STUDENT AND FACULTY OPINIONS ON THE IMPACT OF WEB-ENHANCED COURSES ON THE EDUCATIONAL EXPERIENCE AT ALABAMA COMMUNITY COLLEGES

by

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ABSTRACT

This quantitative study examined the perceptions of Alabama community college students and faculty toward Web-enhanced courses and the impact of these courses on the educational experience as defined by Chickering and Gamson's *Seven Principles for Good Practice in Undergraduate Education*, an empirically based model. Secondarily, the study sought to determine if specific personal characteristics of each group influenced those perceptions. Findings indicate that the overwhelming majority of both students and instructors perceive Web-enhanced instruction to have a positive impact on the educational experience despite the fact that many instructors failed to utilize course management system tools that are designed to engage students in the learning process and to promote active learning (i.e., discussion boards, chat rooms, quizzes), favoring instead those tools designed to facilitate class management (e.g., announcements, posting syllabi, etc.). Moreover, the results of the study revealed that instructors continue to embrace the lecture as one of the primary teaching strategies employed in the classroom even though this strategy has been proven to disengage the learner from the learning process.

Although the influence of identified student and instructor characteristics were less definitive and harder to explain within the context of the seven vectors, findings suggest that for students, race/ethnicity, enrollment status, and hours of computer use more broadly influenced their opinions in terms of the seven vectors and, in some cases, were predictors of their opinions. Likewise, hours spent participating in professional development activities and interacting with students broadly influenced instructor opinions.

DEDICATION

To my parents, Richard and Melba Bandy, who showed me the meaning of unconditional love and instilled in me the importance of perseverance and hard work.

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CHAPTER 1

INTRODUCTION

One could reasonably argue that the Internet has forever changed the instructional landscape across all educational levels in this country (Frey, Faul, & Yankelov, 2003; Groves & Zemel, 2000; Kuh & Vesper, 2001). Nowhere is this more clearly illustrated than in the nation's colleges and universities (Anderson, 2003; Flowers, Pascarella, & Pierson, 2000; Groves & Zemel, 2000). In 1999, Phipps and Merisotis wrote of the tremendous influence that technology was having on higher education institutions in the United States at that time and asserted that technology would continue to significantly impact these institutions in the future. The authors' assertion proved prophetic. In their research regarding student experiences as they relate to information technology and engagement, Kuh and Laird (2005) equated email and the Internet with such ordinary tools as telephones and backpacks in terms of their use.

Although traditional instructional methods continue to dominate the college classroom (Cohen & Brawer, 2003), the increasing popularity of the Web-enhanced course illustrates higher education's growing reliance on technology. Institutions are investing heavily in infrastructure, course management systems such as Blackboard®, and technical support and training to encourage enhanced course delivery (Wingard, 2004); and an increasing number of faculty members are utilizing these tools to supplement their face-to-face classes (Bates & Poole, 2003; Pack, Jackson, Laughner, & Wheeler, 2003). In 2005, 43% of courses delivered in public colleges and universities and 31% of those delivered at public 2-year colleges were Web-enhanced, percentages that are likely to continue to grow (EDUCAUSE, 2005). If these trends

continue, a completely different picture of the college classroom and the teaching and learning process will emerge—one where technology, when integrated effectively, will play an increasingly important role.

Background

Technology is not new to institutions of higher learning. According to Lee (2004), computers were used as early as the 1950s as "sophisticated number crunchers and as extensions of calculators" (p. 13). By the late 1970s, research universities were primarily using mainframe computers for computer science instruction, administrative functions, and intense statistical research (Katz, 1993). However, with the unveiling of the desktop computer in the 1980s, a new technological trend began to emerge. Institutions of higher learning began exploring ways to utilize the computer to further enhance the teaching and learning process (Shuell & Farber, 2001), to increase access, and to gain a competitive advantage in educational arenas (Broskoske & Harvey, 2000; Le Grew, 1995). Enter the Internet. According to Jones and Madden (2002), it was the college campus that first experienced widespread use of the Internet in the 1990s. The author contended that the research taking place in universities led, in part, to the development of the Internet and that collectively, college students could be thought of as pioneers. Not surprisingly, it was college students who created Yahoo!, Napster, and Google, the latter of which was born in a dorm room at Stanford University ("Corporate Information," 2008, para. 2; Jones & Madden, 2002). (See Appendix A for a list of web-related terms and their definitions.)

