho, 2001; Poock & Lefond, 2001, 2003; Peakow, 2006; Noel-Levitz, 2008). Maximizing the likelihood that findings will be utilized is partially contingent on this research conforming to accepted standards which will assure the ability to generalize from, along with the possibility for future publication of, the findings. This is especially germane since, as Patton (1997) argued, an evaluation report is only valuable if it is shared and used, not shelved and ignored.

Public Relations and Evaluation Theory. While many of the early, influential practitioners emphasized the use of mass media, in the 1930's Arthur Page was a pioneer in the use of third party research to evaluate his organization's public relations efforts (Lattimore, Haskin, Heiman & Toth, 2007). Use of research in public relations has continued and expanded as techniques and methodologies have evolved. Stufflebeam & Shinkfield (2007) strongly admonish the field of public relations needs to continue to assure impartiality, professional practices, and ethical standards throughout the evaluation, analysis, synthesis, and recommendation processes.

As the public relations profession evolved, numerous professional organizations, accrediting procedures, and a professional code of ethics were developed. The public relations profession, with extensive scholarly assistance, has also developed a four-step approach to practice – research, planning, action (communication / implementation), and evaluation (Cutlip, Center, & Broom, 2006; Lattimore, Haskin, Heiman & Toth, 2007; Seitel, 2007).

The revolution of Internet-based communication and the convergence of communication mediums have forever altered the process of communicating with an organization's publics, plus the expansion of the Internet has been faster and more pervasive than electronic media in history (Berthon, Pitt, & Watson, 1996). The recent growth and wide-spread popularity of the Internet has made personal and business communication and information searches nearly instantaneous and ubiquitous, while the use of organizational web sites has radically changed the nature of public relations work (Heath & Coombs, 2006).

Research in public relations is still an evolving part of the field. Calling the bulk of public relations' research "pseudoevaluation," it is almost impossible to exaggerate Stufflebeam & Shinkfield's (2007) negative opinion towards what they perceive to be the biased, self-serving orientation of public relations professionals. Because of potential bias, improper influence, and perceptions of impropriety Stufflebeam & Shinkfield (2007) warn that "evaluators need to be cautious about how they relate to the public relations activities of their sponsors, clients, and supervisors" (p. 148).

Definitions

Just as Heath (2006) argued for a more theory-based and systematic approach to public relations research, this study intends to extend the limited existing scholarly inquiry into dialogic public relations theory as it relates to community college web sites.

For the purpose of this study the following terms were defined, using appropriate and applicable sources.

Coding: A process where researchers create and apply consistent rules to the transference of information from a basic information form into numbers or symbols permitting computer analysis of the content's attributes (Neuman, 1997).

Community College: "Any institution regionally accredited to award the associate in arts or the associate in science as its highest degree [, including] the comprehensive two-year college as well as many technical institutes, both public and private" (Cohen & Brawer, 2003, p. 5).

Content: "Words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated" (Neuman, 1997, p. 272).

Content Analysis: A technique for the objective and systematic collection of the symbolic content of a particular communication (written, visual, or spoken) for the purpose of developing a quantitative description of the text. (Krippendorff, 1980; Neuman, 1997).

Internet: "An electronic communications network that connects computer networks and organizational computer facilities around the world" ("Internet", 2005).

Megastates: A term attributed to Neal Pierce (1972) as a description of the states with comparatively large populations and higher education systems, along with an extensive business and industrial base. Hines (1998) reported “Grapevine redefined “megastates” as those states that collectively appropriate one-half of the national total of state support to higher education” (p. 6). In the most recent issue of Grapevine the nine megastates account for 51.5% of the total State tax revenues allocated to community colleges nationwide and include the states of: California, Florida, Georgia, Illinois, Ohio, Pennsylvania, New York, North Carolina, and Texas (Grapevine, 2009).

Click: “To select especially in a computer interface by pressing a button on a control device (as a mouse) (“Click”, 2005).

Publics: “A group of people having common interests or characteristics; *specifically*: the group at which a particular activity or enterprise aims” (“Publics”, 2005).

Public Relations: “The business of inducing the public to have understanding for and goodwill toward a person, firm, or institution: *also*: the degree of understanding and goodwill achieved” (“Public Relations”, 2005).

Dialogic Public Relations: A two-way theoretical model originally conceived by Pearson (1989a, 1989b) and expanded by Kent & Taylor (1998, 2002) to explain how organizations build relationships to serve both the organization and their relevant publics.

Dialogic Loop: This category title was first used by McAllister-Greve (2006), based on Kent & Taylor’s (personal communication, August 23, 2008) original survey instrument, along with Kent & Taylor’s (1998, 2002) explication of dialogic public relations theory.

Dialogic loop is Kent & Taylor's (1998) terminology explaining that an active web site-based function "allows publics to query organizations and, more importantly, it offers organizations the opportunity to respond to questions, concerns and problems" (p.327).

Passive Information: This original category title was created by this writer and is based, in part, on Kent & Taylor's (personal communication, August 23, 2008) original survey category, Usefulness of Information. Creating the category title was also informed by Mazzini's (2004) work with activist web sites, along with the realization that a large number of currently available web site functions did not exist and were not identified in any of Kent & Taylor's (personal communication, August 23, 2008) other existing categories (ease of use, return visits, timeliness). The usefulness of information category title originally contained sub-categories of media publics and citizen publics and was too restrictive for the expanded and evolved state of web sites. A wide variety of web site functions provide information, but no response is anticipated or directly expected from their use, hence the designation of passive information. Recent examples of features in this category include: Frequently Asked Questions (FAQ), admission requirements, admission & financial aid form downloads, etc. In summary, Usefulness of Information was not appropriately descriptive and needed effective differentiation from the other categories; especially from the Dialogic Loop category.

Web site: A web site is "a group of World Wide Web pages usually containing hyperlinks to each other and made available online by an individual, company, educational institution, government, or organization" ("Web site", 2005).

Chapter 3

Methods

Introduction

This chapter identifies the total population, selection of the stratified random sample population, and addresses content analysis relative to the topic of web sites and public relations theory. The process of survey instrument development, code book development, coding metrics, coder training, pilot testing, data collection, and data analysis are also detailed.

Sampling

Phillippe & Gonzales Sullivan (2005) reported the existence of 1,158 community colleges in the United States. Nine states are considered megastates because they collectively account for more than half of the "total of state support to higher education" (Hines, 1998, p. 6). According to Grapevine (2009), California, Florida, Georgia, Illinois, Ohio, Pennsylvania, New York, North Carolina, and Texas represent 51.5% of the total State tax revenues committed to community colleges nationwide. The population for this study consists of all community colleges in the nine megastates, including: California (n=111, 21.9%), Florida (n=60, 11.9%), Georgia (n=54, 10.7%), Illinois (n=48, 9.5%), Ohio (n=44, 8.9%), Pennsylvania (n=23, 4.5%), New York, (n=44, 8.7%), North Carolina (n=58, 11.5%), and Texas (n=63, 12.5%).

Within the nine community college megastates, at the time of this research, there were a total of 506 community colleges (See Instrumentation – Data Collection). This study utilized a proportional, stratified random sample. According to Sproull (2002), a stratified random sample is “a probability sampling method in which elements are randomly selected from each designated subpopulation (stratum) of a population” (p. 115). Sproull (2002) further defines a proportional, stratified random sample as one where the researcher “maintain[s] the same proportions in the sample as in the population” (p. 116) for each individual stratum. According to Bartlett, Kotrlik, and Higgings (2001), this study should use a sample size formula for categorical data. Bartlett, Kotrlik, and Higgins’ (2001) sample size formula $\{n = [(t)^2 * (p)(q)] / [(d)^2]\}$ for a population of 506 would be as follows: $n = [(1.96)^2 (.5)(.5)] / (.05)^2 = 384$. In the formula (t) equals the value for a selected alpha level of .025 in each tail, which is 1.96. An alpha level of .05 indicates the level of risk the researcher is willing to accept when the true margin of error may exceed the acceptable margin of error. According to Krejcie & Morgan (as cited in Bartlett, Kotrlik, and Higgings (2001), when categorical data is used, an acceptable margin of error is 5%. Where (p)(q) = estimate of variance = .25 (maximum possible proportion (.5) * 1- maximum possible proportion (.5)). The margin of error for the proportion the researcher is willing to except is set at (d) = .05. To use this calculation, the required sample size is 384. Bartlett, Kotrlik, and Higgins’ (2001) report that Cochran’s (1977) correction formula $\{n = n_o / (1 + n_o /$ Population)} should be used to calculate the final sample size when a sample size exceeds 5% of the population (506 * .05 = 25.3). Concurrently, Bartlett, Kotrlik, and Higgins’ (2001) provide a table for determining the minimum sample size, and for a population of 500, using categorical data with an acceptable margin of error of .05 and t = 1.96, they report an appropriate “minimum returned sample size” of 218 (p. 48).

To use the exact number of institutions, in the adjusted community college population (506), the calculation results in a stratified random sample size of 218.32. When the calculation for each megastate resulted in a fraction equal to or greater than .5, the number of institutions in the sample was rounded up to the next whole number, providing a total stratified random sample size of 218 institutions. Table 1 lists the percentage of community colleges in each of the individual megastates, along with the total number of institutions in each state making up the stratified random sample. The study includes 48 schools from California, 26 schools from Florida, 23 schools from Georgia, 21 schools from Illinois, 19 schools from New York, 25 schools from North Carolina, 19 schools from Ohio, 10 schools from Pennsylvania, and 27 schools from Texas.

Table 1

Community Colleges (CC) by Mega State and Calculated Number of Institutions in the Stratified Random Sample

Mega State	CC Population (adjusted)	Percent of CC Population	Extended	CC Totals (rounded)
California	111	21.9%	47.6	48
Florida	60	11.9%	25.7	26
Georgia	54	10.7%	23.2	23
Illinois	48	9.5%	20.6	21
New York	44	8.7%	18.9	19
North Carolina	58	11.5%	24.9	25
Ohio	45	8.9%	19.3	19
Pennsylvania	23	4.5%	9.9	10
Texas	63	12.5%	27.0	27
TOTALS	506	100.0%	---	218

Content Analysis

The technique of content analysis involves the collection and examination of communicated subject matter. According to Kolbe (1991), content analysis offers several benefits to consumer researchers, including: unobtrusive appraisal of communications; assessment of variable impacts upon message, content, and receiver perception. This provides an empirical benchmark for new research and is a companion to multi-method research and the potential for data analysis triangulation. The content to be analyzed can involve symbols, ideas, pictures, words, themes or messages that have been exchanged in any nominally understood form or format. According to Bowers & Courtright (1984):

> Deciding what your units will be and what your categories will be depends completely on the research questions you want to answer. . . . The unit needs to be inclusive enough to manifest whatever item or items are of interest to the researcher. Yet, the unit needs to be manageable – not so inclusive that it is simply general or vague, not so inclusive that it manifests an indeterminate number or mixture of the item or items that are of interest" (p. 74).

The goal of content analysis is to produce exacting findings concerning the communicated material that can be reproduced. Another function of content analysis is the description of communication characteristics, evaluating trends between sources or over time, and then identifying and comparing differences (Poindexter & McCombs, 2000). Berelson (1952) posited one of the most predominant definitions for content analysis was as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (cited in Kaid & Wadsworth, 1989 p. 197). In the process of collection, the researcher employs "objective and systematic counting and recording procedures to produce [a] quantitative description of the symbolic content in text" (Neuman, 1997, p. 272). According to Krippendorff (1980), the three most common methods of recording data for content analysis are physical, thematic, and referential. Coding of the content by converting the text into numbers according to whether or not the specific form, symbol, or word is present is identified as the physical method, were "counting the number of units in each category yields quantitative data" (Frey, Botan, Friedan & Kreps, 1991, p. 215). More complicated forms of content analysis may investigate the meanings of words or phrases, perceptions people assign to images or symbols, or the relative value of the information source (Kaid & Wadsworth, 1989). Recording data in a thematic manner is the most abstract method and requires a conceptual definition to explicate the construct. Descriptions of people, objects, events, or the manner in which such items or objects are portrayed is the referential method. For this research, the content or substance of the message was used to categorize the data into the several categories conceptualized by Kent & Taylor (1998) and informed by other research (Pegoraro, 2006; Mazzini, 2004).

According to Kolbe (1991), there are also some inherent drawbacks to content analysis, including:

> It is quite susceptible to the effects of researcher biases, which, in turn, can affect decisions made in the collection, analysis, and interpretation of data. Given that

researchers wish to draw inferential conclusions from data, the existence of these biases can affect a study's contribution to knowledge (p. 244).

Krippendorf (1980) observes the key to avoiding researcher bias is based upon the accuracy, stability and/or reproducibility of the coding and "boils down to measuring the agreement achieved among observers, coders, or judges regarding how they independently process scientific information" (p. 133). Consequently, coder direction, supervision, and training are paramount to avoiding bias in the data.

Even though Kolbe (1991) comments that content analysis "makes it difficult to consider theoretical perspectives," (p. 244) Kent & Taylor's (1998, 2002) theory is founded on and has been consistently researched using physical content analysis methodology. Consequently, this research was designed around physical, or term, analysis. According to Janis, Fadner, & Janowitz (1943), "term analysis" is the most basic form of content analysis, where the coder is "counting the number of physical occurrences of a given symbol or term … [which] involves simple perceptual discriminations" (p. 293). This straight-forward approach is exactly what the coders were instructed to accomplish; they simply determined whether or not a variable existed on an institutional web site and how many clicks of the computer mouse were required to access the link. (See Appendix B)

Instrumentation

Code Book Development. Appendix A contains the code book utilized in this study. The foundation for the variables in the code book were Kent & Taylor's (1998) categories of return visits, timeliness, and ease of use, with a very few additions to accommodate new

Web-based offerings, such as online catalogs, newsletters, and update notifications. The original dialogistic communications loop variable was expanded to capture evolving technological innovations and the volume of new information added to web sites in the years since Kent, Taylor and White's (2003) study, in addition to the work of McAllister-Greve (2006) and the Noel-Levitz (2006, 2007a, 2007b, 2008) studies. Many of the new variables (such as: personal applicant portal, downloadable form, instant messaging, Podcast, chat room, Flash media player, etc.) were not in Kent & Taylor's (personal communication, August 23, 2008) original survey, but they were listed in the Noel-Levitz (2006, 2007a, 2007b, 2008, 2009) studies reflecting prospective college student preferences.

Insights provided by Mazzini's (2004) analysis of activist's web sites informed the decision to re-define a variable category. Starting with Kent & Taylor's (personal communication, August 23, 2008) original survey, and in consideration of the dialogistic category, this writer has chosen the title of passive information for those individual web site functions/tools where information is provided but a response is not expected, anticipated or provided for on the web site. While the passive information functions and links do not directly initiate or facilitate dialogue, they do provide content presumed important simply by its inclusion on the institutional web site. Some of the passive information functions and links could potentially cause a web site visitor to make further inquiry to, or initiate some form of dialogue with, the web site sponsoring institution. Whether or not such actions actually occur is beyond the scope of this inquiry.

There was significant overlap between Pegoraro's usability variables (navigation, content, technical, admissions) and the similar variables (such as ease of use, timeliness, and return visits) as defined by Kent & Taylor (2002). The two lists were combined under Kent & Taylor's (2002) variable categories, duplicate variables were eliminated, and any variables not relevant to the current research questions were removed. When considering this study's target population, recent research by Noel-Levitz (2006, 2007, 2008) does not support the inclusion of several of Pegoraro's (2006) variables (campus physical information, extracurricular activities, faculty) and, as a consequence, those particular variables were excluded from the survey instrument.

Noel-Levitz (2006, 2007, 2008) studies established a strong basis for editing the various elements of the final instrument. The conclusion of the several studies in this area point directly to the desire by prospective college students for the opportunity to interact with higher education institutions through the institutional web site (Hartman, 1997; Poock & Lefond, 2001; Stoner, 2001; Clayton, 2003; Noel-Levitz, 2006, 2007, 2008). Specifically, college-bound high school juniors and seniors conducting college searches indicated they were seeking dialogue and direct communication with institutions through the Internet (Noel-Levitz, 2007a). A majority of higher education institutions recognize the value of a web site and have included it in their arsenal of marketing tools (Abrahamson, 2000). Colleges and universities indicate they are attempting to build relationships with the target audience of prospective student through the Internet and dialogic Web-based functions (Kirp, 2003; Noel-Levitz, 2008). Existing research also indicates that community colleges are less likely than their four-year counterparts to engage in any form of dialogue with prospective students (Peakow, 2006; Noel-Levitz, 2006, 2008).

Implementation of new Web-based technology has advanced dramatically since the original Taylor, Kent and White (2003) study, as well as the Mazzini (2004) and McAllister-Greve (2006) studies. As a direct result of the Noel-Levitz (2006, 2007a, 2007b, 2008) studies, twenty two additional variables were added to the dialogic loops section of the survey instrument, including: request for additional information, request for prospective student e-mail address, request for parent/guardian e-mail address, electronic admission form, electronic admission submission, personal applicant portal, admission confirmation, electronic financial aid form, electronic financial aid submission, electronic fee deposit, on-line course registration, request for academic counseling, tuition calculator, news forum, instant messaging, Blog, social networking tool(s), podcasting, flash/media player page(s), RSS/XML, request for contact from institution, and request for a campus visit.

One variable added to the study was informed by Mazzini's (2004) thesis - recording of the number of clicks required with a computer mouse to locate or open a specific set of information. The fewer number of mouse clicks required to locate or open a page the quicker a visitor is able to find the information or function they are seeking and the page utilization is therefore considered more efficient. When coding for all of the categories, it was possible to record the number of mouse clicks required to open the function or locate the information.

Categories of Metrics

Metrics were coded and quantified for each of the 218 sampling units (stratified and randomly selected megastate community colleges). The metrics were divided into six categories with related variables grouped into each category: Category 1: Ease of use, Category 2: Return visits, Category 3: Timeliness, Category 4: Dialogic loops, Category 5: Passive information, Category 6: Institutional characteristics (campus code, full-time students, and web site load time). The following definitions are for the listed metrics:

Category 1: Ease of Use. The conceptual definition for ease of use refers to those elements and functions on web sites which facilitate a visitor's ability to navigate around a site with a minimum of effort or difficulty. Functions that contribute to this category include links on the home page for: site map, search engine box, text/graphic switch, sub menus, image maps are understandable, prospective student, current student, alumni, businesses, continuing education/training, community, donor/fundraising, employees/faculty/staff, legislative/political, media/press, student services, admissions, financial aid, and bilingual/multilingual options.

Category 2: Return Visits. The conceptual definition for return visits includes those elements of a web site which encourage a visitor to return for additional information or other experiences. Elements which contribute to this classification include: return invitation, bookmark, invitation to subscribe for new information and/or updates, and events calendar.

Category 3: Timeliness. The conceptual definition of timeliness includes a variety of data presentations that are updated to maintain and reflect recent and future institutional information, activities and events. Elements which contribute to this classification are current editions of: calendar of events, news releases, E-newsletters, course catalogs, updates within thirty days, and notification of anticipated updates.