As these technological innovations were taking place on college campuses, the federal government recognized the criticality of providing universal access to digitized resources (Van Dusen, 2000). Both the Clinton and Bush administrations sought to increase Internet penetration across the country. In 1994, President Clinton's Information Infrastructure Task Force was

charged with developing a plan to take advantage of the advances that had been made in the telecommunications industry in terms of bandwidth and connection speed. Because of the tremendous promise of broadband technologies, President George W. Bush continued the push for increased penetration, establishing 2007 as the year that affordable, universal access to broadband technology would be available on a national scale (U.S. Department of Commerce, 2004). Consequently, federal policy had a significant part to play in the rapid growth of Internet penetration in all sectors, resulting in increased usage not only among college students but the general population as well.

Although institutional innovations and federal initiatives led to significant advances in terms of technology, improvements in these areas during the 1990s developed rather quickly and often without the benefit of much empirical data. Higher education institutions invested billions of dollars trying to capitalize on the touted benefits of classrooms with integrated technology. In fact, in the 2005-2006 academic year alone, it was estimated that the investment by colleges and universities in information technology would exceed $7 billion, setting an all-time high (as cited in Bradford, Porciello, Balkon, & Backus, 2006-07). However, it is safe to say that in the beginning, few of the decisions to jump on the technology bandwagon were based on true research (other than that quickly provided by the vendor selling the technology). Rather, a "keeping up with the Joneses'" mentality appeared to take hold of those in higher education, at least for those making the decisions regarding technology use and its value to the educational experience. Broskoske and Harvey (2000) contended that institutions usually moved in this direction because they were afraid not to and because they wanted to reap the potential benefits. In hindsight, the motivators that led institutions to move toward technology integration in the classroom may have been misguided and uninformed, but it appears that the decisions to make

the move were good ones. In fact, Pascarella and Terenzini (2005) asserted that technology has the potential to transform the very face of teaching and learning.

Rationale for the Study

Given the technological innovations taking place in recent years, the federal imperatives relating to increased Internet penetration, and the lack of research informing best practices, the need for additional research is clear. This is particularly true for community colleges, institutions largely ignored in the literature when it comes to Web-enhanced instruction (Glasgow & Keim, 2005). Therefore, this study sought to investigate student and faculty opinions regarding the impact of Web-enhanced courses on the educational experience at Alabama community colleges.

Berge, Collins, and Dougherty (2000) defined the Web-enhanced course as one that supplements the traditional face-to-face class. In other words, the class continues to meet but uses the Web to provide additional learning opportunities along with an avenue for more effectively managing the course. Although detractors might argue otherwise, advocates assert that Web support extends the walls of the traditional classroom, allowing increased communication between students and instructors; gives students access to course content 24 hours a day, 7 days a week; more actively engages students in the learning process; and aligns with the expectations and activities of today's learners (C. Hamilton, Paulhamus, & Cochran, 2000).

In addition to the benefits noted in the preceding paragraph, other important benefits have been noted in terms of learning and student development. Targeting 4-year college and university students, Kuh and Vesper (2001) found that instructional technology, when used appropriately, increases the level of cognitive and personal growth. Including 2-year college students in their investigation, Flowers et al. (2000) found that information technology use in the classroom

resulted in a marked improvement in learning outcomes among first-year college students. Given these benefits, it is not surprising that the Internet has become an increasingly popular means through which to support face-to-face courses (Maddux & Cummings, 2000; Wilson-Jones & Caston, 2006).

When instructors first started utilizing the Web to support their traditional courses, many used websites to display static course content (Kandies & Stern, 1999). However, vendor-developed course management systems such as Blackboard® and WebCT®, open-source applications such as Moodle, and homegrown institutional systems provided centralized learning environments on the Web that made it much easier for them to post content and to engage students in asynchronous discussions and real-time chats. These systems also provided effective course management tools such as the grade book, which allowed instructors to post grades and students to track their progress. According to Rose (2004), thousands of colleges and universities around the world have adopted course management systems for classroom management and delivery. However, the number of public 2-year colleges adopting these systems in this country is slightly behind the national average for all institutions. In 2004, 31% of public 2-year colleges utilized course management software in their classes, compared with 40% of all institutions of higher learning (EDUCAUSE, 2005). No longer considered an educational innovation, the Web-enhanced course is quickly becoming the standard in college classrooms throughout the United States and around the globe.