Category 4: Dialogic Loops. The conceptual definition of dialogic loops includes the elements of a web site which provide feedback or responses to the user. Elements which contribute to this classification include: prospective student e-mail address request, parent/guardian e-mail address request, admission electronic submission link, personal applicant portal, electronic acceptance confirmation, financial aid contact request, financial aid electronic submission, electronic deposit, on-line course registration, academic counseling request, tuition calculator, scheduled news forum, instant messaging, Blog(s), social networking tool(s), podcast(s), flash/media player, RSS/XML feed, chat room, question & answer forum, feedback request from institution, admissions: request for contact from institution, and campus visit request.

Category 5: Passive Information. The conceptual definition of passive information includes the elements of a web site which provide information without any promise or functionality to provide feedback to, or interaction with, the visitor. Elements which contribute to this classification include: philosophy/mission statement, admissions: downloadable form, financial aid downloadable form, events calendar, FAQ/About Us/Fact Sheet, E-newsletter, survey, guest book, electronic course catalog, virtual tour, tuition information, bulletin board, and housing application.

Category 6: Institutional Characteristics. The institutional attribute metrics (campus code, full-time students, and web site load time) are continuous, ratio, independent variables. The following are definitions for these matrices.

Campus code. The NCES (National Center for Educational Statistics, n. d.) database includes a numerical U.S. Census identifying code for each community college which defines the location of each institution and its proximity to a population center. The following are definitions for the various U. S. Census classifications:

2006 Urban-Centric Locale Codes

City, Large: Territory inside an urbanized area and inside a principal city with population of 250,000 or more.

City, Midsize: Territory inside an urbanized area and inside a principal city with population less than 250,000 and greater than or equal to 100,000.

City, Small: Territory inside an urbanized area and inside a principal city with population less than 100,000.

Suburb, Large: Territory outside a principal city and inside an urbanized area with population of 250,000 or more.

Suburb, Midsize: Territory outside a principal city and inside an urbanized area with population less than 250,000 and greater than or equal to 100,000.

Suburb, Small: Territory outside a principal city and inside an urbanized area with population less than 100,000.

Town, Fringe: Territory inside an urban cluster that is less than or equal to 10 miles from an urbanized area.

Town, Distant: Territory inside an urban cluster that is more than 10 miles and less than or equal to 35 miles from an urbanized area.

Town, Remote: Territory inside an urban cluster that is more than 35 miles from an urbanized area.

Rural, Fringe: Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster.

Rural, Distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster.

Rural, Remote: Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster (National Center for Educational Statistics, n. d., para. "Locale Codes," emphasis in original).

The individual designations are coded according to the geographic location of the community college campus in proximity to the local population area. The campus codes are delineated in the following manner: City, Large = 1; City, Midsize = 2; City, Small = 3; Suburb, Large = 4; Suburb, Midsize = 5; Suburb, Small = 6; Town, Fringe = 7; Town, Distant = 8; Town, Remote = 9; Rural, Fringe = 10; Rural, Distant = 11; and Rural, Remote = 12 (National Center for Educational Statistics, n. d., para. "Locale Codes").

The campus code designation for each community college in the sample was retrieved from the NCES (National Center for Educational Statistics, n. d.) database. This research sought to determine if a relationship existed between the location of a community college and the existence of dialogic public relations functions on the corresponding web site.

Full-time students. The student enrollment numbers for each community college in the sample was retrieved from the NCES (National Center for Educational Statistics, n. d.) database. This research sought to determine if a relationship existed between the level of student enrollment and the existence of dialogic public relations functions on the corresponding web site.

Web site load time. This measure classifies the speed (in seconds) that each community college's web site loads onto a standardized web browser. Download speed for each community college web site was determined using the web site analysis software on the Pingdom AB (2010) web site. This research sought to determine if a relationship existed between the speed of a web site's load time and the existence of dialogic public relations functions on the corresponding web site.

Data Collection

This study examined a stratified, randomly selected number of community college web sites for the possibility of relationships between the variables of dialogic public relations (dialogic loops, passive information, timeliness, return visits, and ease of use), and specific institutional attributes (campus code, full-time students, and web site load time).

The population of community colleges in the nine megastates was identified using the NCES web site database report generator. The initial list of community colleges obtained from the NCES site contained 603 institutions. Numerous citations on the initial list included administrative offices for a community college system, high school adult education centers, or single subject/discipline institutions (i.e.: agriculture, cooking, design, nursing, etc.). The number of community colleges in the total population was reduced to 506 after the removal of institutions which only served a single subject or discipline, along with high school adult education centers and community college system administrative offices. Satellite and/or branch community college sites were retained on the list because it was observed by the pilot test coders and the researcher during the pilot test that even when community colleges were part of a multi-location community college each physical location had a campus-specific web site. The observable content of the stratified, randomly selected community college web sites (n = 218) was reviewed and scored using the Code Book in Appendix A.

In this research, the five continuous, categorical, dependent variables are dialogic loops, passive information, timeliness, return visits, and ease of use. The three categorical independent variables are campus code, full-time students, and web site load time. The independent variables campus code, full-time students, and web site load time are continuous in nature.

Coders. This study used six persons (including the researcher) to independently code information from the community college web sites within a limited time period of two months (February & March) in 2010. Riffe, Lacy, and Fico (1998) support the use of multiple coders for content analysis methodology when time and financial considerations allow. The rationale for the number of coders was the availability of undergraduate students at the university where the researcher was employed in the spring of 2010 who expressed an interest in participation on a research project. All of the undergraduate students were public relations majors with no previous research or data collection experience.

Pilot Test. A pilot test was conducted in the spring of 2009 with three senior, undergraduate, public relations majors. The rationale for the number of coders was the availability of undergraduate volunteers at the university where the researcher was employed. The pilot test coders independently examined 27 non-megastate community college web sites as an extension of the coding training, to establish the coding methodology, and as a pilot test of the survey instrument. Non-megastate community colleges were used to avoid any potential contamination of the final research sample. Use of a pilot test provided an opportunity to identify any instrumentation issues, uncover coding issues, and make necessary adjustments prior to full implementation of the study. After gathering the data, the coders then entered the data into a spread sheet to facilitate data analysis.

Coding Procedure. Data collection of the variables began once a community college's web site was fully open and visible to the coder. Content was viewed and the coders recorded the dichotomous measures (Yes - function existed, No - function did not exist) along with the number of mouse clicks necessary to reach each individual item listed on the survey instrument. Pilot test coders utilized a paper-based coding sheet. Research project coders used a web-based survey instrument to record their observations (Yes, No, Clicks) directly into a single spreadsheet. As a result, the research project coders were able to split the view on their computer screen and have both the survey instrument and the community college's web site open and simultaneously in view. This was a great benefit as coding went much faster during the research project than during the pilot study and entering the data to a spreadsheet was accomplished as the coders answered the survey questions. The survey instrument codebook is located in Appendix A. Coder training procedures are located in Appendix B.

Various web sites currently exist on the Internet utilizing specialized software to determine the speed of a web site download and other diagnostic evaluations. The pilot test coders were instructed to utilize several Internet-based web analysis sites. A follow-up discussion between the researcher and the coders determined the software at the Pingdom AB (2010) web site provided the necessary download time calculation and was the most user friendly site. Download speed for each community college web site in the pilot test and the research project was obtained using the Pingdom AB (2010) web-based analysis software.

Enrollment figures for full-time students, along with the U.S. Census code for the geographic location of each campus relative to the nearest population center was obtained from the NCES (National Center for Educational Statistics, n. d.) web site.

Data Analysis. The data analysis in this study utilized dichotomous variables for each of the five dimensions on the survey instrument. Institutional attributes and the number of mouse clicks required for access to each of the dimensional variables were recorded as continuous numbers. The dichotomous variables were coded with a "1" if the function/link/variable was present, visible, or the variable definition was met and "0" if the function/link/variable was not present, not visible, or the definition was not met. The coding system and data collection generated raw scores for each institution's web site and each dimension within the following ranges:

Category 1: Ease of use, range of 0 to 20.

Category 2: Return visits, range of 0 to 4.

Category 3: Timeliness, range of 0 to 6.

Category 4: Dialogic loops, range of 0 to 23.

Category 5: Passive information, range of 0 to 13.

Category 6: Full-time students, range of 0 to infinity; Web site load time, range of 0 to infinity; Campus code, range of 1 to 12

During the codification process, the data was recorded through the web-based survey directly into a spreadsheet. After survey completion, the spreadsheet was downloaded and then processed through SPSS for statistical analysis. After the community college web site information was coded using the survey instrument, observations were made of the analysis, specifically descriptive statistics computing the range, mean, median, and standard deviation of the total scores. Observations can be made from the data about the community college web sites concerning: the availability of dialogic loops and/or passive information, ease of use, timeliness of information provided, encouragement of return visits to the site, and any relationships that may exist between the variables. A first step was to have the SPSS software calculate a Cronbach's alpha coefficient for each of the six dimensions, with the desired result being as high of an internal consistency as possible. A further analysis involved the comparison of how many community college web sites contained each of the variables within each of the individual dimensions, with mean, median, standard deviation, total number and percentage of sites reporting. The final analytic step was to compare the totals for the ranges in each dimension with that of each other dimension in a standard multiple regression analysis to determine the existence and possible strength of any relationships between any combinations of the dimensions. Of particular interest was the possibility of a relationship between any of the five dimensional categories and the institutional attributes. An additional area of consideration was the possibility of a relationship between the five dimensional categories.

Chapter 4

Results

Introduction

The data for this research was collected during the months of February and March in 2010. The coders reviewed 218 community college web sites; using a stratified random sample to achieve an appropriate proportional representation of institutions randomly selected from the nine megastates. Utilizing content analysis each web site was examined for 61 individual units (site map, search engine box, text/graphic switch, sub menus, image maps are understandable, prospective student, current student, alumni, businesses, continuing education/training, community, donor/fundraising, employees/faculty/staff, legislative/political, media/press, student services, admissions, financial aid, bilingual/multilingual options, return invitation, bookmark, invitation to subscribe for new information and/or updates, calendar of events, news releases, course catalog, updates within thirty days, notification of anticipated updates, prospective student e-mail address request, parent/guardian e-mail address request, admission electronic submission link, admissions: request for contact from institution, personal applicant portal, electronic acceptance confirmation, financial aid contact request, financial aid electronic submission, electronic deposit, on-line course registration, academic counseling request, tuition calculator, scheduled news forum, instant messaging, Blog(s), social networking tool(s), podcast(s), flash/media player, RSS/XML feed, chat room, question & answer forum, feedback request from institution, campus visit request, philosophy/mission statement, admissions:

downloadable form, financial aid downloadable form, FAQ/About Us/Fact Sheet, E-newsletter, survey, guest book, virtual tour, tuition information, bulletin board, housing application). Each unit was coded as “yes” the function was present, or “no” the function as not present. . The number of mouse clicks a user must make from the home page to open an individual unit was also recorded. The coders utilized the Pingdom AB (2010) web-based software program to measure the time required to open each web site’s home page.

The next section will report the findings for preliminary data analysis, the answers to each of the research questions, and conclude with a summary of the findings.

Preliminary Data Analysis

Preliminary data analysis was conducted to address any missing data and detect any potential outliers. Two of the surveyed web sites were designed in such a manner that they blocked any attempts to run the diagnostic program to determine their loading time. In addition, an outlier was discovered for one item and removed. Consequently all of the web site load time output reports indicate that 215 units were included in any analysis of the web site load time variable, out of the 218 units in the full sample.

Outlier Detection. During analysis one outlier was obvious on the Scatterplot where it displayed a standardized residual greater than ± 4, which Hair, Babin, Anderson, & Tatham (2006) state “raise[s] a red flag and suggest[s] a potentially unacceptable degree of error” (p. 796). “Standardized residuals are simply the raw residuals divided by the standard error of the residual” (Hair, Black, Babin, Anderson, & Tatham, 2006, p. 796)).

The MANOVA analysis indicated a Mahalanobis distance value of 85.89, where a critical value for four independent variables is anything larger than 18.47 (Pallant, 2006). The Data Editor was used to uncover the single outlier with a web site load time of 29.9 seconds. Review of the other web site load time data entries showed none outside of the $\pm$4.0 standard residual threshold suggested by Hair, Babin, Anderson, & Tatham (2006). Removing the one web site load time outlier caused the Mahalanobis distance value to reduce from 85.89 to 29.35 leading to the conclusion that the web site load time observation was "not unique on any single variable but instead [was] unique in combination" (Hair, Black, Babin, Anderson, & Tatham, 2006, p. 77). The MANOVA was recalculated after removing the outlier. The recalculated Mahalanobis distance value was still above the desired maximum critical value; however, it was significantly reduced. Cooks Distance value was used to check for any undue influence on the model as a whole. The Cooks Distance value was .067, where a value below 1.0 indicates that no undue influence is being exerted on the model by any outliers (Tabachnick & Fidell, 2007, p. 75). The decision was made to proceed with all analysis using the amended database.

Characteristics of the Sample

The population for this research was drawn from the 2007 listing of community colleges in the National Center for Educational Statistics (n. d.) database, which was the most current listing at the time of the research. The distribution of community colleges in the stratified random sample matched the estimated distribution of institutions in the mega states as exhibited in Table 1. Community college central offices, high school-based locations, and single discipline institutions were eliminated from the list of mega state community colleges before selection for the study occurred.

Descriptive Data. The community college locations were coded by the U.S. Census Bureau according to the geographic location of the community college campus and the campus proximity to the local population area, as follows: City, Large = 1; City, Midsize = 2; City, Small = 3; Suburb, Large = 4; Suburb, Midsize = 5; Suburb, Small = 6; Town, Fringe = 7; Town, Distant = 8; Town, Remote = 9; Rural, Fringe = 10; Rural, Distant = 11; and Rural, Remote = 12 (National Center for Educational Statistics, n. d., para. “Locale Codes”). Table 3 shows the distribution of surveyed community colleges according to the U.S. Census geographic designations of city, suburb, town, or rural. Table 4 shows the distribution of the institutions according to the U.S. Census population center designations of large (250,000+), midsize (1,000-250,000), or small (under 100,000), fringe ($\leq$ 10 miles), distant (> 10 to $\leq$ 35 miles), remote ($\geq$ 35 miles).

Web site load time was measured by the speed in seconds that each community college’s web site loaded onto a standardized web browser. Download speed for each community college web site in the research project was obtained using the Pingdom AB (2010) web site analysis software.

The number of full-time students was determined by the full-time student enrollment counts on the NCES (National Center for Educational Statistics, n. d.) web site database. The number of students in the surveyed community colleges was divided into the following categories for further analysis: 1 = 0-999; 2 = 1,000-4,999; 3 = 5,000-9,999; 4 = 10,000-19,999; 5 = 20,000-29,999; 6 = 30,000-39,999; 7 = 40,000+.

Summary of the Demographics. Table 2 shows the distribution of community colleges by campus code within the stratified, random sample. Table 3 exhibits the distribution of surveyed community colleges by geographic location and Table 4 reports the distribution of community colleges by proximity to population centers.

The average number of units (function/link) utilized on community college web sites for each of the dependent variable categories, along with standard deviations and a total count of the available units was: dialogic loops (n = 23, *M* = 8.60, *SD* = 2.98), ease of use (n = 20, *M* = 12.01, *SD* = 2.886), passive information (n = 13, *M* = 6.59, *SD* = 1.672), timeliness (n = 6, *M* = 3.24, *SD* = 1.195), and return visits (n = 4, *M* = 1.10, *SD* = .734).

Table 2

Distribution of Surveyed Community Colleges by Campus Code

	f	*P*
City, Large	34	15.6
City, Midsize	24	11.0
City, Small	19	8.7
Suburb, Large	40	18.3
Suburb, Midsize	7	3.2
Suburb, Small	6	2.8
Town, Fringe	6	2.8
Town, Distant	22	10.1
Town, Remote	6	2.8
Rural, Fringe	42	19.3
Rural, Distant	9	4.1
Rural, Remote	3	1.4
N	218	100.0

Table 3 exhibits the descriptive statistics for geographic location of the community colleges in the survey. Given the proximity of population areas to the respective geographic designations the distribution of institutions among the U.S. Census survey designated locations was as anticipated: city (n = 77, 35.3%), suburb (n = 53, 24.3%), town (n = 34, 15.7%) and rural (n = 54, 24.8%).

Table 3

Distribution of Surveyed Community Colleges by Geographic Location

Location	*f*	*P*
City	77	35.3
Suburb	53	24.3
Town	34	15.7
Rural	54	24.8
N	218	100.0

Table 4 exhibits the distribution of community colleges by proximity to population areas. Given the anticipation that larger populations would necessitate educational services the distribution of institutions among the U.S. Census survey designated population categories was as anticipated: large (n = 122, 56.0%), mid-size (n = 62, 28.3%), and small (n = 34, 14.7%).

Table 4

Distribution of Surveyed Community Colleges by Population Area Proximity

Population Area	*f*	*P*
Large	122	56.0
Mid-Size	62	28.3
Small	34	14.7
N	218	100.0

Table 5 exhibits the descriptive statistics for web site load time. The average time required for an institutional web site to load was 4.47 seconds (*SD* = 2.16). Web site load times for the surveyed institutional sites ranged between .09 and 13.6 seconds. Two institutions' web sites could not be evaluated with the selected software and one outlier of 29.9 seconds was removed from the data before analysis.

Table 5 also exhibits the descriptive statistics for full-time students. The average number of full-time community college students in the sample was 9,250 (*SD* = 9,256). The surveyed community college enrollments ranged between 235 and 57,222 full-time students.

In addition, Table 5 exhibits skewness and kurtosis for web site load time and full-time students. With reasonably large samples (over 200+ cases) the possibility of kurtosis resulting in an underestimate of the variance is substantially reduced and skewness will "not make a substantive difference in the analysis" (Tabachnick & Fidell, 2007, 80). The skewness indicated for web site load time (skewness = 1.58) and full-time students (skewness = 1.71) are both in the directions that would be expected, given the ubiquity of community college web sites and the location of a majority of the institutions near large population areas.

Table 5

Descriptive Statistics for Web Site Load Time and Full-Time Students

						Skewness		Kurtosis	
	N	Min.	Max.	*M*	*SD*	Statistic	*SE*	Statistic	*SE*
Web site load time	215	.9	13.6	4.365	2.1646	1.578	.166	3.092	.330
Full-time students	218	235	57222	9249.96	9256.009	1.713	.165	3.779	.328

Table 6 exhibits the descriptive statistics for full-time students by enrollment categories. The median for full-time student enrollment (*M* = 3.02, *SD* = 1.32) is category 3 and the Mode is category 2, where category 2 = 1,000-4,999 and category 3 = 5,000-9,999. A majority of community colleges (n = 174, 77.7%) enroll between 1,000 and 19,999 students.