Statement of the Problem

Given the rapid evolution of technological advances in recent years, particularly as it relates to Web-enhanced instruction, it is not surprising that research regarding the integration of instructional technology into the traditional classroom is just beginning to provide educators with

best practices that positively influence student learning and educational outcomes (Frey et al., 2003). Unfortunately, many of these studies focus on 4-year colleges and universities or group all institutions of higher learning together (Frey et al., 2003; Hu & Kuh, 2001; Kirkwood & Price, 2005; Kuh & Vesper, 2001; Laird & Kuh, 2005; Landry, Griffeth, & Hartman, 2006; Lu, 2001; Palloff & Pratt, 2001; Sanders & Morrison-Shetlar, 2001; Shuell & Farber, 2001; Wernet, Olliges & Delicath, 2000; Wilson-Jones & Caston, 2006.

Although this research provides valuable insight into the impact of technology on students from a broad perspective, more inquiries into the influence of Web-enhanced instruction on the educational experiences of community college students are needed. In their discussion of new directions for research, Pascarella and Terenzini (2005), whose synthesis of over 2,500 studies relating to the influence of college on students in *How College Affects Students*, acknowledged significant gains in reducing the "empirical black hole" as it related to community colleges and the effect of community colleges on students during the last decade (p. 631). The researchers further contended that inquiries into these institutions should not only continue but expand in light of the numbers of students enrolling in today's 2-year colleges.

As noted previously, research as it relates to instructional technology is relatively new. As one attempts to narrow the research focus to the public community college as it relates to Web-enhanced courses and their impact on the educational experience, the literature is meager at best, which is surprising given the impact these institutions have had on higher education in this country and the number of students they serve (Glasgow & Keim, 2005). Of the available studies targeting this population, according to Glasgow and Keim, most take the form of case studies, each involving one institution, making it impossible to generalize to larger populations.

The fact that the empirical data that exists is so limited is disturbing when one considers that the effective use of instructional technology requires an understanding of the learners with whom instructors engage and the increasingly important role technology plays in their lives both academically and socially (Oblinger, 2003). Yet, there appears to be a disconnect between educators and the students they teach in terms of technology usage. Jones and Madden (2002) referred to this phenomenon as an "Internet generation gap," and it is growing more and more apparent in today's colleges and universities (p. 9). In a report produced by EDUCAUSE, *Boomers, Gen-Xers, & Millennials: Understanding the New Students*, Oblinger (2003) stated that

> current higher education administrators, as well as many faculty and staff, represent a different generation from the majority of the student population. With an average faculty age of over fifty, many decision-makers in higher education graduated in the 1970s. The experiences of a 1970s generation of students are likely to be quite different from those of the current student body. (p. 38)

Considering the fact that the personal computer was not introduced until 1982 and the Internet did not gain widespread use until the late 1990s, the previous statement provides valuable insight into the technological gap that currently exists between faculty and students. This is particularly true for students who began entering college in 2000 and who are commonly referred to in the literature as Millennials (Coomes & DeBard, 2004; Oblinger, 2003; Strauss & Howe, 2003). Considered the largest generation, this population represented 51% of students attending public 2-year colleges in 2003 (National Center for Education Statistics [NCES], 2006a), and this number will continue to increase as more and more Millennials reach college age. According to Skiba and Barton (2006), Millennials will bring different expectations than those of the previous generations in terms of when and how they learn.

Although not exploring Internet usage from a generational perspective, Jones and Madden (2002) provided a broad snapshot of patterns of Internet use among traditional-aged

students attending today's colleges and universities. Although only 27 public and private 2- and 4-year colleges participated in the study, the researchers noted that the sample was representative of college students nationally. According to students responding to the survey, 85% owned their own computer, 86% had been online, 72% checked email daily, and 47% were introduced to the Internet at home. Moreover, all respondents reported that by age 18 (some as early as 16), they were using computers, and the Internet was a common staple in their world. It is clear from these findings that neither the Internet nor college students' reliance on it is going away. The challenge will be for educators to develop effective learning environments that capitalize on its use.