Table 6

Distribution of Community Colleges by Full-Time Student Categories

Students by Category	*f*	*P*
0-999	15	6.9
1,000-4,999	86	39.4
5,000-9,999	38	15.4
10,000-19,999	50	22.9
20,000-29,999	19	8.7
30,000-39,999	8	3.7
40,000+	2	.9
N	218	100.0

Reliability

Cronbach's alpha, or coefficient alpha, is the most often utilized measure of reliability for determining the internal consistency of data. The statistic gives an indication of the average correlations between the elements making up a scale and "provides the lowest estimate of reliability that can be expected for an instrument" (O'Rourke, Hatcher, & Stepanski, 2005, p. 159). As a measure, Cronbach's alpha indicates a positive relationship to the items on a range of 0 to 1, with higher values suggesting greater reliability. The lower limit of acceptability for Cronbach's alpha as an indicator for reliability is usually placed at .70, and adjusted to .60 for experimental studies (Hair, Black, Babin, Anderson, & Tatham, 2006; DeVellis, 2003; Robinson, Shaver, Wrightsman, 1991).

The Cronbach's alpha coefficient ($\alpha = .720$) for the five scales dialogic loops, ease of use, timeliness, return visits, and passive information was above the acceptable criteria.

According to Hair, Black, Babin, Anderson, & Tatham (2006) there is a direct, positive relationship between the number of items utilized in a scale and the reliability of the scale, especially as the scale rises above a minimum of 10 items. Conversely, Cronbach's alpha values are very sensitive to the number of items in a scale, especially when there are less than ten total items (Pallant, 2006). Briggs & Cheek (1986) suggest using the mean inter-item correlation score for short scales and recommend an optimal range of .2 to .4. Two of the scales contained less than ten items return visits ($n = 4$) and timeliness ($n = 6$). Neither of the mean inter-item correlation scores for the short scales return visits ($\alpha = .154$), or timeliness (α = .096), was within the acceptable range recommended by Briggs & Cheek (1986).

Statistical Data Analysis

The following sections contain the results of the research effort, based on the research questions.

Research Question 1. This question sought to determine the extent to which dialogic loops are available on community college web sites. Each web site was examined for the presence of 23 dialogic loops (functions or links). Table 7 shows that the maximum number of dialogic loops present on two community college web sites was 16. The minimum number of dialogic loops present on two community college web sites was 1. Figure 3 exhibits the descriptive statistics for the dialogic loops found on the surveyed community college web sites (N = 218, M = 8.60, SD = 2.98).

Each of the 23 dialogic loop units appeared on one or more of the community college web sites and 98.6% (n = 215) of the community colleges in the sample incorporated at least one dialogic loop on their web site. In addition, 89.0% (n = 194) of the community colleges surveyed utilized six or more dialogic loops on their web site. Nine dialogic loops was the single largest grouping for institutions with 21.0% (n = 47), while only 1.4% (n = 3) had no dialogic loops.

Table 7

Distribution of Community Colleges by a Count of Dialogic Loops on their Respective Web Site

Dialogic loops	*f*	*P*
0	3	1.4
1	2	0.9
2	0	0.0
3	5	2.3
4	5	2.3
5	9	4.1
6	25	11.5
7	26	11.9
8	26	11.9
9	47	21.0
10	20	6.0
11	17	9.2
12	11	7.8
13	8	3.7
14	5	2.3

Table 7 (continued)

Dialogic loops	*f*	*P*
15	7	3.2
16	2	0.9
N	218	100.0

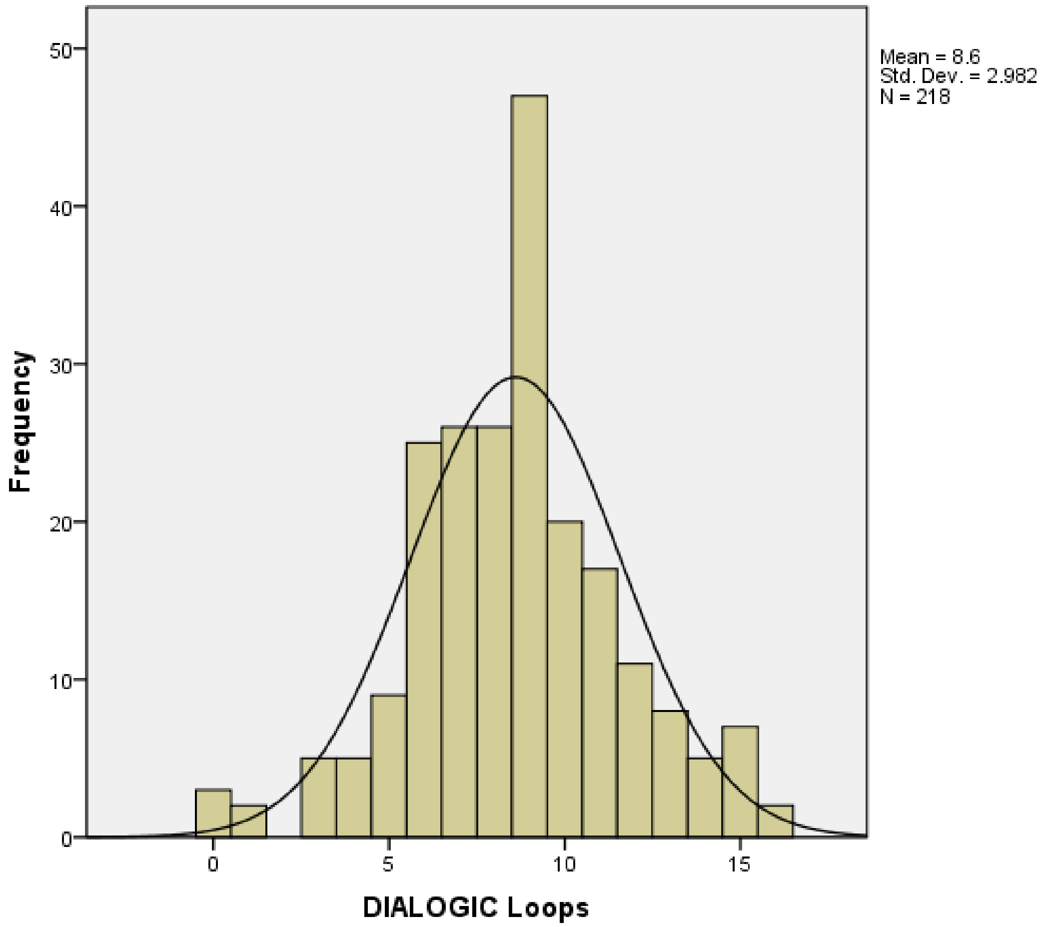

Figure 3. Frequency of Dialogic Loops on Community College Web Sites

Table 8 exhibits the number and percentage of the 23 dialogic loops present on each community college web site. The single most utilized dialogic loop by community colleges was Course Registration (n = 196, 89.9%), which allows an individual to register for classes electronically. Dialogic loops closely following the availability of Course Registration were Admissions: Electronic Submission (n = 182, 83.5%), Financial Aid: E-mail contact information (n = 181, 83%), Academic Counseling Request (n = 178, 81.7%), and Financial Aid: Electronic Submission (n = 171, 81.7%). After Campus Visit Request (n = 110, 505%) availability of dialogic loops on institutional web sites dropped to 50% or below for the remaining functions.

Table 8 also displays the average number, mean and standard deviation for the number of mouse clicks required to find and open the 23 dialogic loops present on each community college web site. A larger number of mouse clicks required to open a dialogic loop (more than one) indicate the function or link was located beyond the web site's home page, two or more layers inside a website. The minimum number of mouse clicks needed to open any of the dialogic loops was one and a maximum of seven mouse clicks was required to open two different dialogic loops on separate web sites - Admissions: Electronic submission (*M* = 2.69, *SD* = .372) and Tuition Calculator (*M* = 2.28, *SD* = .319). Less than half of the community colleges web sites contained a link to a social networking site (n = 98, *M* = 1.23, *SD* = .499). It is notable that the social networking links were usually very close to the institutions' home page, as expressed by the low number of average mouse clicks (*M* = 1.23) and maximum number of mouse clicks (n = 3). Only two dialogic loops had lower average mouse clicks than the social network dialogic loops, Flash Media Player (n = 59, M = 1.12, SD = .445) and RSS/XML (n = 36, M = 1.14, SD = .372), and these two functions were also found on significantly fewer web sites.

Table 8

Institutional Dialogic Loops Utilization and Mouse Click Statistics

	Institutions		Mouse Clicks to Function			
	f	*P*	*M*	*SD*	*Max.*	*Min.*
Course Registration	196	89.9	2.15	.302	5	1
Admissions: Electronic submission	182	83.5	2.69	.372	7	1
Financial Aid: E-mail contact information	181	83.0	2.27	.376	6	1
Academic Counseling Request	178	81.7	2.07	.388	4	1
Financial Aid: Electronic submission	171	78.4	2.73	.412	6	1
Admissions: E-mail contact information	158	72.5	2.01	.448	6	1
Campus Visit Request	110	50.5	2.04	.501	4	1
Prospective Student Application Portal	108	49.5	2.11	.501	6	1
Social Network Links	98	45.0	1.23	.499	3	1
Admissions Confirmation: Electronic	94	43.1	2.33	.496	5	1
Electronic Fee Deposit	82	37.6	2.39	.486	5	1
Flash Media Player	59	27.1	1.12	.445	3	1
Feedback/Comment	38	17.4	1.63	.380	4	1
RSS/XML	36	16.5	1.14	.372	3	1
Tuition Calculator	25	11.5	2.28	.319	7	1
Q & A Forum	21	9.6	2.19	.296	4	1
Blog	17	7.8	1.47	.269	3	1

Table 8 (continued)

	f	*P*	*M*	*SD*	*Max.*	*Min.*
Podcasts	11	5.0	1.73	.219	3	1
Chat Room	4	1.8	2.00	.135	3	1
Instant Messaging	3	1.4	1.67	.117	3	1

Note. The units request for student e-mail and request for parent e-mail were removed prior to analysis.

Research Question 2. This question queries whether a statistically significant relationship exists between the extent to which community colleges utilize dialogic loops and the institutional attributes of campus code, full-time students, and web site load time.

Table 9 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the possible relationships between dialogic loops on a community college web site and the institutional attributes of campus code, full-time students, and web site load time. Preliminary analyses were performed to ensure no violation of the assumptions for normality, linearity, and homoscedasticity. There is a small correlation between the variable of dialogic loops and the institutional attribute of full-time students, r = .137, n = 218, p = .05, indicating larger student enrollments positively correlate to increased numbers of dialogic loops on a community college's web site. Cohen's (1988) guidelines suggest that a small correlation exists if the size of the value of the correlations coefficient is r = .10 to .29. Calculating the coefficient of determination indicates that 1.9% of the variance is shared by the two variables.

Table 9

Pearson Product-Moment Correlations Between Dialogic Loops and Institutional Attributes

		Dialogic loops	Campus code	Full-time students	Web site load time
Dialogic loops	Pearson r	1	-.075	.137*	-.008
	p (2-tailed)		.267	.043	.909
	N	218	218	218	215
Campus code	Pearson r	-.075	1	-.510**	-.001
	p (2-tailed)	.267		.000	.993
	N	218	218	218	215
Full-time students	Pearson r	.137*	-.510**	1	.118
	p (2-tailed)	.043	.000		.085
	N	218	218	218	215
Web site load time	Pearson r	-.008	-.001	.118	1
	p (2-tailed)	.909	.993	.085	
	N	215	215	215	215

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

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

Table 10 exhibits the results of the dialogic loops multicollinearity tests for Tolerance and VIF. Very small Tolerance scores (less then .10) indicate multiple correlations with another variable. VIF values larger than 10 indicate the existence of multiple correlations with other variables. The multicollinearity assumptions are not violated by any of the scores for any of the variables.

Table 10

Dialogic Loops Coefficients – Collinearity Statistics

Model		Tolerance	VIF
1	(Constant)		
	Campus code	.750	1.332
	Full-time student	.745	1.343
	Web site load time	.977	1.024

In Figure 4 the Scatterplot for the regression standardized residual on the dependent variable dialogic loops exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated in the center along the 0 axis. There is no clear or systematic pattern displayed in the Scatterplot which would indicate some level of non-normalcy of the data.

In Figure 5 the data points for dialogic loops on the normal P-P Plot of regression standardized residual follow a nearly straight diagonal line from the bottom left to the top right of the scale. This display suggests no major deviations from normality.

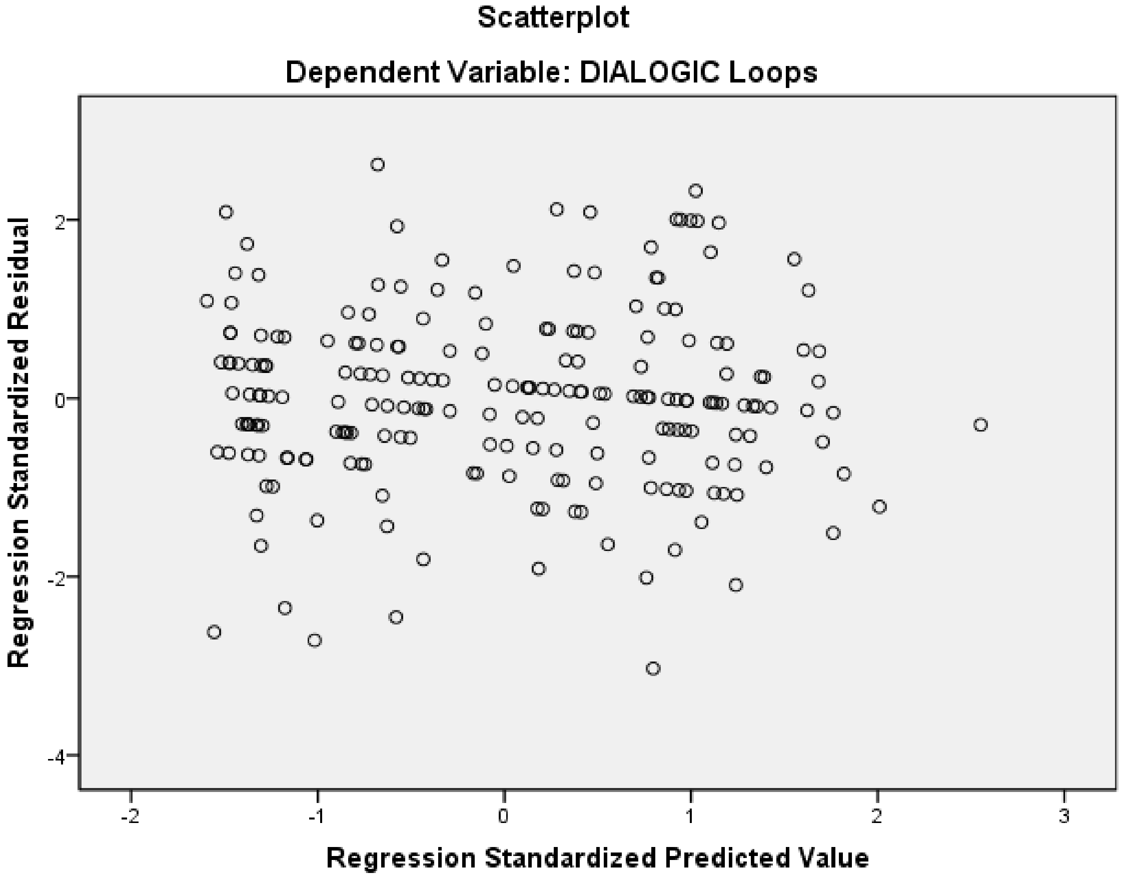

Figure 4. Scatterplot of Dialogic Loops

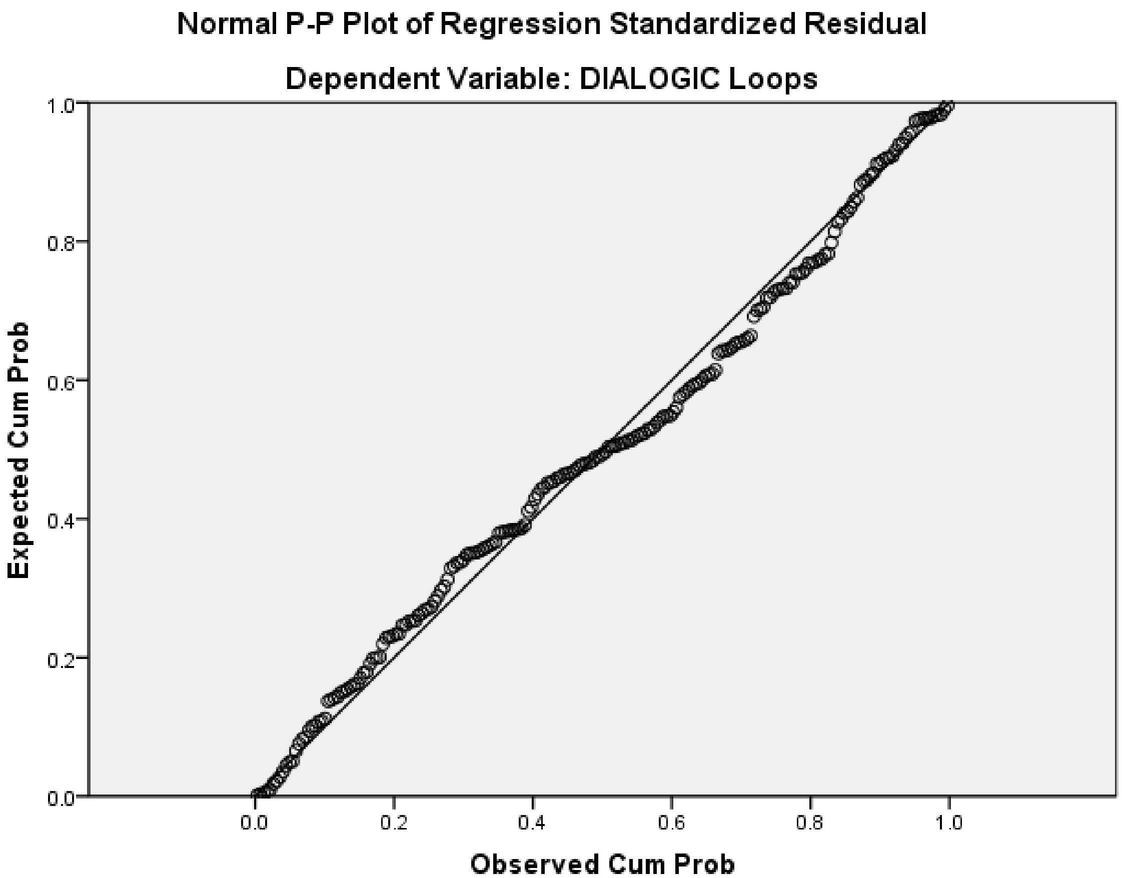

Figure 5. Dialogic Loops Normal P-P Plot of Regression Standardized Residual

In Table 11 the R^2 score is .030 which indicates how much of the variance in the dependent variable is explained by the model. When the R^2 value is converted to a percentage the result is 3.0%; denoting that a small part of the dialogic loops variable is explained by the independent variables campus code, full-time students, and web site load time.

Table 11

Dialogic Loops Model Summary

Model	*R*	R^2	Adjusted R^2	*SE*
1	.172	.030	.011	2.967

Table 12 exhibits the ANOVA for this regression analysis showing a level of statistical significance was not reached.

Table 12

Dialogic Loops ANOVA with the Institutional Attributes

Model		*SS*	df	Mean Square	*F*	*p*
1	Regression	56.322	4	14.080	1.600	.176
	Residual	1848.162	210	8.801		
	Total	1904.484	214			

Table 13 displays the Coefficients for the dependent variable dialogic loops. All of the Beta values are very small which indicates that none of the independent variables make a strong or unique contribution toward explaining the dependent variable. The *p* values are all greater than .05 which supports the finding that they do not make a significant contribution to the prediction of the dependent variable.

Table 13

Dialogic Loop Coefficients with the Institutional Attributes

Model		β	*p*
1	(Constant)		.000
	Campus code	-.050	.525
	Full-time student	.045	.567
	Web site load time	.011	.868

Research Question 3. This question asks whether a statistically significant relationship exists between the extent to which community colleges utilize any of the non-dialogic variable categories and the community college attributes of campus, code, full-time students, or web site load time.

In Figures 6, 7, and 8 each of the Scatterplots for the analysis of passive information categorical variable and institutional attributes (campus code, full-time students, and web site load time) exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated along the center axis. There are no clear or systematic patterns displayed in any of the Scatterplots which would indicate some level of non-normalcy of the data.

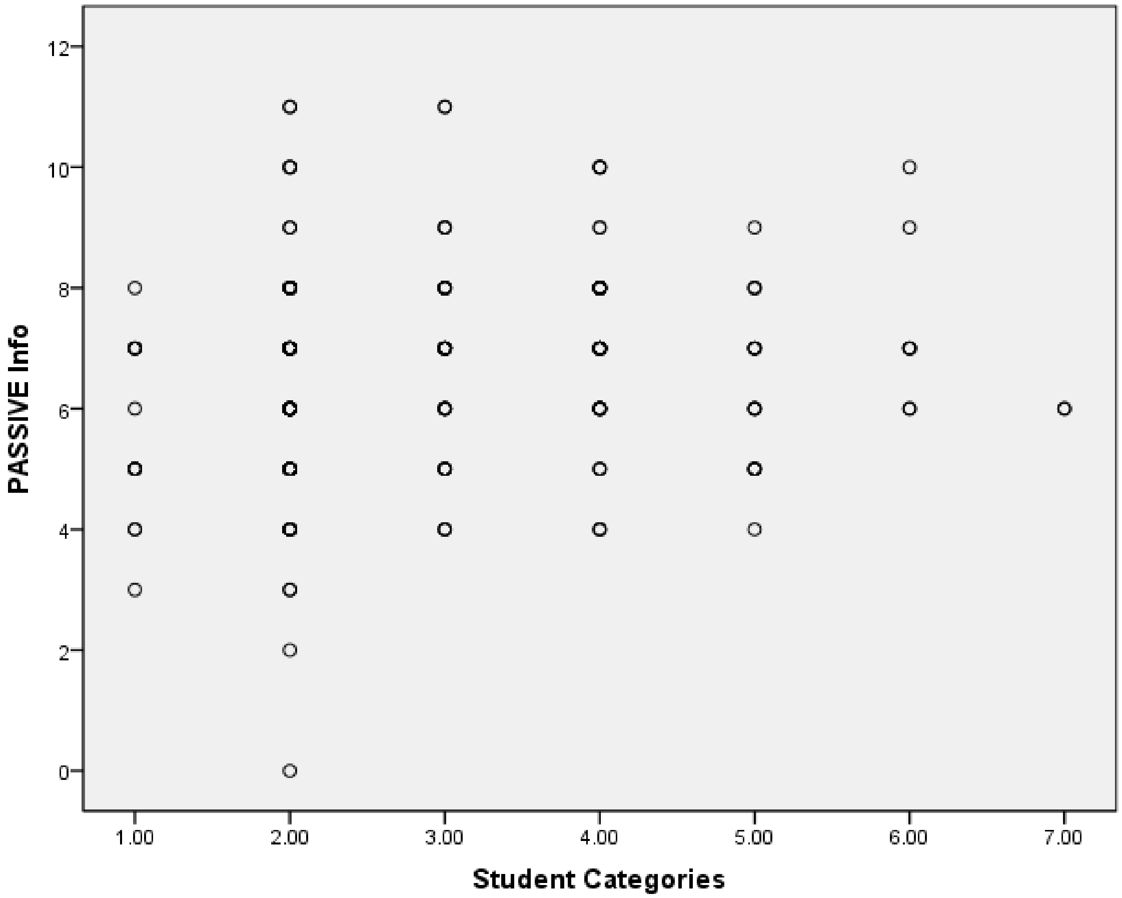

Figure 6. Scatterplot of Passive Information and Full-Time Students

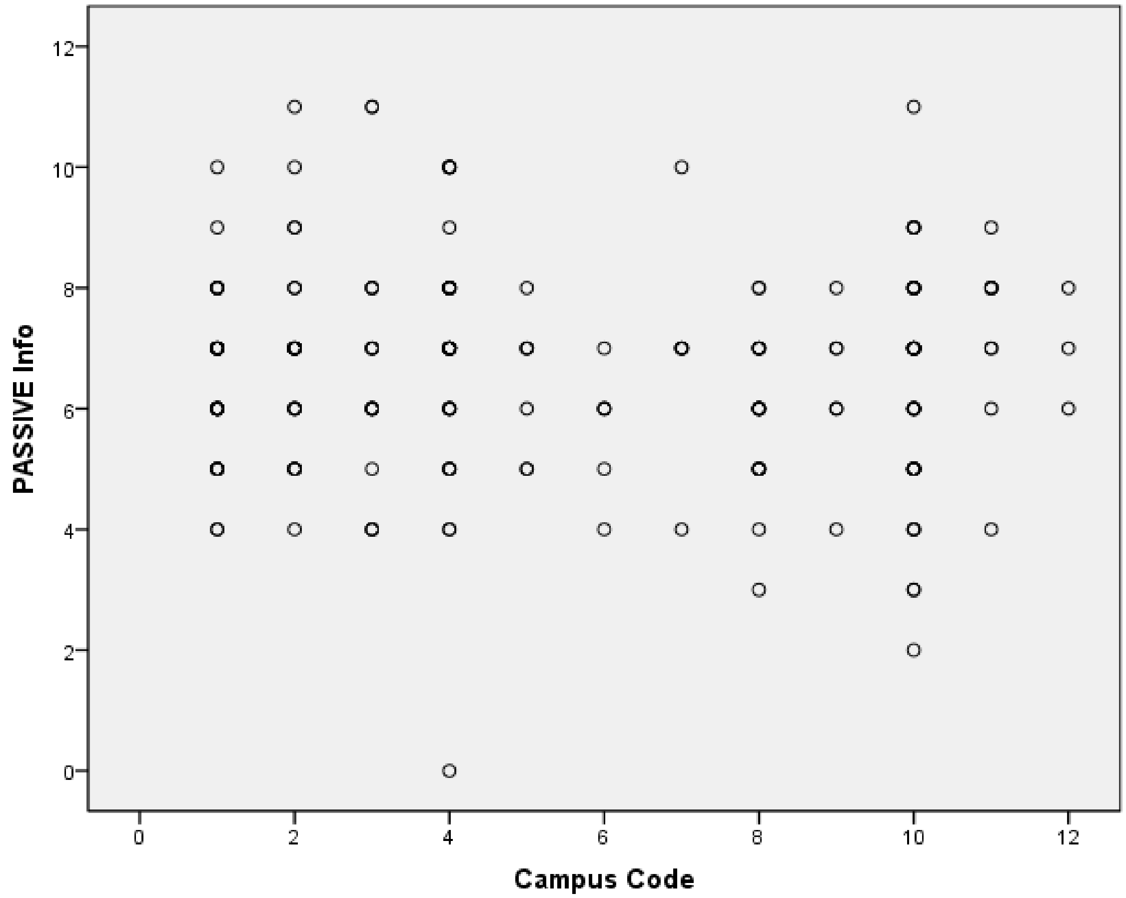

Figure 7. Scatterplot of Passive Information and Campus Code

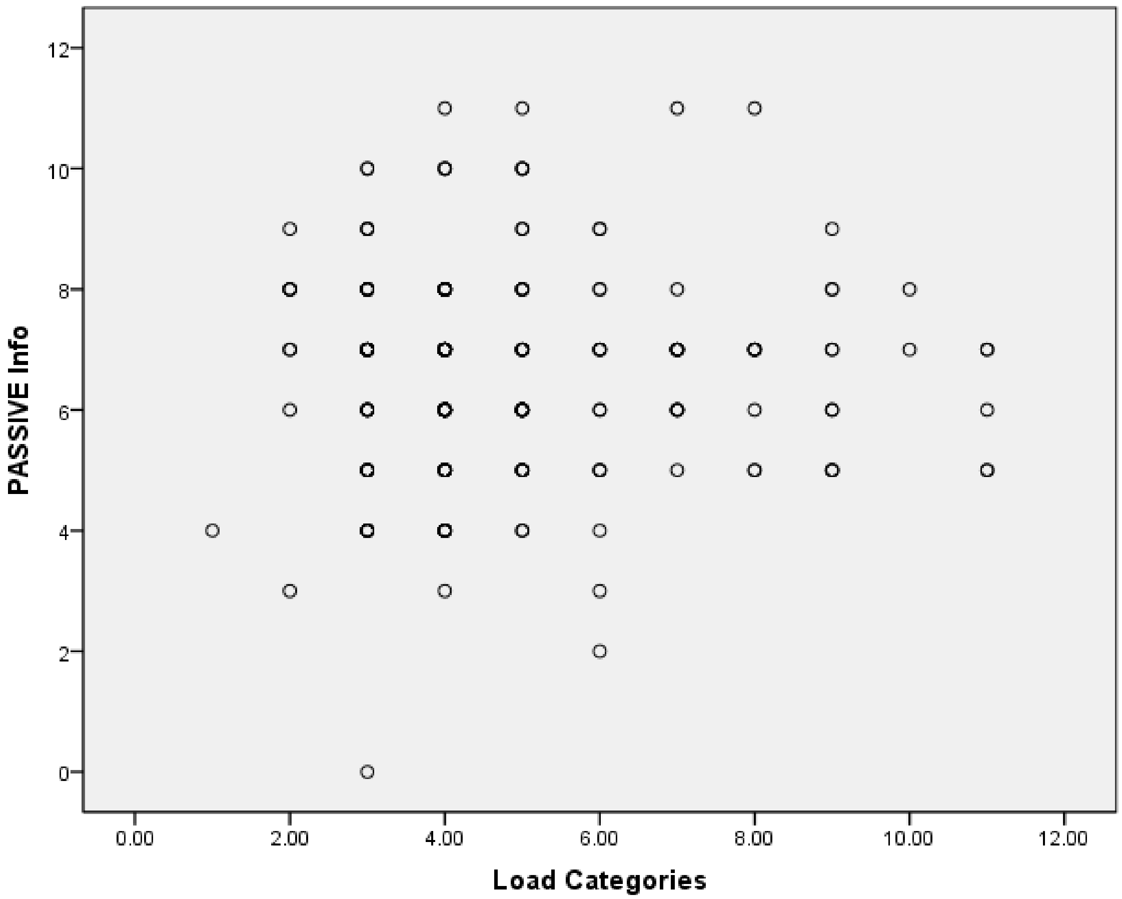

Figure 8. Scatterplot of Passive Information and Web Site Load Time

Table 14 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the continuous non-dialogic variable category passive information and the institutional attribute categories of campus code, full-time students, and web site load time. Preliminary analyses were performed to ensure no violation of the assumptions for normality, linearity, and homoscedasticity. One small relationship was found between the passive information category and the institutional attribute of full-time students. The Pearson correlations coefficient calculated for the relationship between the categories of passive information and full-time students found $r = .152$, n = 218, $p < .05$. Cohen's (1988) guidelines suggest that a small correlation exists if the size of the value of the correlations coefficient is r = .10 to .29. Calculating the coefficient of determination indicates that 2.3% of the variance is shared by the two variables.

In Figures 9, 10, and 11 the Scatterplots for the analysis of the ease of use categorical variable and the institutional attributes (campus code, full-time students, and web site load time) exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated along the center axis. There are no clear or systematic patterns displayed in any of the Scatterplots which would indicate some level of non-normalcy of the data.

Table 14

Pearson Product-Moment Correlations Between Passive Information and Institutional Attributes

		Passive information	Campus code	Full-time students	Web site load time
Passive information	Pearson r	1	-.069	.152*	.028
	p (2-tailed)		.313	.024	.685
	N	218	218	218	215
Campus code	Pearson r	-.069	1	-.510**	.001
	p (2-tailed)	.313		.000	.993
	N	218	218	218	215
Full-time students	Pearson r	.152*	-.510**	1	.119
	p (2-tailed)	.024	.000		.082
	N	218	218	218	215
Web site load time	Pearson r	.028	.001	.119	1
	p (2-tailed)	.685	.993	.082	
	N	215	215	215	215