Although 2-year colleges were represented in the national study described above, it is important to note that in addition to the sample's representing traditional-aged students, participants were classified as degree-seeking and nonworking, characteristics far less common among students found on 2-year college campuses. According to Cohen and Brawer (2003), the majority of 2-year college students work, attend classes part-time, and are not necessarily seeking a degree. Many of these nontraditional students report annual family earnings of less than $20,000. In fact, 38% percent of independent students attending 2-year colleges fell within this category (NCES, 2002). Moreover, the average age of the typical 2-year college student is 28, slightly older than the typical traditional-aged student (NCES, 2006c).

Flowers et al. (2000) contended that different student populations and institutional types impact access to computers as well as the utilization of information technology. The researchers investigated, in part, the degree to which institutional and student characteristics influenced computer and email use and found that 4-year college students were much more likely to use computers and email than their 2-year counterparts. Moreover, age was found to significantly influence computer usage; the younger the student, the more positively computer usage was

influenced. Others concurred with these findings (Lu & Miller, 2002; Manner, 2003). Consequently, when narrowing the examination of Internet usage patterns to 2-year college students enrolled on campuses in the south, a region that holds the distinction for having the lowest rates of Internet penetration in the country (Spooner, 2003), a slightly different profile may emerge.

In his discussion of access and computer technology in community colleges, Watson (2004) described a digital divide where Internet usage patterns indicated considerable gaps in technology access, a problem compounded by geography. In fact, the results of a study conducted by the Pew Internet & American Life Project revealed that people in the south, regardless of their age, income, or education, were not as likely to go online as people in other regions of the country (Spooner, 2003). In addition to student characteristics, Katsinas and Moeck (2002) successfully applied the digital divide to rural 2-year colleges and the communities they serve due to consistently low levels of Internet penetration. The researchers contended that although the Internet can reduce economic gaps, rural institutions face additional challenges when trying to deliver services equal to those offered at urban institutions. For Alabama's 2-year colleges and its diverse student population, this presents even more challenges, given that 21 of its institutions have been classified as rural under the *Carnegie 2005 Basic Classification* system (NCES, 2006b).

It is important to note that increased access to broadband technologies has resulted in dramatic strides in narrowing the digital divide in recent years, but gaps still exist. In a study conducted by the U.S. Department of Commerce that explored the increased use of broadband technologies in the home and compared how dial-up and broadband usage varies, researchers found that "the distribution of high-speed usage across economic and demographic categories,

for the most part, follows the same patterns of variations that have been observed in the past in overall Internet use" (U.S. Department of Commerce, 2004, pp. 4-5). For example, in 2001 30% of households with incomes of less than $15,000 were Internet users. In contrast, 80% of households with incomes of $75,000 or above were Internet users. When comparing patterns relating to broadband access in 2003, similar disparities existed. For example, 8% of households with incomes of less than $15,000 compared to 45% of households with incomes of $75,000 or above had broadband connectivity. Results were similar when comparing Internet usage to broadband access along racial/ethnic lines. Twenty-six percent of Whites had access to Broadband connectivity in the home compared with 14% of Blacks and 13% of Hispanics.

Although an awareness of the technological experiences of the differing student populations served by 2-year institutions is important, particularly as more and more institutions embrace Web-enhanced instruction, employing appropriate strategies to effectively support the use of instructional technology is critical if learning is to be enhanced and educational outcomes are to be positively influenced. Unfortunately, the way teachers teach is often directly related to the way they learned. Brookfield (2002) asserted the following:

> Most of how teachers teach is in direct response to how they learned. They try to avoid reproducing the humiliations that they felt were visited upon them as learners and they seek to replicate the things their own teachers did that affirmed or inspired them. (p. 32)

Like their 4-year counterparts, 2-year college faculty use lecture as their main instructional approach. In fact, results from the Community College Faculty Survey of Student Engagement revealed that approximately 31% of instructors reported spending over half of their time in class lecturing to students (CCSSE, 2006). This learning environment represents a traditional teaching model. Skiba and Barton (2006) maintained that this model has been a mainstay in college classrooms for some time and described it as one where knowledge is

transferred from the instructor to the student via lectures and PowerPoint presentations. In these classrooms, unfortunately, learners are passive participants in the education process. However, when used appropriately, computer technology can shift the control of learning to the student, transforming the traditional classroom described above into a more active learning environment (Lowerison, Sclater, Schmid, & Abrami, 2006). This approach is a much more appealing alternative for the new generation of learners enrolling in today's colleges and universities, including the 2-year college (Oblinger & Oblinger, 2005; Skiba & Barton, 2006).

The research into 2-year colleges, particularly as it relates to Web-enhanced instruction, is quite limited. Student populations from diverse socioeconomic backgrounds and with different experiences and expectations in terms of technology present difficult challenges for instructors trying to meet the needs of all learners. In addition to these challenges, instructors teaching Web-enhanced courses must re-examine their instructional strategies and employ approaches that have been proven to maximize the teaching and learning process in a technology-rich environment. For some, specifically those who embrace the traditional classroom lecture as their primary instructional approach, this transition may be difficult. Compounding these challenges is the lack of relevant empirical data regarding Internet usage patterns, as it relates to the characteristics of 2-year college students and faculty, particularly those in the south.

Each of these issues has the potential to influence the educational experience of one or more student groups found on 2-year college campuses. Collectively, however, these issues have the potential, either directly or indirectly, to impact the educational experience of the entire student population. For example, older students who did not grow up using technology may feel alienated in Web-enhanced classrooms. Younger students (i.e., Millennials), who expect technology integration, may be negatively impacted by instructors who embrace more traditional

instructional approaches. Students from lower socioeconomic backgrounds may have issues of access. Consequently, the need for more extensive research is needed in order to fully understand the impact of Web-enhanced instruction on the educational experience, particularly as it relates to 2-year colleges and the faculty and students who teach and learn in these institutions.

Purpose of the Study

The primary purpose of this study was to determine the opinions of students and instructors at Alabama's 2-year colleges in terms of the impact of Web-enhanced courses on the educational experience. The researcher also sought to determine if personal characteristics influenced the opinions of these two groups. More specifically, how did the opinions of students attending Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience relate to generational membership, gender, race/ethnicity, institutional classification, educational goal, major/division, enrollment status, employment status, household income, and computer usage patterns? Moreover, how did the opinions of instructors employed at Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience relate to generational membership, gender, race/ethnicity, highest degree earned, institutional classification, employment status, years teaching, Internet access point, technology related professional development, computer usage patterns, and student interaction outside the classroom?

Research Questions

The primary purpose of this study was to investigate how 2-year college instructors and students perceived Web-enhanced instruction to influence the educational experience within the framework of the seven principles outlined by Chickering and Gamson (1987). The researcher

also sought to determine if there was a difference between the perceptions of each sample (i.e., instructors and students) and certain personal characteristics.

Specifically, this study sought to answer the following research questions:

1. What were the opinions of instructors and students in Alabama's 2-year colleges as they related to Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's (1987) Seven Principles?

2. Did the opinions of Alabama's 2-year college students differ regarding Web-enhanced instruction and its impact on the educational experience based upon their:

   a. generational membership?
   b. gender?
   c. race/ethnicity?
   d. institutional classification?
   e. educational goal?
   f. major?
   g. enrollment status?
   h. employment status?
   i. household income?
   j. computer usage patterns?

3. Did the opinions of Alabama's 2-year college faculty differ regarding Web-enhanced instruction and its impact on the educational experience based upon their:

   a. generational membership?
   b. gender?
   c. race/ethnicity?
   d. highest degree earned?
   e. institutional classification?
   f. employment status?
   g. years teaching?
   h. Internet access point?
   i. technology-related professional development?
   j. computer usage patterns?
   k. student interaction outside the classroom?