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

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

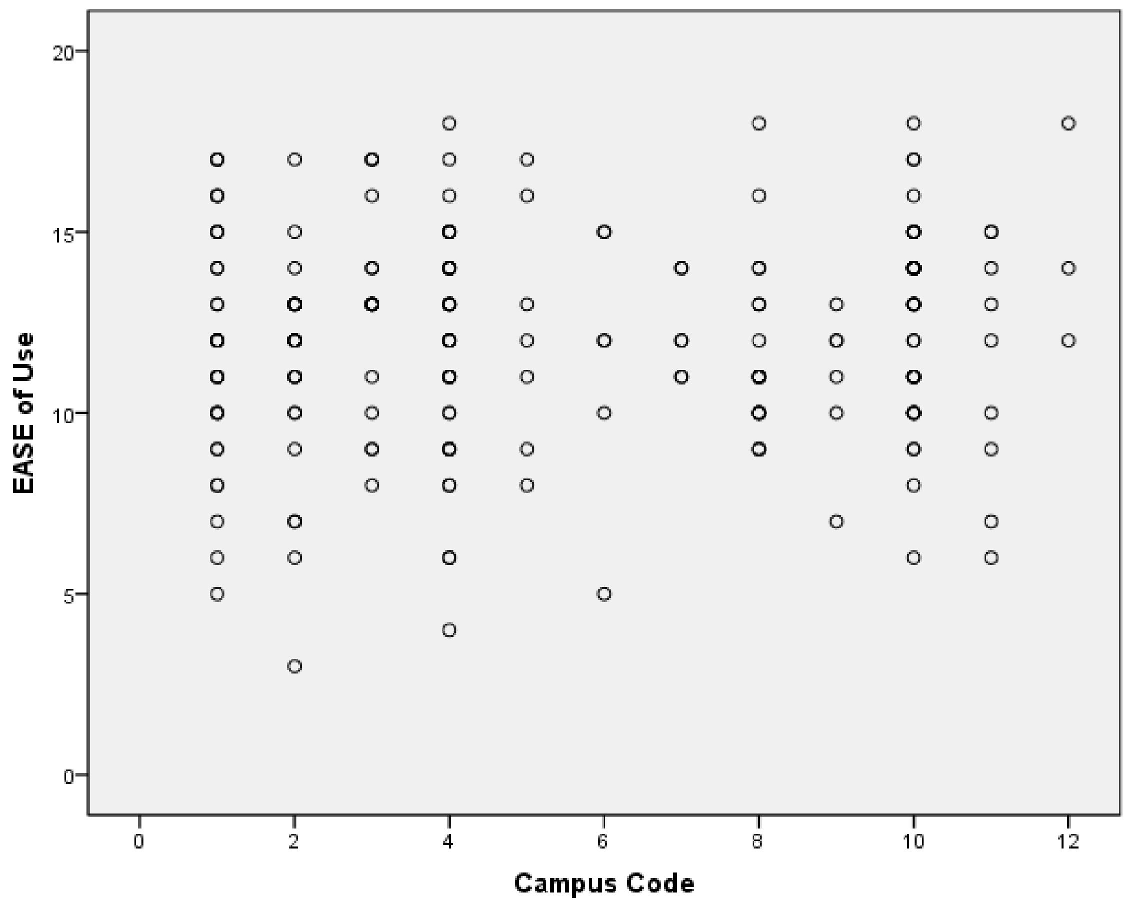

Figure 9. Scatterplot of Ease of Use and Campus Code

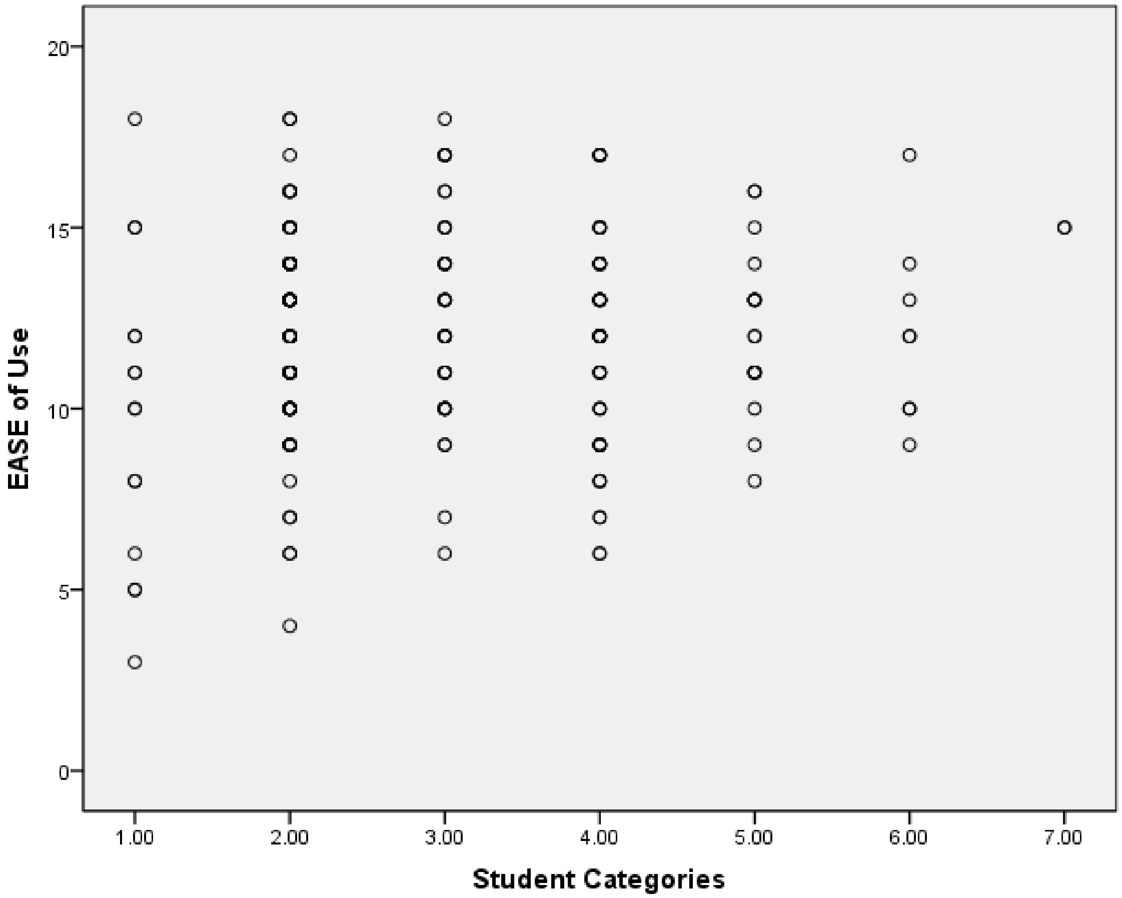

Figure 10. Scatterplot of Ease of Use and Full-time Students

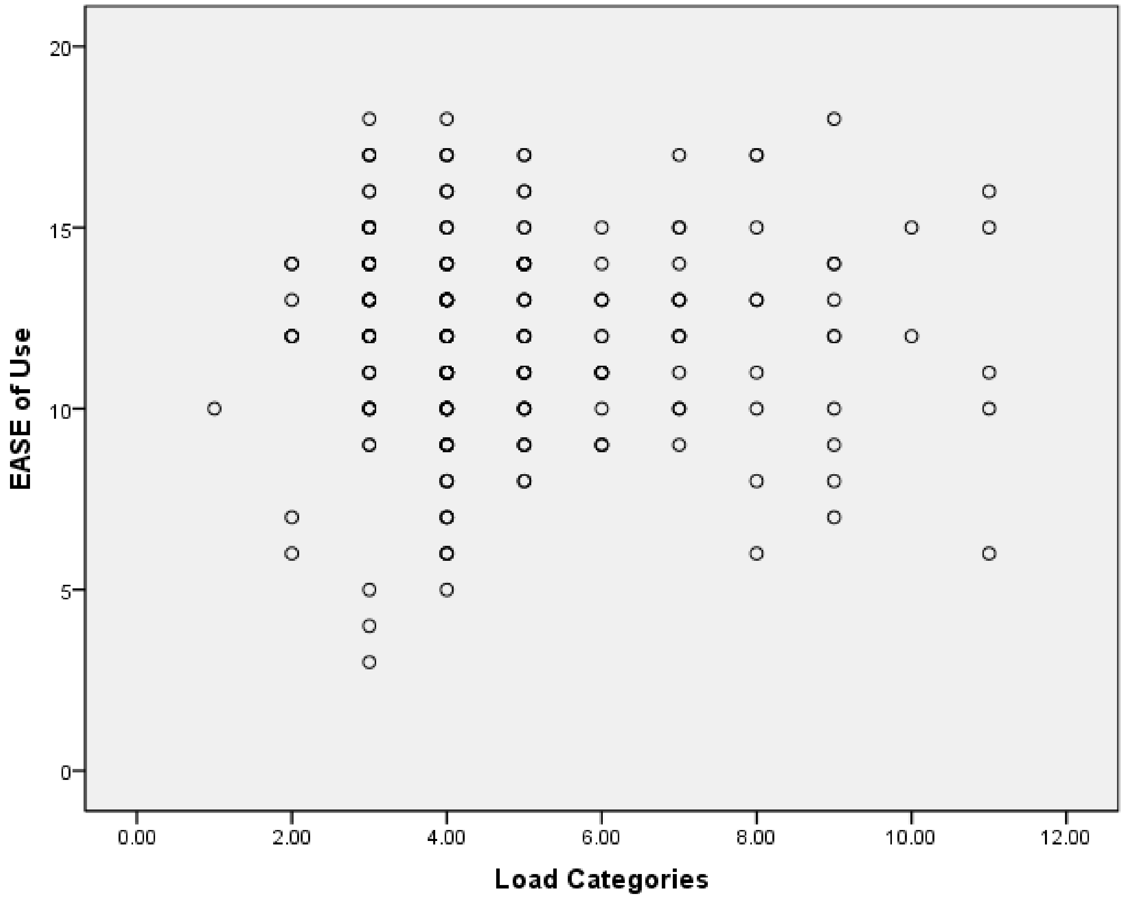

Figure 11. Scatterplot of Ease of Use and Web Site Load Time

Table 15 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the continuous non-dialogic variable category ease of use and the institutional attributes of campus code, full-time students, and web site load time. Preliminary analyses were performed to ensure no violation of the assumptions for normality, linearity, and homoscedasticity. One small relationship was found between the ease of use category and the institutional attribute of full-time students. The Pearson correlations coefficient calculated for the relationship between the categories ease of use and full-time students found $r = .108$, n = 218, $p < .05$. Cohen's (1988) guidelines suggest that a small correlation exists if the size of the value of the correlations coefficient is r = .10 to .29. Calculating the coefficient of determination indicates that 2.3% of the variance is shared by the two variables.

Table 15

Pearson Product-Moment Correlations Between Ease of Use and Institutional Attributes

		Ease of Use	Campus code	Full-time students	Web site load time
Ease of use	Pearson r	1	.050	.108	.010
	p (2-tailed)		.464	.112	.884
	N	218	218	218	215
Campus code	Pearson r	.050	1	-.510*	.001
	p (2-tailed)	.464		.000	.993
	N	218	218	218	215
Full-time students	Pearson r	.108	-.510*	1	.119
	p (2-tailed)	.112	.000		.082
	N	218	218	218	215
Web site load time	Pearson r	.010	.001	.119	1
	p (2-tailed)	.884	.993	.082	
	N	215	215	215	215

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

In Figures 12, 13, and 14 each of the Scatterplots for the analysis of the return visits categorical variable and institutional attributes (full-time students, campus code, and web site load time) exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated along the center axis. There are no clear or systematic patterns displayed in any of the Scatterplots which would indicate some level of non-normalcy of the data.

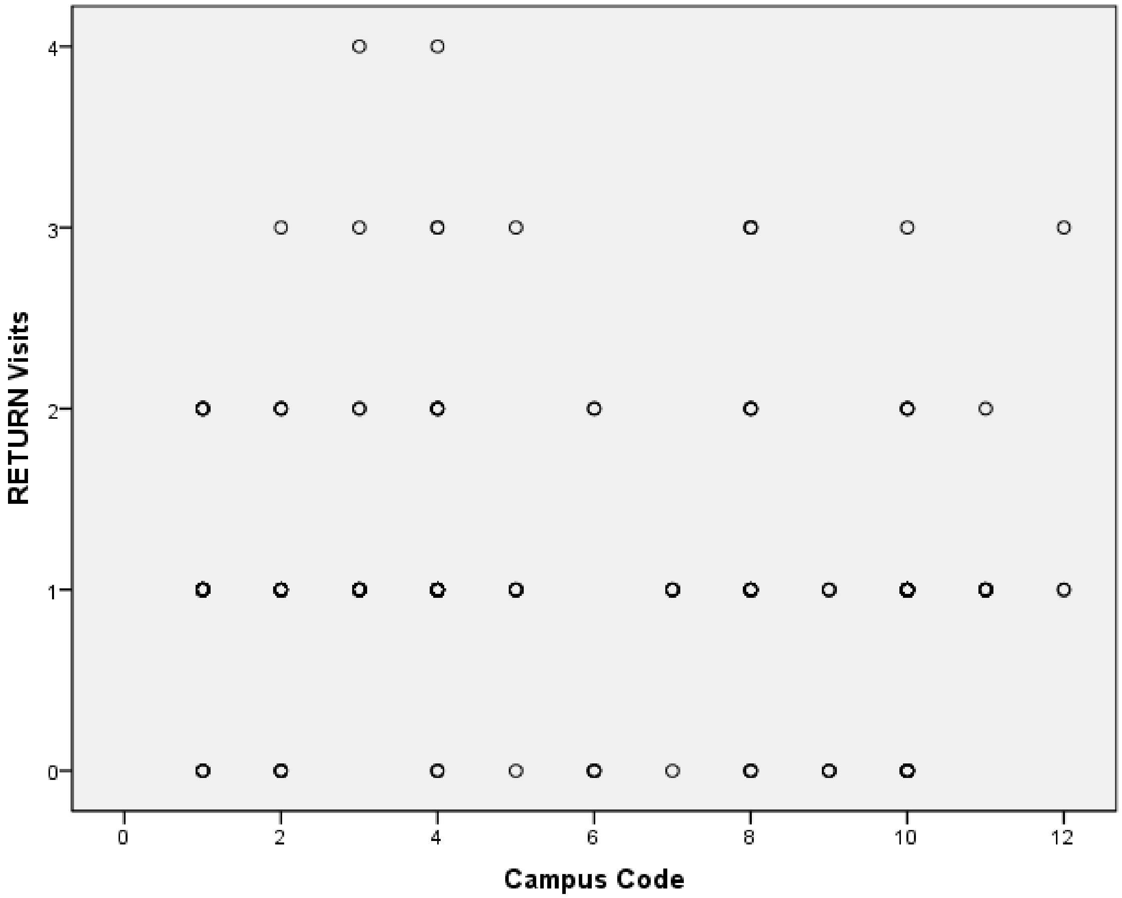

Figure 12. Scatterplot of Return Visits and Campus Code

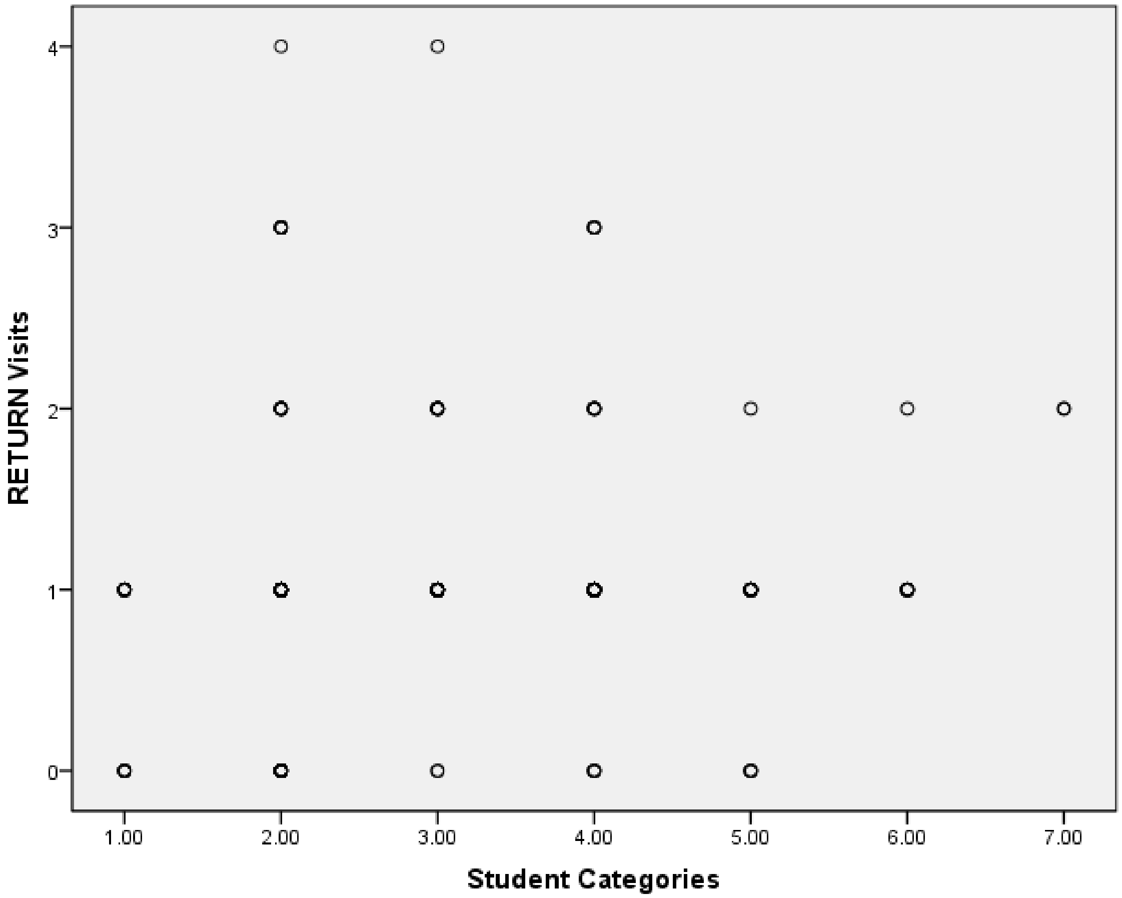

Figure 13. Scatterplot of Return Visits and Full-Time Students

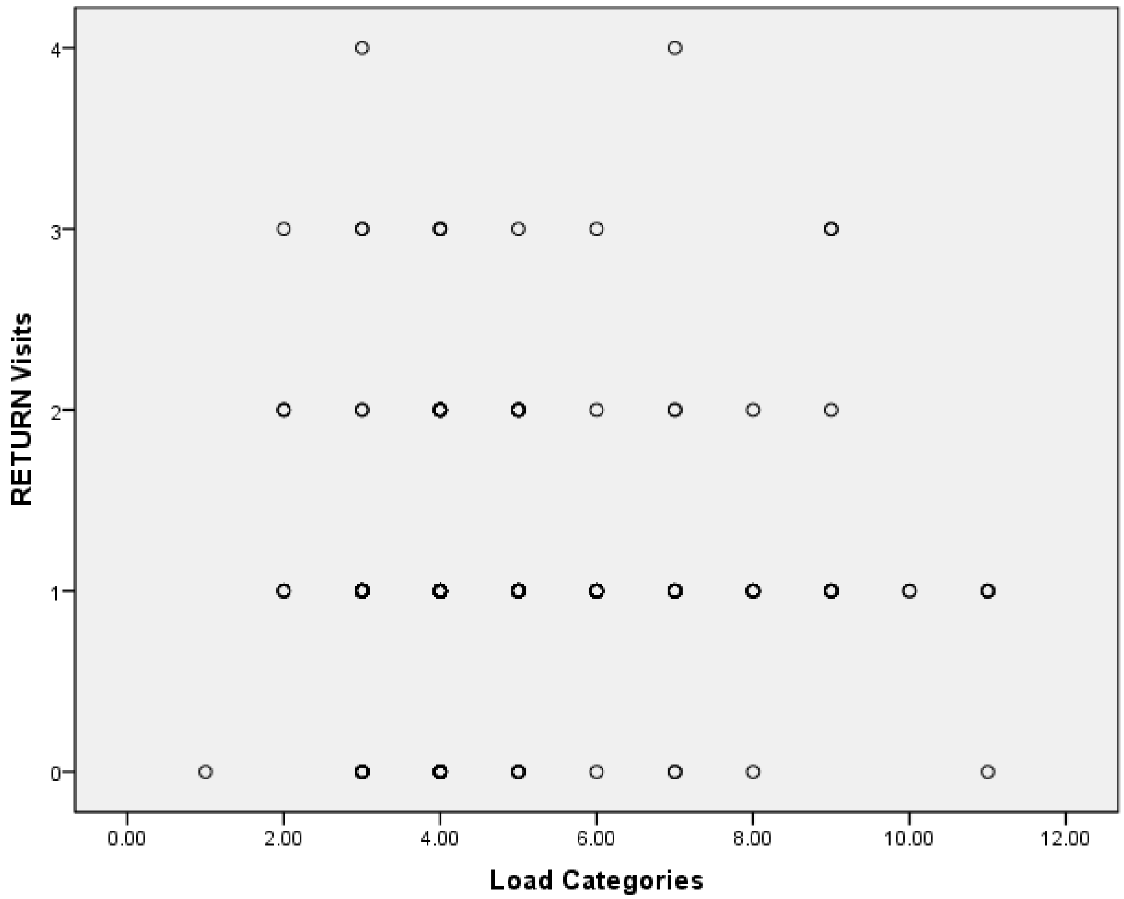

Figure 14. Scatterplot of Return Visits and Web Site Load Time

Table 16 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the continuous, non-dialogic variable category return visits and the institutional attributes of campus code, full-time students, and web site load time. Preliminary analyses were performed to ensure no violation of the assumptions for normality, linearity, and homoscedasticity. The Pearson correlations coefficient calculated for the relationship between the non-dialogic category variable of return visits and the institutional attributes (campus code, full-time students, and web site load time) indicate no significant relationships exist.

In Figures 15, 16 and 17 the Scatterplots for the analysis of the timeliness categorical variable and institutional attributes (full-time students, campus code, and web site load time) exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated in the center along the 0 axis. There is no clear or systematic pattern displayed in any of the Scatterplots which would indicate some level of non-normalcy of the data.

Table 16

Pearson Product-Moment Correlations Between Return Visits and Institutional Attributes

		Return visits	Campus code	Full-time students	Web site load time
Return visits	Pearson r	1	-.052	.094	.005
	p (2-tailed)		.441	.165	.947
	N	218	218	218	215
Campus code	Pearson r	-.052	1	-.510*	.001
	p (2-tailed)	.441		.000	.993
	N	218	218	218	215
Full-time students	Pearson r	.094	-.510*	1	.119
	p (2-tailed)	.165	.000		.082
	N	218	218	218	215
Web site load time	Pearson r	.005	.001	.119	1
	p (2-tailed)	.947	.993	.082	
	N	215	215	215	215

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

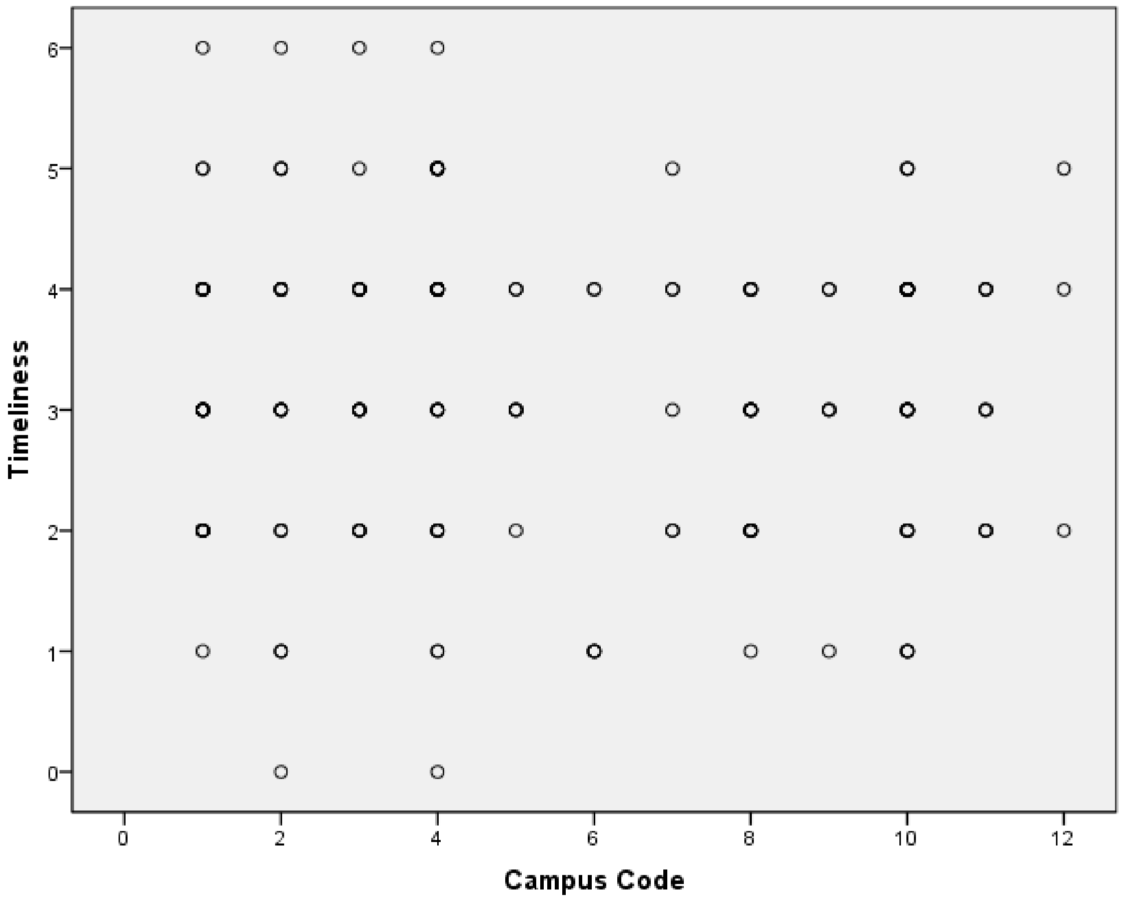

Figure 15. Scatterplot of Timeliness and Campus Code

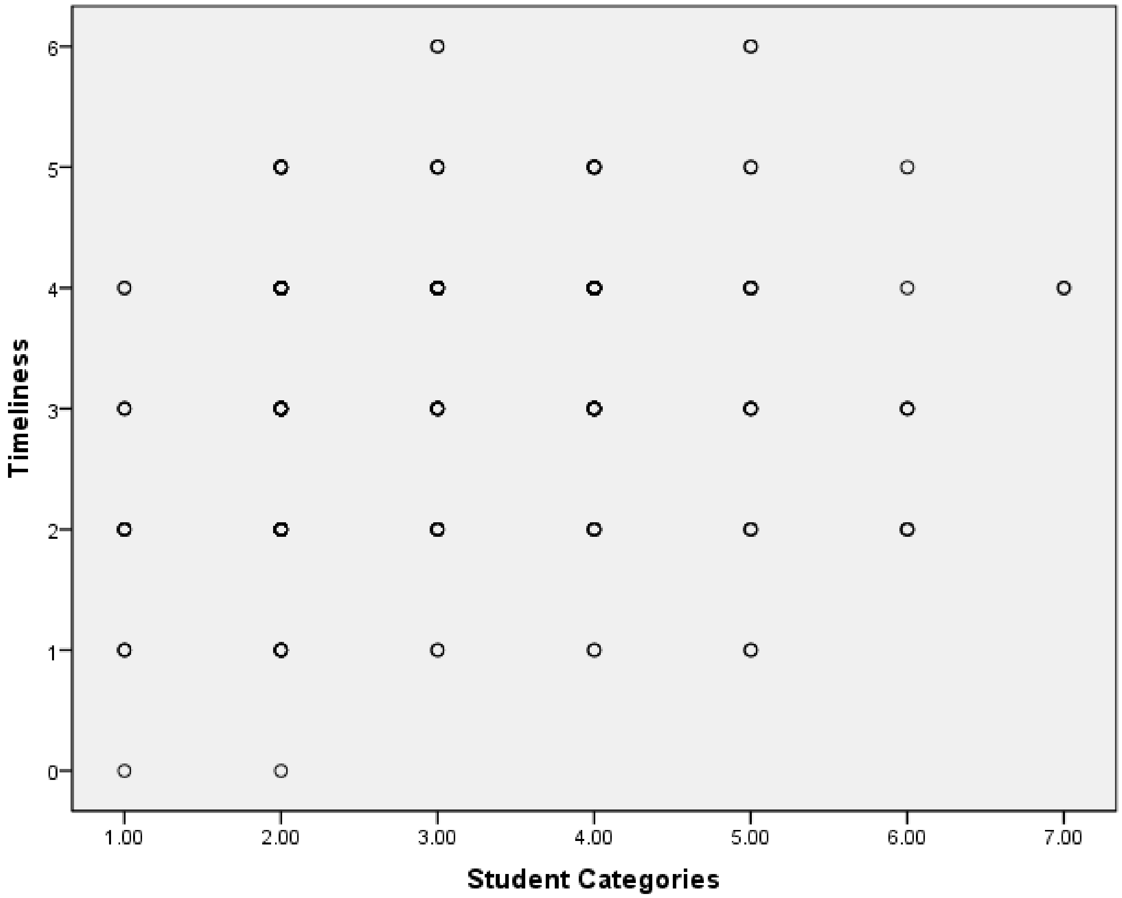

Figure 16. Scatterplot of Timeliness and Full-Time Students

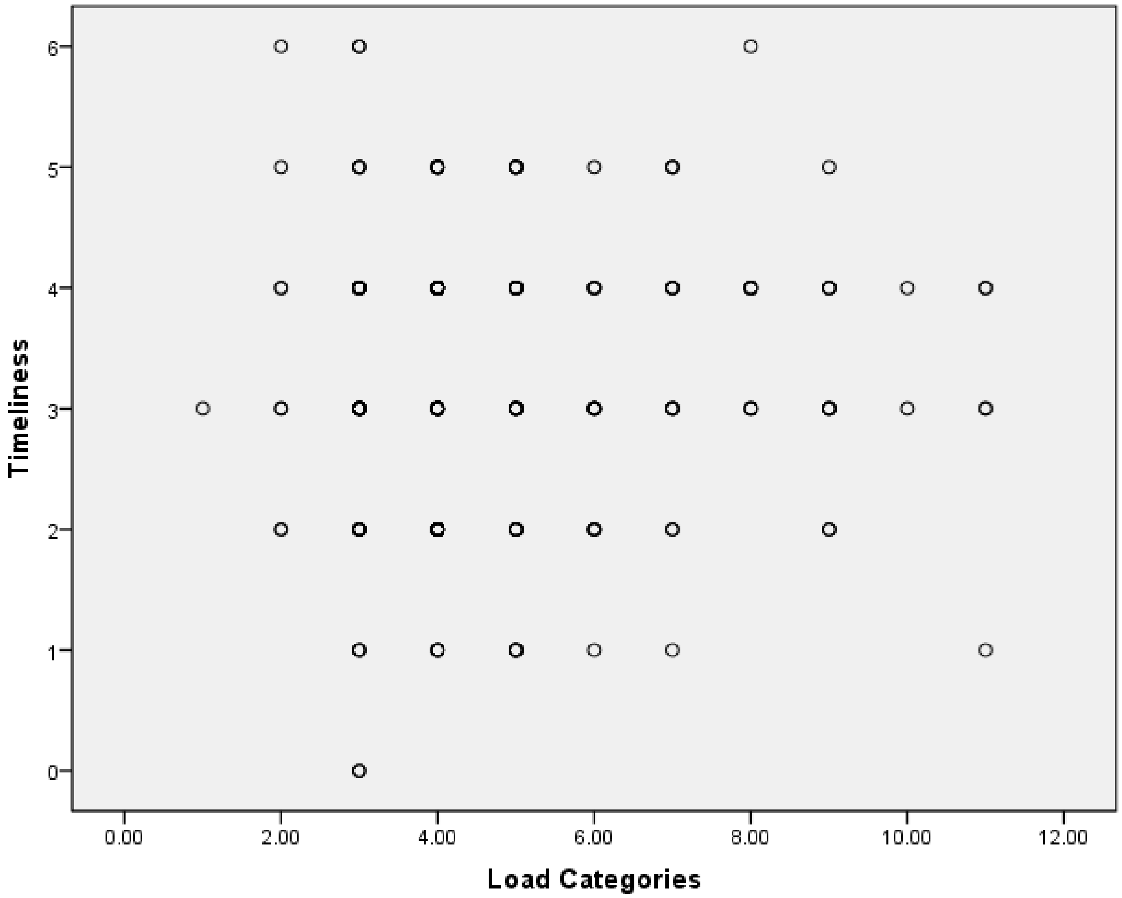

Figure 17. Scatterplot of Timeliness and Web Site Load Time

Table 17 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the continuous non-dialogic variable category timeliness and the institutional attributes of campus code, full-time students, and web site load time. Preliminary analyses were performed to ensure no violation of the assumptions for normality, linearity, and homoscedasticity. One small relationship was found between the timeliness of information category and the institutional attribute of full-time students. The Pearson correlations coefficient calculated for the relationship between the categories of timeliness of information and full-time students found $r = .183$, n = 218, $p < .05$. Cohen's (1988) guidelines suggest that a small correlation exists if the size of the value of the correlations coefficient is r = .10 to .29. Calculating the coefficient of determination indicates that 3.3% of the variance is shared by the two variables.

Table 17

Pearson Product-Moment Correlations Between Timeliness and Institutional Attributes

		Timeliness	Campus Code	Full-time students	Web site load time
Timeliness	Pearson r	1	-.052	.183*	.031
	p (2-tailed)		.448	.007	.654
	N	218	218	218	215
Campus code	Pearson r	-.052	1	-.510**	.001
	p (2-tailed)	.448		.000	.993
	N	218	218	218	215
Full-time students	Pearson r	.183*	-.510**	1	.119
	p (2-tailed)	.007	.000		.082
	N	218	218	218	215
Web site load time	Pearson r	.031	.001	.119	1
	p (2-tailed)	.654	.993	.082	
	N	215	215	215	215

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

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

A separate MANOVA was performed on each of the three independent variables. If significant results were obtained for the Wilks' Lambda in any of the analysis, the use of four separate MANOVA's for each of the individual dependent variables would necessitate utilization of an adjusted Bonferroni alpha level to test for statistical significance. With three independent variables the Bonferroni adjusted alpha level is $p = .017$, instead of the standard $p = .05$ test level for statistical significance.

Table 18 exhibits the results of a one-way between groups MANOVA performed to investigate geographic/population location differences on the non-dialogic dependent variables. The four non-dialogic, continuous, dependent variables were ease of use, timeliness, return visits, and passive information. The independent variable was campus code. The *p* value on Table 18 is larger than .001 indicating the assumption of homogeneity was not violated. The independent variable was campus code. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, and no serious violations were noted.

Table 18

Campus Code - *Box's Test of Equality of Covariance Matrices*

Box's M	120.099
F	1.110
df1	90
df2	3983.925
p	.226

Note. Design: Intercept + campus code

Table 19 displays no statistically significant differences between the campus locations on the combined dependent variables, F (44, 779) = 1.22, *p* = .062; Wilks' Lambda = .164).

Table 19

Campus Code - Multivariate Tests

Effect		Value	*F*	Error *df*	*p*	η^2
Intercept	Pillai's Trace	.930	676.470	203.000	.000	.930
	Wilks' Lambda	.070	676.470	203.000	.000	.930
	Hotellings' Trace	13.329	676.470	203.000	.000	.930
	Roy's Largest Root	13.329	676.470	203.000	.000	.930
Campus code	Pillai's Trace	.245	1.221	824.000	.158	.061
	Wilks' Lambda	.776	1.215	778.582	.164	.062
	Hotellings' Trace	.264	1.207	806.000	.171	.062
	Roy's Largest Root	.086	1.618[a]	206.000	.095	.080

Note. Design: Intercept + campus code.

[a] The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 20 displays the results of a one-way between groups MANOVA performed to investigate community college enrollment differences on the non-dialogic dependent variables. The four non-dialogic, continuous, dependent variables are ease of use, timeliness, return visits, and passive information. The independent variable full-time students was separated into seven categories by enrollment levels. The *p* value on Table 20 is larger than .001 indicating the assumption of homogeneity was not violated. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, and no serious violations were noted.

Table 20

Full-Time Student Categories – Box's Test of Equality of Covariance Matrices

Box's M	93.316
F	1.676
df1	50
df2	5607.065
p	.002

Note. Design: Intercept + student categories

Table 21 exhibits Levene's Test of Equality of Error Variances. None of the scores are less than the conventional statistically significant level of $p = .05$.

Table 21

Full-Time Students – Levene's Test of Equality of Error Variances

	F	df1	df2	*p*
Ease of use	2.105	6	211	.054
Return visits	.916	6	211	.485
Timeliness	1.396	6	211	.218
Passive information	.954	6	211	.459

Note. Design: Intercept + Student Categories

Table 22 shows a statistically significant difference between the full-time student categories on the combined dependent variables, F (4, 28) = 1.812, $p = .000$; Wilks' Lambda = .816; $\eta^2 = .049$). Obtaining a significant result on the multivariate test of significance allows further investigation into the relationship towards each of the dependent variables.

Table 22

Full-Time Student Categories - Multivariate Tests

Effect		Value	F	Hypothesis *df*	Error *df*	*p*	η^2
Intercept	Pillai's Trace	.884	396.580	4.000	208.000	.000	.884
	Wilks' Lambda	.116	396.580	4.000	208.000	.000	.884
	Hotellings' Trace	7.627	396.580	4.000	208.000	.000	.884
	Roy's Largest Root	7.627	396.580	4.000	208.000	.000	.884
Stu. Cat.	Pillai's Trace	.194	1.796	24.000	844.000	.011	.049
	Wilks' Lambda	.816	1.812	24.000	726.835	.010	.049
	Hotellings' Trace	.212	1.821	24.000	826.000	.010	.050
	Roy's Largest Root	.126	4.430*	24.000	211.000	.000	.112

Note. Design: Intercept + student categories

* The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 23 exhibits the tests of between-subjects effects on the four dependent, non-dialogic variables by the independent variable full-time students. According to Tabachnick & Fidell (2007) with four dependent variables the Bonferroni adjusted alpha level is p = .0125 instead of the standard p = .05 test level for statistical significance. When the results for the dependent variables are considered separately, using a Bonferri adjusted alpha level of .0125, the only difference to reach statistical significance was timeliness, F (6, 211) = 3.32, p = .004, η^2 = .086. According to the commonly used guidelines proposed by Cohen (1988) this suggests a moderate effect size (.01 = small, .06 = moderate, .14 = large) with 8.6% of the variance in timeliness explained by the level of full-time student categories.

A follow-up univariate analysis to identify where the significant differences lie is necessary when the analysis contains three or more levels of independent variables.

Table 23

Full-Time Students – Tests of Between-Subjects Effects on the Dependent, Non-Dialogic Variables

	Type III *SS*	*df*	*MS*	F	*p*	η^2
Corrected Model						
Ease of use	98.463[a]	6	16.411	2.027	.063	.054
Return visits	8.117[b]	6	1.363	2.643	.017	.070
Timeliness	26.735[c]	6	4.456	3.318	.004	.086
Passive info.	32.018[d]	6	5.336	1.959	.073	.053
Intercept						
Ease of use	9179.654	1	9179.654	1133.692	.000	.843
Return visits	82.019	1	82.019	159.062	.000	.430
Timeliness	641.495	1	641.495	477.647	.000	.694
Passive info.	2597.110	1	2597.110	953.611	.000	.819
Students						
Ease of use	98.463	6	16.411	2.027	.063	.054
Return visits	8.177	6	1.363	2.643	.017	.070
Timeliness	26.735	6	4.456	3.318	.004	.086
Passive info.	32.018	6	5.336	1.959	.073	.053

Table 23 (continued)

		Type III *SS*	*df*	*MS*	F	*p*	η^2
Error	Ease of use	1708.495	211	8.102			
	Return visits	108.800	211	.515			
	Timeliness	283.380	211	1.339			
	Passive info.	574.647	211	2.708			
Total	Ease of use	33271.00	218				
	Return visits	379.00	218				
	Timeliness	2603.00	218				
	Passive info.	10079.00	218				
Corrected Total							
	Ease of use	1806.959	217				
	Return visits	116.977	217				
	Timeliness	310.115	217				
	Passive info.	606.665	217				

[a] R^2 = .054 (Adjusted R^2 = .027).

[b] R^2 = .070 (Adjusted R^2 = .044).

[c] R^2 = .089 (Adjusted R^2 = .063).

[d] R^2 = .058 (Adjusted R^2 = .031).

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of categories of full-time student enrollment on the dependent variable timeliness. Subjects were divided into seven categories according to the number of full-time enrolled students (category 1 = 0-999; category 2 = 1,000-4,999; category 3 = 5,000-9,999; category 4 = 10,000-19,999; category 5 = 20,000-29,999; category 6 = 30,000-39,999; category 7 = 40,000+). Table 24 exhibits the descriptive statistics relating to the ANOVA of timeliness and full-time student enrollment.

Table 24

Timeliness on Student Categories - Descriptive Statistics

					95% Confidence Interval for Mean			
Student Categories	*N*	*M*	*SD*	*SE*	Lower Bound	Upper Bound	Min.	Max.
0-999	15	2.13	1.125	.291	1.51	2.76	0	4
1,000-4,999	88	3.15	1.163	.125	2.90	3.40	0	5
5,000-9,999	38	3.50	1.202	.195	3.10	3.90	1	6
10,000-19,999	50	3.48	1.015	.144	3.19	3.77	1	5
20,000-29,999	19	3.42	1.465	.336	2.71	4.13	1	6
30,000-39,999	8	3.00	1.069	.378	2.11	3.89	2	5
40,000+	2	4.00	.000	.000	4.00	4.00	4	4
Total	218	3.24	1.195	.081	3.08	3.40	0	6

Table 25 exhibits Levene's Test of Equality of Error Variances for the ANOVA. The *p* score is greater than the conventional statistically significant level of $p = .05$, indicating the assumption of homogeneity of variance was not violated.

Table 25

Timeliness on Student Categories – Test of Homogeneity of Variances

Levene Statistic	df1	df2	*p*
1.396	6	211	.218

Table 26 displays the ANOVA results for timeliness on student categories analysis. There was a statistically significant difference at the $p < .05$ level in scores for the seven student categories: F (2, 211) = 3.318, $p = .004$.

Table 26

Timeliness on Student Categories – ANOVA

	SS	*df*	*MS*	*F*	*p*
Between Groups	26.735	6	4.456	3.318	.004
Within Groups	283.380	211	1.343		
Total	310.115	217			

Table 27 exhibits the Multiple Comparisons for timeliness on the full-time student enrollment categories. The effect size, calculated using eta squared, is .09. Cohen (1988) classifies .01 as a small effect, .06 as a medium effect, and .14 as a large effect. Post-hoc comparisons using the Tukey HSD test indicate that the mean scores for Group1 (*M* = 2.13, *SD* = 1.125), Group 2 (*M* = 3.15, *SD* = 1.163), Group 3 (*M* = 3.50, *SD* = 1.202), Group 4, (*M* = 3.48, *SD* = 1.015) and Group 5 (*M* = 3.42, *SD* = 1.465) were different from each other. Despite reaching statistical significance, the actual difference in mean scores between the groups was very small and did not differ significantly between groups.