Limitations

There were several limitations associated with this study. Some were identified prior to the study; others emerged during the course of the study. The following is a list of limitations:

1. The sample itself was a limitation. Because there is only one institution in the Alabama Community College System that is designated suburban according to the Carnegie 2005 Basic Classification, it was difficult to determine if the data generated was representative of the institution or the institutional type. Similarly, only one urban institution participated in the study because the other institution was not yet offering Web-enhanced courses, which led to additional concerns regarding the generalizability of the study.

2. The response rate for online surveys is typically low. However, the researcher anticipated that because instructors in the sample had taught a Web-enhanced course in the past or were currently teaching one, they would possess the technological skills needed to complete the online surveys, and access to the surveys would be readily available to them, thereby minimizing the limitation. Although the response rate (45%) exceeded that which is generally associated with online surveys, it was still low in terms of the generalizability of the results (Ladico, Spaulding, & Voegtle, 2006).

3. Only students present the day the onsite student survey was administered responded to the survey. Consequently, the data collected were limited to those participants.

4. The data collected were self-reported. Differences in perceptions could have led to misreported data.

5. Although the courses were randomly selected, there was an inordinate number of students in the sample whose majors were related to the health sciences, primarily licensed

practical nursing and registered nursing. This can be attributed to the fact that the science courses (i.e., Anatomy and Physiology) were among those required of health related fields.

Assumptions

1. Instructors and students participating in the study would respond to the survey items truthfully.

2. Because instructors in the sample must have been teaching or must have taught a Web-enhanced course, they would have access to the Internet and would not be intimidated by a Web-based survey instrument.

3. When completing the surveys, instructors and students would be familiar with terminology typically associated with Web-enhanced instruction, particularly as it relates to CMSs because they would have taught, or have taken, a Web-enhanced course.

CHAPTER 2

LITERATURE REVIEW

In order to acquire a broad understanding of Web-enhanced instruction and its impact on the educational experiences of community college students, a comprehensive review of the literature is needed. In addition to providing an overview of the unique characteristics of 2-year college faculty and students, this review will examine the treatment of Web-enhanced instruction from a variety of perspectives—historical/ technological, generational, attitudinal, and pedagogical/theoretical—and conclude with the conceptual framework that will guide the study.

The 2-Year College: An Institutional Profile

Two-year colleges in the United States are indeed unique. In fact, the development of these institutions was a totally American experiment dating back to the late 1800s (Cohen, 1998; Ratcliff, 1994; Thelin, 2004). Describing the 2-year college as "a distinctively American invention, the comprehensive community college stands between secondary and higher education, between adult and higher education, between industrial training and formal technical education," Ratcliff succinctly illustrated the complexity of these organizations (pp. 3-4).

Alabama's 2-year colleges are governed by the State Board of Education, a body that also oversees the state's K-12 educational system. The Alabama Community College System, under the control of the State Board of Education, provides oversight to the state's 26 public 2-year community and technical colleges and one upper division university. According to *Focus on Education and Workforce Training: 2006 Annual Report* published by the Department of Postsecondary Education (2007), of the 26 public 2-year colleges currently in operation, 22 are

considered community colleges and 4 are considered technical colleges. From both national and Alabama Community College System perspectives, this section explores the characteristics of the 2-year college student, the faculty, and the institutional classifications through which Alabama's 2-year colleges and other institutions of higher learning are often examined.

The 2-Year College Student

Because the broad institutional mission of 2-year colleges promises affordable, accessible educational opportunities to individuals with varying academic needs, the diverse populations found on these campuses are not surprising (Bogart, 1994). In fact, Cohen and Brawer (2003) asserted, "To an institution that tries to offer something for everyone in the community, everyone is a potential student" (p. 39). Although each student is unique, collectively 2-year college students exhibit common characteristics. *Act on Fact: Using Data to Improve Student Success*, a report published by the Community College Survey of Student Engagement (CCSSE, 2006), provides a succinct, yet complex and telling portrait of community colleges and the students they serve. The findings of the report did not produce any startling revelations as to the unique characteristics of 2-year college students; in fact, the findings are clearly supported in the literature (Cohen & Brawer, 2003; Dougherty, 1994; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1995-1996). Still, the document provides a realistic, concise picture of today's multifaceted 2-year college student.