Table 27

Timeliness on Student Categories – Multiple Comparisons

(I) Stu. Cat.	(J) Stu. Cat.	*M* Dif. (I-J)	Std. Error	*p*	95% Confidence Interval Lower Bound	Upper Bound
1.00	1.00					
	2.00	-1.018*	.324	.031	-1.98	-.05
	3.00	-1.367*	.353	.003	-2.42	-.31
	4.00	-1.347*	.341	.002	-2.36	-.33
	5.00	-1.288*	.400	.025	-2.48	-.10
	6.00	-.87	.507	.611	-2.38	.64
	7.00	-1.867	.872	.333	-4.46	.73
2.00	1.00	1.018*	.324	.031	.05	1.98
	2.00					
	3.00	-.349	.226	.717	-1.02	.32
	4.00	-.329	.206	.685	-.94	.28
	5.00	-.270	.294	.969	-1.14	.60
	6.00	.151	.428	1.000	-1.12	1.43
	7.00	-.849	.829	.948	-3.32	1.62

Table 27 (continued)

(I)	(J)				95% Confidence Interval	
Stu. Cat.	Stu. Cat.	*M* Dif. (I-J)	Std. Error	*p*	Lower Bound	Upper Bound
3.00	1.00	1.367*	.353	.003	.31	2.42
	2.00	.349	.226	.717	-.32	1.02
	3.00					
	4.00	.020	.249	1.00	-.72	.76
	5.00	.079	.326	1.00	-.89	1.05
	6.00	.500	.451	.925	-.84	1.84
	7.00	-.500	.841	.997	-.300	2.00
4.00	1.00	1.347*	.341	.002	.33	2.36
	2.00	.329	.206	.685	-.28	.94
	3.00	-.020	.249	1.000	-.76	.72
	4.00					
	5.00	.059	.312	1.000	-.87	.99
	.00	.480	.441	.931	-.83	1.79
	7.00	-.520	.836	.996	-3.01	1.97

Table 27 (continued)

(I) Stu. Cat.	(J) Stu. Cat.	*M* Dif. (I-J)	Std. Error	*p*	95% Confidence Interval Lower Bound	Upper Bound
5.00	1.00	1.288*	.400	.025	.10	2.48
	2.00	.270	.294	.969	-.60	1.14
	3.00	-.079	.326	1.000	-1.05	.89
	4.00	-.059	.312	1.000	-.99	.87
	5.00					
	6.00	.421	.488	.978	-1.03	1.88
	7.00	-.579	.862	.994	-3.14	1.99
6.00	1.00	.867	.507	.611	-.64	2.38
	2.00	-.151	.428	1.000	-1.43	1.12
	3.00	-.500	.451	.925	-1.84	.84
	4.00	-.480	.441	.931	-1.79	.83
	5.00	-.421	.488	.978	-1.88	1.03
	6.00					
	7.00	-1.000	.916	.930	-3.73	1.73

Table 27 (continued)

(I)	(J)				95% Confidence Interval	
Stu. Cat.	Stu. Cat.	*M* Dif. (I-J)	Std. Error	*p*	Lower Bound	Upper Bound
7.00	1.00	1.867	.872	.333	-.73	4.46
	2.00	.849	.829	.948	-1.62	3.32
	3.00	.500	.841	.997	-2.00	3.00
	4.00	.520	.836	.966	-1.97	3.01
	5.00	.579	.862	.994	-1.99	3.14
	6.00	1.000	.916	.930	-1.73	3.73
	7.00					

[*] The mean difference is significant at the 0.05 level.

A one-way between groups MANOVA was performed to investigate web site loading time differences on the non-dialogic dependent variables. The four non-dialogic, continuous, dependent variables were ease of use, timeliness, return visits, and passive information. The independent variable was web site load time.

Table 28 exhibits a *p* value larger than .001 indicating the assumption of homogeneity was not violated. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, and no serious violations were noted.

Table 28

Web Site Load Time - *Box's Test of Equality of Covariance Matrices*

Box's M	87.551
F	1.087
df1	70
df2	6247.382
p	.290

Note. Design: Intercept + web site load time

Table 29 displays the results of the multivariate tests on web site load time on the non-dialogic variables (ease of use, return visits, timeliness, and passive information) There were no statistically significant differences between the web site load times on the combined dependent variables, $F\ (4, 40) = .778$, $p = .164$; Wilks' Lambda = .860.

Table 29

Web Site Load Time - Multivariate Tests

Effect		Value	*F*	Hypothesis *df*	Error *df*	*p*	η^2
Intercept	Pillai's Trace	.866	323.338	4.000	201.000	.000	.930
	Wilks' Lambda	.134	323.338	4.000	201.000	.000	.930
	Hotellings' Trace	6.436	323.338	4.000	201.000	.000	.930
	Roy's Largest Root	6.436	323.338	4.000	201.000	.000	.930
Load Time	Pillai's Trace	.147	.780	40.000	816.000	.158	.061
	Wilks' Lambda	.860	.778	40.000	764.024	.164	.062
	Hotellings' Trace	.156	77607	40.000	798.000	.171	.062
	Roy's Largest Root	.079	1.609*	40.000	204.000	.095	.080

Note. Design: Intercept + web site load time.

* The statistic is an upper bound on F that yields a lower bound on the significance level.

Research Question 4. This question asks whether there was a statistically significant relationship between the extent to which community colleges utilized both dialogic loop and non-dialogic loop variables. A statistically significant relationship was found between dialogic loop scores and all four of the non-dialogic variable scores (ease of use, return visits, timeliness, and passive information).

Table 30 exhibits the Pearson correlation coefficient (Pearson's *r*) analysis for the continuous dialogic loops variable and the non-dialogic variables ease of use, return visits, timeliness, and passive information. The Pearson correlations coefficient calculated for the relationship between dialogic loops and ease of use found $r = .530$, n = 216, $p < .05$. Calculating the coefficient of determination indicates that 28.1% of the variance is shared by the two variables. The Pearson correlations coefficient calculated for the relationship between dialogic loops and return visits found $r = .377$, n = 216, $p < .05$. Calculating the coefficient of determination indicates that 14.2% of the variance is shared by the two variables. The Pearson correlations coefficient calculated for the relationship between dialogic loops and timeliness found $r = .518$, n = 216, $p < .05$. Calculating the coefficient of determination indicates that 26.8% of the variance is shared by the two variables. The Pearson correlations coefficient calculated for the relationship between dialogic loops and passive information found $r = .556$, n = 216, p < .05. Calculating the coefficient of determination indicates that 30.9% of the variance is shared by the two variables.

Table 30

Pearson Product Moment Correlations Between the Dialogic Loops Variable and the Four Non-Dialogic Variables[*]

		Dialogic loops	Ease of use	Return visits	Timeliness	Passive information
Dialogic loops	Pearson r	1	.530	.377	.518	.556
	p (2-tailed)		.000	.000	.000	.000
	N	218	218	218	218	218
Ease of use	Pearson r	.530	1	.263	.296	.321
	p (2-tailed)	.000		.000	.000	.000
	N	218	218	218	218	218
Return visits	Pearson r	.337	.263	1	.435	.272
	p (2-tailed)	.000	.000		.000	.000
	N	218	218	218	218	218
Timeliness	Pearson r	.518	.296	.435	1	.532
	p (2-tailed)	.000	.000	.000		.000
	N	218	218	218	218	218
Passive information	Pearson r	.556	.321	.272	.532	1
	p (2-tailed)	.000	.000	.000	.000	
	N	218	218	218	218	218

[*] All Correlations are significant at the 0.05 level (2-tailed).

The outlier discovered during the preliminary data analysis was removed prior to conducting the standard multiple regression analysis. Preliminary analyses were conducted to ensure there were no violations of the assumptions of normality, linearity, multicollinearity and homoscedasticity.

In Figure 18 the Scatterplot for this analysis of dialogic loops exhibits a roughly rectangular distribution of data points with a majority of the scores concentrated in the center along the 0 axis. There is no clear or systematic pattern displayed in the Scatterplot which would indicate some level of non-normalcy of the data.

Figure 19 displays the data points for dialogic loops following a reasonably straight diagonal line from the bottom left to the top right of the scale. No major deviations from normality are suggested.

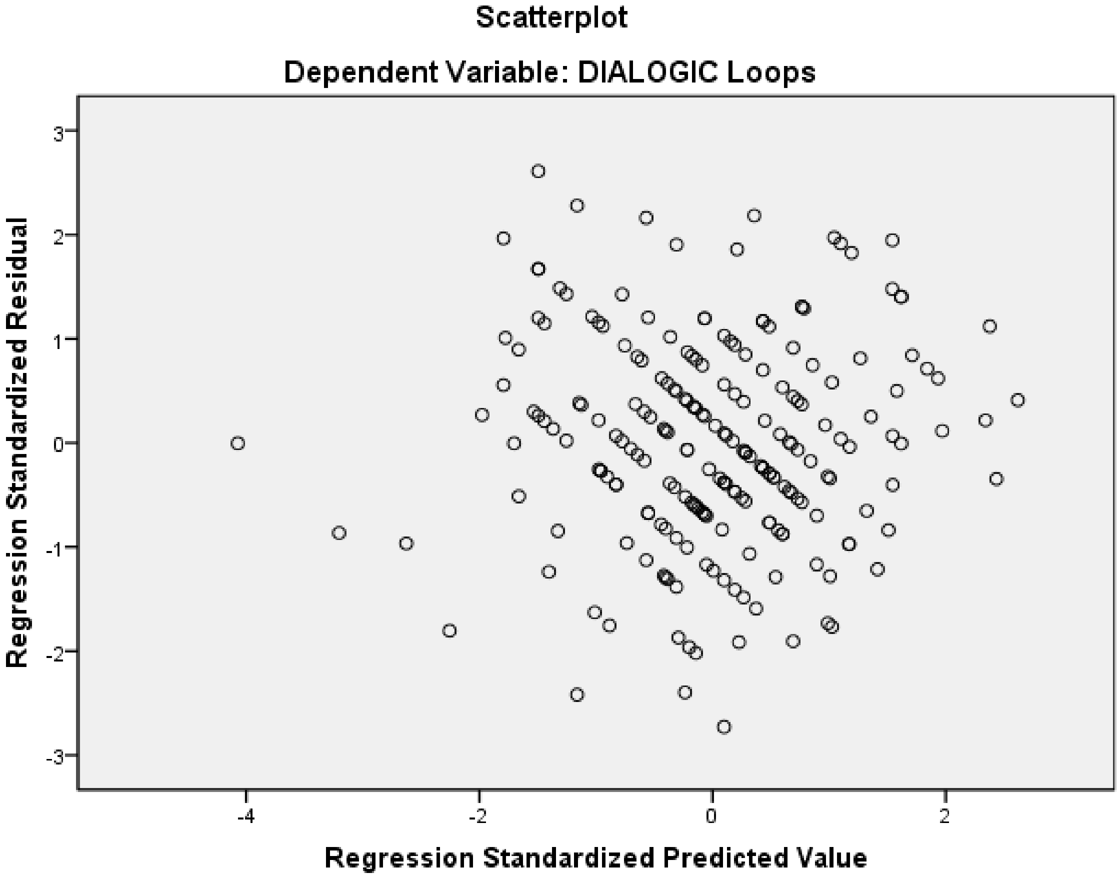

Figure 18. Scatterplot of Dialogic Loops

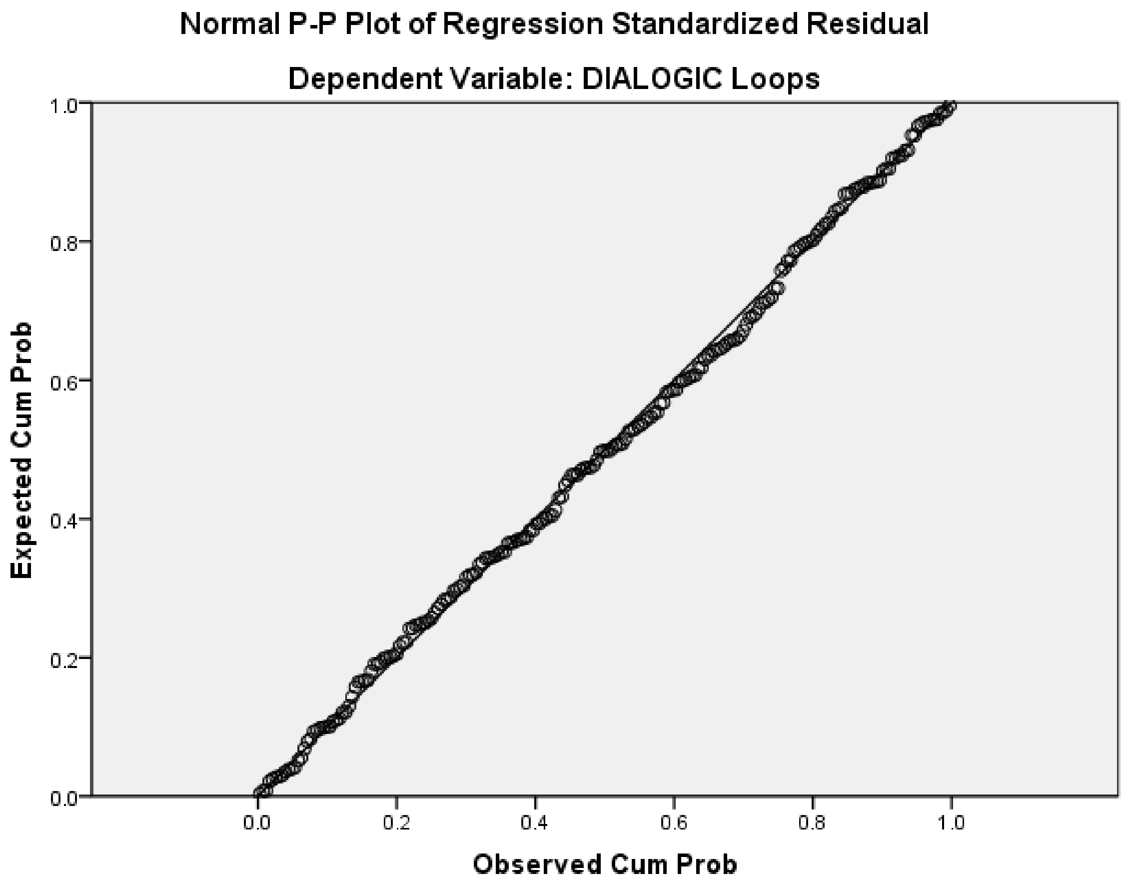

Figure 19. Dialogic Loops Normal P-P Plot of Regression Standardized Residual

Table 31 exhibits the results of the dialogic loops multicollinearity tests Tolerance and VIF. Very small Tolerance scores (less than .10) indicate multiple correlations with another variable. VIF values greater than 10 indicate the existence of multiple correlations with other variables. The multicollinearity assumptions are not violated by any of the scores for any of the four dependent, non-dialogic loop variables.

Table 31

Dialogic Loops Coefficients – Collinearity Statistics

Model		Tolerance	VIF
1	(Constant)		
	Ease of use	.856	1.168
	Return visits	.791	1.265
	Timeliness	.621	1.612
	Passive information	.687	1.455

In Table 32 R^2 is .500, which indicates how much of the variance in the dependent variable is explained by the model. When the R^2 value is converted to a percentage the result is 50.0%; which means the model explains half of the variance in dialogic loops.

Table 32

Dialogic Loops Model Summary

Model	R	R^2	Adjusted R^2	*SE*
1	707	.500	.491	2.128

Table 33 exhibits the ANOVA for this regression analysis model (F (4, 213) = 53.31, $p < .001$). The total variance explained by the model as a whole is 50.0%.

Table 33

Dialogic Loops ANOVA with the Non-Dialogic Variable Categories

Model		*SS*	df	Mean Square	*F*	*p*
1	Regression	965.699	4	141.425	53.312	.000
	Residual	964.581	213	4.529		
	Total	1930.280	217			

Table 34 displays the coefficients for the dependent variable dialogic loops with the non-dialogic variables of ease of use, return visits, timeliness, and passive information. The p values ($p < .05$) support the finding that all of the non-dialogic variables make a significant contribution to the prediction of the dependent variable dialogic loops.

The Beta value for ease of use ($\beta = .340$) indicates the variable makes the strongest single contribution toward explaining the dependent variable, when the variance explained by all the other variables in the model is controlled for. The ease of use variable uniquely explains 9.9% of the dialogic loops variable.

The Beta value for passive information ($\beta = .306$) indicates the variable makes a strongest single contribution toward explaining the dependent variable, when the variance explained by all the other variables in the model is controlled for. The passive information variable uniquely explains 6.5% of the dialogic loops variable.

The Beta value for timeliness ($\beta = .205$) indicates the variable makes a strongest single contribution toward explaining the dependent variable, when the variance explained by all the other variables in the model is controlled for. The timeliness variable uniquely explains 2.6% of the dialogic loops variable.

The Beta value for return visits ($\beta = .116$) indicates the variable makes a strongest single contribution toward explaining the dependent variable, when the variance explained by all the other variables in the model is controlled for. The return visits variable uniquely explains 1.1% of the dialogic loops variable.

Table 34

Dialogic Loop Coefficients with the Four Dependent Variables

Model		Standardized Coefficients		Correlations
		β	*p*	Part
1	(Constant)		.059	
	Ease of use	.340	.000	.315
	Return visits	.166	.035	.103
	Timeliness	.205	.001	.161
	Passive information	.306	.000	.254

The next chapter provides a discussion of the research results relative to the current literature and offers several possibilities for the direction of future inquiries.

Chapter 5

Discussion

Introduction

Web site utilization by community colleges is growing in a manner not unlike the explosive growth of the Internet itself. Current literature contends community colleges are not embracing the Internet, yet every institution in this study had a web site and nearly every web site had multiple dialogic loops. This study clearly demonstrates that community colleges are using an institutional web site as part of their recruiting and communication effort with prospective students. However, Kent & Taylor's (1998) statement that "the World Wide Web still remains underutilized" (p. 322) continues to apply to the majority of community colleges with a web presence but who are still not fully responsive to the needs and desires for web-based dialogue expressed by prospective students.

The purpose of the study was to investigate the possibility of relationship building through dialogue, which is the core of Kent & Taylor's (2002) dialogic theory of public relations, and the stated desire of a majority of prospective college students in the Noel-Levitz (2006, 2007a, 2007b, 2008) studies.

Data was collected using a survey instrument (see Appendix A) that was an updated expansion of McAllister-Greve's (2006) study. McAllister Greve's instrument was based upon Kent & Taylor's (personal communication, August 23, 2008) original survey of web sites. For this study the category of dialogic loops was expanded to reflect functions and links currently on Internet web sites, but which were not available or addressed in the earlier surveys. The functions and links included in the dialogic loops category were also reported by Noel-Levitz (2006, 2007a, 2007b, 2008) as being sought by high school seniors and juniors during their college search process. A new category of passive information was created to better reflect the expansion of web-based mechanisms that did not facilitate any form of two-way communication or dialogue between an institution and the web site visitor and which this researcher felt were no longer appropriate when included in the original dialogic categories as conceived by Kent & Taylor (1998, 2002).

A proportionally stratified random sample (n = 218) was selected from the population of community colleges located in the nine mega states of California, Florida, Georgia, Illinois, Ohio, Pennsylvania, New York, North Carolina, and Texas. Data was collected during the months of February and March, 2010. When the coders entered the data, it was automatically entered into a Microsoft Excel spreadsheet through the web-based survey software. The spreadsheet was subsequently converted to SPSS format for analysis. SPSS software was used to generate descriptive statistics, test for relationships using Pearson's correlation coefficient, and to analyze statistical differences using MANOVA's, ANOVA's, and multiple regression procedures. The results of the research are discussed in the following section.

Dialogic Loops

Dialogic loops were found on almost every community college web site in the study. Nearly all of the community college web sites contained three or more dialogic loops and six or more dialogic loops were extremely common. Over half of the community college web sites contained nine or more dialogic functions/links. However, exactly which dialogic loops were available is noteworthy.

Eleven of the top thirteen dialogic loops on community college web sites are focused on the areas of admissions, course registration, and financial aid processing. Only two of the top thirteen dialogic loops on community college sites have any potential for answering prospective student questions or building any type of relationship between the individual and the institution - Academic Counseling Request and Social Network Link. Although it was outside the top thirteen, more than a third of the community college web sites also contained a web-based function/link for the electronic payment of tuition and fees. These findings are interpreted to indicate that the highly concentrated focus of community college web sites is on the "business" of the institution (admissions and financial aid). Only the Academic Counseling Request dialogic loop addressed the type of communication Noel-Levitz (2006, 2007a, 2007b, 2008) reported as being sought by high school juniors and seniors. However, the Academic Counseling Request function/link is by its very nature oriented toward class registration and not necessarily available for general questions concerning the institution, applications for admissions, or admission requirements. Concurrently, nearly all of the community colleges provided an e-mail address for use by any web site visitor. Notwithstanding their institutional web site, eleven percent of community colleges provide no e-mail address and no other Internet or web-based mechanism (instant messaging, blog, question/response form, survey, social networking, etc.) to contact the institution.

Admissions and Financial Aid forms, along with electronic links for the submission of forms, were always located within their respective departmental web pages, several layers inside the institutional web site. Conversely, the few sites with dialogic loops offering recently developed functions for two-way communication and social networking usually either placed the function/link on the institution's home page or on the page oriented to current students, as indicated by the lower average number of mouse clicks.

There is no relationship between the presence of dialogic loops on a community college's web site and the geographic location of the institution relative to the population center (campus code), the number of full-time enrolled students (full-time students), or the amount of time it takes the respective web site home page to fully open (web site load time). Concurrently, there are no statistically significant relationships between any of the non-dialogic variables (ease of use, return visits, timeliness, and passive information) and the institutional attributes (full-time students, campus code, and web site load time). While there are no statistically significant relationships between the dialogic theory-based variables and any of the institutional characteristics, there is a medium, negative relationship between the location of a community college campus relative to population areas and the size of the full-time student enrollment. This is interpreted to support the logical presumption that the more rural an institution's location, and the further it is separated from a major population area, the smaller the full-time student enrollment is likely to be. Despite the distance and populations issues, the analysis shows more rural community colleges are no more likely to have a dialogic loops on their web site than their more urban or city-centric counterparts.

Non-Dialogic Variables

The four non-dialogic, dependent variables have no relationship to the three independent variables; referring to the location of a community college campus, the number of full-time enrolled students, or the amount of time required to open the home page of the institutional web site. If another variable is impacting the use of dialogic loops by community colleges, it is not apparent from this study.

Dialogic Loops and Non-Dialogic Variables

There is a statistically significant relationship between the dependent variable dialogic loops and all four of the dependent, non-dialogic variable categories (ease of use, return visits, timeliness, and passive information). Fifty percent of the variation in dialogic loops is explained by the four non-dialogic variables. The Beta values indicate that each of the four non-dialogic variables makes a very strong and/or unique contribution toward explaining the dependent variable. The dialogic loops dependent variable category shares almost 31% of the variance with the four non-dialogic, dependent variables. In combination this is interpreted to mean the five categories originally based on Kent & Taylor's (1998, 2002) theory of dialogic public relations are interrelated and appropriately constructed. Viewed from another perspective, when an institution uses dialogic loops, it is also highly likely to incorporate functions and links that make it easy to navigate the web site; encourage visitors to return to the web site; offer current and relevant facts; and provide adequate, plentiful, and appropriate information.

Suggestions for Future Research

While this study may show a high correlation among the categorical variables derived from dialogic theory of public relations, it is only a starting point for future inquiries into the way community colleges and other higher education institutions utilize their web site and address their consuming publics.

Future research could consider a wide range of questions, for example: Is the presence of dialogic loops an indicator of institutional responsiveness? How well do institutions respond to prospective student inquiries? Is there a relationship between the responsiveness of the organization, or the availability of specific dialogic loops, and the likelihood of prospective students to select and enroll at an institution? What motivates an institution of higher education to become more responsive to prospective students? Does institutional responsiveness directly contribute to increased enrollment? How is institutional image or reputation translated to the institutional web site? Is the image or reputation of a community college appropriately represented and supported by the institutional web site? What are the wants and needs of the other publics served by community colleges? Are the needs and wants of other publics compatible or different than those of the cohort of high school juniors and seniors? Are the needs of the institutions' other publics appropriately or adequately addressed through the institution's web site? Do they need to be? Considering Cohen & Brawer's (2003) lament about the dearth of community college research, the list of possible research inquiries is nearly endless.

Conclusion

Clayton's (2003) admonition that the institutional web site is ubiquitous and has emerged as the pre-eminent recruiting and informational tool for higher education in the twenty-first century community college is an acknowledgement of the beginning of a new era in community college public relations efforts. This fact is not lost on community colleges and their administration, as nearly all community colleges have and maintain an institutional web site. The results of this study show that community colleges generally embrace the need for a web site. Nearly all institutional web sites incorporate dialogic loops. Unfortunately, community colleges are falling short in their public relations efforts to develop the type of web-based, dialogic, communicative relationship sought by their key public - prospective students. If community colleges were specifically answering the prospective student desire for dialogue they would incorporate an e-mail link for general questions on the first page of the admissions or prospective student section of their web site.

Concurrently, research has shown that the single most influential group of potential community college customers (high school juniors and seniors) has repeatedly indicated they prefer to find information on the Internet during their college search process (Goff, Patino, & Jackson, 2004). This critical pool of potential community college students want to have electronic-based dialogue with institutional representatives as they make a decision about selecting, enrolling, and attending an institution of higher education (Noel-Levitz, 2006, 2007a, 2007b, 2008). The level of passive information currently available on community college web sites is strong in the areas that address a prospective student's informational needs in the areas of admissions, financial aid, and class registration. On nearly all community college web sites the link for prospective students offers much of the information needed to choose one institution over another. However, Noel-Levitz (2006, 2007a, 2007b, 2008) has repeatedly indicated that students want more than a passive sheet of data - they want dialogue.

Noel-Levitz (2008) has also indicated that community colleges are not as responsive to student desires for two-way communication as their four year counterparts, a contention also supported by other researchers (Kent & Taylor, 2002; Kotler, 1996; see also Gower & Cho, 2001; Pegoraro, 2006; Poock & Lefond, 2001, 2003). This study demonstrates that even though community colleges have seemingly embraced creating and populating an institutional web site, less than half of the institutions have an e-mail link to address general questions. They still have much work to do to make truly dialogic communication readily and easily available. Providing a responsive mechanism for prospective students to ask questions and begin developing a relationship with the institution is a huge first step.

Creating and maintaining an institutional web site is the tip of the functionality iceberg as community colleges address the interests and desires of today's Internet savvy and electronically connected generation. Academia traditionally allocates an extremely small portion of its overall budget to promotional activities, compared to what businesses and for-profit educational organizations nominally dedicate to the same set of activities. Consequently, the ability of community colleges to respond to rapidly changing circumstances is negatively impacted when their revenues are increasingly stretched or reduced by short-term economic fluctuations as their enrollments are concurrently increasing. It becomes especially problematic when those enrollment increases are not customarily funded until the following fiscal year. Institutions may also be hard-pressed to assign any new job functions or time intensive activities to their already overburdened staff, such as responding to increased e-mail, social networking, and text message inquiries. It would also be counter-intuitive for community colleges to increase recruiting efforts when economic fluctuations have caused enrollments to increase dramatically and their limited institutional resources are being strained almost beyond reason.

Community colleges are also traditionally bound to their limited geographic service area both in funding relationships with local and regional governmental bodies, and in their recruiting efforts. They may not see an institutional web site as a high priority for a locally oriented educational enterprise which was historically well-served by face-to-face recruiting efforts.

When the relationship between the dialogic loops and the non-dialogic loops is considered it becomes clear that if the community college web site was viewed with a greater level of importance, an institution might have more current information in more places and provide additional incentives for web site visitors to return and learn more about the institution. Currently institutions barely incorporate a quarter of the available functions or links to encourage return visits to their web site. Given the historical need to serve the needs of their local community institutions should embrace those needs and include every possible function to develop and support multiple visits to their web site. In the category of timeliness, institutions utilize just over half of the available functions or links. The currency of information on a dynamic web site is critical to its usefulness. Continual efforts should be made by institutions to post and maintain as much pertinent information as possible. Taken together these findings could very easily support the contention that even though community colleges approach web sites as a necessity, they do not act as if it is a very high priority. If an institution's web site was a higher priority, incorporating more, if not all, of the available links to facilitate return visits and the inclusion of timely information would both be implemented to better meet prospective students' desires for dialogic communication. Concurrently, adding as many dialogic loops as possible would start to address the expressed desires of prospective students for easy to use, responsive functions.

As mentioned earlier, community colleges have not received much attention from higher education writers (Cohen & Brawer, 2003). The subject of higher education web site utilization has also received very little research attention (Kent & Taylor, 1998; Gower & Cho, 2001; Poock & Lefond, 2001, 2003). Kent & Taylor's (1998) statement that "the World Wide Web still remains underutilized by many organizations and underexamined[sic] by scholars as a tool for building organizational-public relationships" (p. 322) is still valid, especially in higher education (Gower & Cho, 2001; Poock & Lefond, 2001, 2003). While this research adds only one small glimpse into community colleges and their web site utilization, others will hopefully continue and extend the inquiry.

It is obvious from this study that community colleges have generally embraced the need for institutional web sites and incorporated dialogic loops. College recruiters have long known the necessity of dialogue in their follow-up efforts to build relationships with potential students. Unfortunately, community colleges do not appear to make efficacious use of their web site to develop relationships, encourage return visits or provide more, timely, and current information.

When a respected source like Noel-Levitz (2006, 2007a, 2007b, 2008), over a multiple year period, reports that prospective students want and expect to develop a relationship through electronic-based mechanisms, the reactive institution should at least make some form of web-based option available for communication between the student and the institution. Forward thinking institutions might allocate the necessary support for dedicated personnel to provide timely web-based responses to inquiries of any kind - especially inquiries from prospective students.

Curtain and Gaither (2004) observed that the mere existence of a web site does not mean two-way, dialogic communication is actually taking place. If community colleges placed a higher priority on building dialogic relationships more function and links facilitating two-way communication would be readily available on all institutional web sites. In light of Heath & Coombs (2006) contention that public relations in the twenty-first century is about "creating, maintaining, and repairing strategic relationships," (p. 4), the majority of community colleges still have much to accomplish.

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Appendices

Appendix A

Codebook

Survey # ______ Coder Name: ________________________ Date: ____________

Web Site Load Time : _____________ seconds

Campus Code: ________

Students - Full-time ___________________

	Yes	No	# clicks
Site Map/Directory			
Search Engine box			
Sub-menu(s)			
Image Maps: Self-explanatory			
Bilingual/Multilingual options			
Information Accessible with images turned off			
Prospective Students link			
Current Students link			
Alumni link			
Business link			
Continuing Education link			
Local Community link			
Donors/Fundraising link			
Employees/Faculty/Staff link			
Legislative/Political link			
Media Press link			
Student Services link			
Admissions link			
Financial Aid link			

	Yes	No
Explicit statement invites visitors to return		
"Bookmark Now" statement		
Invitation to subscribe: information or updates		
Calendar of Events (current)		
News Releases/Public Information (within 30 days)		
Electronic Catalog (includes next semester/quarter)		
Statement notes anticipated site updates		
Web Site Updated (within 30 days)		

Codebook (continued)

	Yes	No	# clicks
E-mail Address Request: student/prospective student			
E-mail Address Request: parent/guardian			
Admission: Electronic submission			
Admission: Personal applicant portal			
Admission: Acceptance confirmation			
Admission: Contact request			
Electronic Fee/Tuition deposit			
Course Registration			
Academic Counseling request			
Tuition Calculator			
Chat Room			
Q & A forum *(scheduled)*			
Instant Messaging			
Blog			
Social Networking tool(s)			
Podcast			
Flash/Media Player page(s)			
RSS/XML			
Feedback/Comments			
Financial Aid: Electronic submission			
Financial Aid: Contact request			
Campus Visit Request link			
News Forum scheduled			
Philosophy/Mission Statement			
Admission Information, Application (print only)			
Financial Aid Information, Application (print only)			
Housing Information			
Campus Fact Sheet/FAQ’s/About Us			
E-Newsletter			
Quiz/Poll/Survey			
Guest Book			
Electronic Catalog			
Virtual Tour			
Tuition List			
Bulletin Board			

Appendix B

Coder Instructions

"Researchers usually use two coders, and preferably more, who classify each unit into its appropriate category independently" (Frey, Botan, Friedman and Kreps, 1991, p. 215) In line with Krippendorff's (1980) recommendations the following steps were taken in an effort to appropriately prepare the coders for their tasks and responsibilities.

Coder Prescription

Coders for this research project were fourth year, senior level students, majoring in public relations at Northwest Missouri State University. At the beginning of the project, the coders had no knowledge of Kent & Taylor's (1998) theory of dialogistic public relations and had not studied the Internet, community colleges, or community college web sites. The recruitment of coders was completely voluntary from among the population of undergraduate public relations majors. All student coders were female.

Coder Training

After receiving a verbal project overview, the coders each received a copy of Kent & Taylor's (1998) article and were instructed to read it and return to the next session prepared to discuss the article. At the second session, an explanation of the steps taken in coding a page during the pilot test was described. At all times during the training process, community college web sites from non-megastates were used to avoid any contamination of the research data.

As part of the orientation, a non-megastate community college web site was opened and displayed on a large format computer screen and the coders used a printed copy of the survey document to record their responses to the questions. After viewing the website, the coders compared their survey sheets and discussed any differences in understanding or perceptions concerning the observed functions and the survey questions.

Subsequently, the coders were each given four non-megastate community college web sites and four coding sheets to complete and return to the researcher. The coders were unaware that each of their sets contained duplications; one common site with each of the other three coders. This duplication provided the researcher with four sets of data for each web site and a means for any points of coder variation. After the survey sheets were returned the researcher compared responses and prepared questions for the coders concerning any discrepancies in their coding of identical web sites.

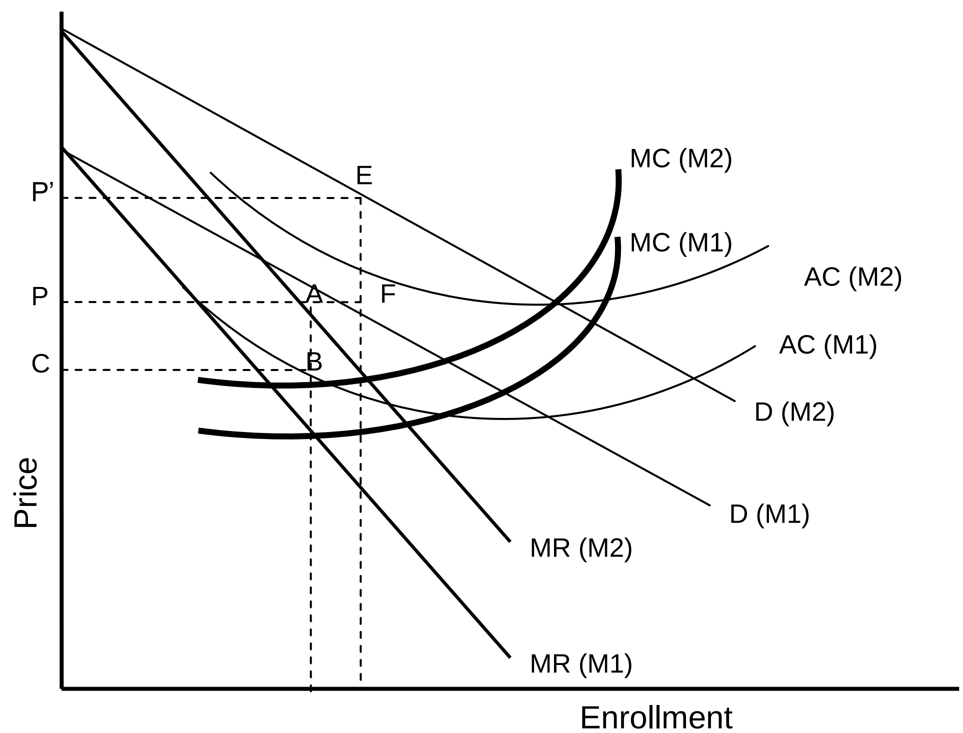
The recording units, variables, categories and the “cognitive procedures to be employed in placing data into categories” (Krippendorff, 1980, p. 174) are described in other sections of this document (See Instrumentation).

In the pilot test, the most prevalent, but extremely minor, issue was when a function was noted as existing on a web site and a corresponding record of the number of mouse clicks also needed to be in the data. At times the pilot test coders would forget to record the mouse clicks or record them on the wrong line of the data sheet. With the coders for the research project this turned out to not be an issue.

The dissertation research was recorded on directly into the data base using an online survey where the computer’s cursor moved from response category to response category. This process for data gathering allowed the coders to access the site through a URL address and input the data directly into the database from any location with a computer and Internet access. Once each week the accumulated data was downloaded in an Excel spreadsheet format and reviewed by the researcher for the appropriate recording of data and to monitor the coders’ progress. Monitoring coder progress turned out to be necessary as the coders’ demanding academic and work schedules which caused delays in data collection.

Appendix C:

Economic Theory of Monopolistic Competition



NOTE: Expensive non-price competition trades marketing (promotional) costs for revenues.

KEY:
M1 – initial marketing expenditure
M2 – increased marketing expenditure
MR – marginal revenue
D – demand (revenue structure)
AC – cost structure
MC – marketing expenditures
M1 positive discretionary budget: BA=CP
M2 positive discretionary budget: FE=PP'
(Paulsen & Smart, 2001, p. 238).

Appendix D:

Institutional Research Board (IRB) – Exemption

From: Deb Paxton [debra_paxton@ncsu.edu]
Sent: Tuesday, February 09, 2010 12:08 PM
To: Shadinger, David A
Subject: RE: IRB exemption - application

Hi Dave,

Because you're not conducting research with human subjects, you don't require IRB approval.

Thanks,

Deb

****
Deb Paxton
Office of Research Administration
North Carolina State University
2701 Sullivan Drive, Room 245
Raleigh, NC 27695-7514
Telephone: 919.515.4514
Fax: 919.515.7721
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