According to the report, the majority of those served by 2-year colleges are low-income and first-generation college students. These individuals are much more diverse and less likely to have common academic goals than those attending 4-year institutions. For example, some students seek formal degrees, whereas others only want to obtain the technical skills needed to secure a job. Moreover, these students typically are unable to devote as much of their time to

their studies because a significant portion of it must also be shared among family, work, and their community. Consequently, many 2-year college students attend classes on a part-time basis, their time on campus spent primarily in class (CCSSE, 2006). In addition to having differing educational goals and similar enrollment patterns, many students attending community colleges are academically challenged, having come from a public educational system that failed to adequately serve their needs (Cohen & Brawer, 2003; CCSSE, 2006). In fact, according to the *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 2003-2004* produced by NCES (2006a), almost half (42%) of students attending 2-year colleges reported taking a remedial course during their college experience, despite the fact that 97% of them had earned a high school diploma. Those who do not face the academic challenges of many of their peers often are looking for an affordable and accessible place to begin their college career (CCSSE, 2006).

Several of the characteristics outlined previously distinguish traditional students from nontraditional students, a disproportionate number of whom are served by 2-year colleges (NCES, 2002). The NCES report, *Non-traditional Undergraduates* (2002) characterizes nontraditional students as individuals who meet one or more of the following criteria: They delay enrollment in college following high school graduation by at least one year; they attend classes on a part-time basis, they work full-time; they are financially independent from their parents; they have dependents of their own (other than a spouse); and/or they did not graduate high school. Nontraditional students account for 73% of the entire student population in higher education (NCES, 2002), leading Belcastro and Purslow (2006) to refer to this group as the "New-Traditional Student" (p. 2). According to the NCES report, 61% of the students attending 2-year colleges are considered independent. Given the fact that 62% of students served are over

the age of 24, the number of independent students is not surprising. What is troubling is the fact that among those students, 38% earned less than $20,000 per year. The family earnings for some dependent students were just as bleak. Sixteen percent of students considered dependent had family incomes of less than $20,000. Another 22% of dependent students reported family earnings of $20,000-$40,000. Although 30% of students reported being married, 53% reported having dependents.

In light of the previously mentioned statistics, it is not unexpected that the overwhelming majority of 2-year college students work either part- or full-time. In fact, 38% percent of students work part-time, and 43% work full-time (at least 35 hours per week). The results of the 2007 CCSSE revealed that 57% of community college students work more than 20 hours per week. Almost all (98%) 2-year college students commute.

Demographically, the number of ethnic minorities attending today's 2-year colleges continues to increase. In 2003-2004, 40% of students were in the racial minority, with Blacks and Hispanics making up the largest portion of the group at 15% and 14%, respectively (NCES, 2006a). In Alabama's community colleges in the fall of 2003, minority enrollments made up 33% of the student population; however, the number of Black students attending 2-year colleges was almost double that of the national average ("Student Headcount," n.d.). The report did not distinguish between other ethnic minorities.

Like the number of ethnic minorities, the number of women found on 2-year college campuses is also rising. During 2003-2004, 59% of students attending these institutions were women (NCES, 2006a). The number of women attending Alabama's 2-year colleges mirrored the national average ("Student Headcount," n.d.).

Although student populations found on 2-year college campuses have common characteristics, it is clear that these populations are unique when compared to the student populations found on 4-year college campuses. Yet, a review of the literature revealed that 2-year college students have been largely ignored when it comes to Web-enhanced instruction (Frey et al., 2003; Hu & Kuh, 2001; Kirkwood & Price, 2005; Kuh & Vesper, 2001; Laird & Kuh, 2005; Landry et al., 2006; Lu, 2001; Palloff & Pratt, 2001; Sanders & Morrison-Shetlar, 2001; Shuell & Farber, 2001; Wernet et al., 2000; Wilson-Jones & Caston, 2006). Exploring collective and individual characteristics of 2-year college students becomes more relevant when examining the impact of Web-enhanced instruction on the educational experience because different student populations impact student access to computers and technology utilization (Flowers et al. 2000).

The 2-Year College Instructor: General Characteristics

According to Cohen and Brawer (2003), 2-year college instructor characteristics differ from those of faculty teaching at 4-year institutions in terms of the employment status, gender, and degree attainment. Data from the *Digest of Education Statistics, 2007* support this assertion (Knapp, Kelly-Reid, Whitmore, & Miller, 2007). Yet, as noted in the preceding paragraph, research regarding Web-enhanced instruction focuses almost entirely on 4-year colleges and universities. Because the populations are different, a more intense examination of instructor characteristics is warranted.

Using data provided in the National Survey of Postsecondary Faculty (NSOPF), Cataldi et al. (NCES, 2005) offered an analysis of faculty characteristics, including those of instructors teaching in public 2-year colleges. The authors limited their analyses to background, work activities, and compensation by employment status (full-time vs. part-time), which provided

useful comparison data, particularly when looking at demographics relating to gender, race/ethnicity, age, and highest degree earned.

In public Associate's degree granting institutions, survey results indicate that the majority of instructors work part-time. In fact, in the fall of 2003, only 36% of the faculty worked full-time; the remaining 64% were employed part-time. In Alabama's 2-year colleges, the percentage of part-time instructors was slightly higher than the national average. Seventy-one percent of instructors were employed on a part-time basis ("Full-Time and Part-Time Personnel by Function," n.d.). This disparity in the full- to part-time ratio is not a new phenomenon among 2-year colleges. According to Cohen and Brawer (2003), the percentage of part-time faculty has steadily increased since 1968 when part-time instructors represented just 34% of the faculty employed by these institutions.

Nationally, gender did not appear to be significantly influenced by employment status at 2-year institutions. Male instructors who worked full-time made up 51% of the sample compared with 49% of women. In Alabama's 2-year colleges, the number of full-time instructors who were women (60%) was slightly higher than the national average ("Full-Time Personnel," n.d.). Among those working part-time, 52% were men and 48% were women.

Like gender, race/ethnicity distributions remained relatively constant between full- and part-time faculty members at the national level. Full-time instructors who were White represented 81% of the sample, compared with 84% who worked part-time. Similar patterns emerged for Blacks, Asians, Hispanics, and Others. The difference in the percentage of full-time faculty members who were Black (6.7%) versus part-time faculty members who were Black (6.8%) was miniscule, separated by a mere 1/10th of 1%. Asians/Pacific Islanders represented 3.9% of full-time instructors and 2.9% of part-time instructors. Hispanics represented 5.7% of

those working full-time versus 4.2% of those working part-time. Although data were not available for part-time instructors employed at Alabama's 2-year colleges, the percentage of full-time Black instructors (26%) employed in public 2-year colleges exceeded the national average. Other minorities represented less than 1% of full-time instructors employed in the state's 2-year college system ("Full-Time Personnel," n.d.).

Nationally, the differences between part- and full-time instructors in terms of age were marginal for the most part. The average age of full-time instructors was 49.9; the average age of part-time instructors was 49.2. However, there was a slight difference in the percentage of full-time instructors who were under 35 (7%) when compared to the percentage of part-time instructors (12%) in the same age bracket. The percentage of full-time instructors (22%) who fell in the 35-44 age range did not differ significantly from those who worked part time (23%). However, 71% and 65%, respectively, represented the percentage of full- and part-time faculty members who were over the age of 45, suggesting a "graying" of this population (Rifkin, 2000). Data relating to age were not available for Alabama Community College System instructors.

Cohen and Brawer (2003), in their discussion of faculty pre-service preparation, asserted that the academic degree of choice typically has been the master's for 2-year college instructors. Although full-time instructors tend to have higher degrees than their part-time counterparts, the 2004 NSOPF findings support the popularity of the master's degree among full- and part-time instructors at these institutions (NCES, 2005). In fact, 63% of full-time instructors had master's degrees compared with 53% of their part-time counterparts. Doctoral or professional degrees were held by 19% of full-time instructors and 14% of part-time instructors, which has remained fairly constant in recent decades (Cohen & Brawer, 2003). The percentage of part-time instructors (33%) holding a bachelor's degree or less was almost double that of full-time

instructors (18%). Within the Alabama Community College System, the percentage of full-time instructors with earned master's degrees (71%) surpassed the national average, whereas the percentage of full-time instructors with earned doctorates (18%) mirrored it. Ten percent of full-time instructors held a bachelor's degree or less ("Full-Time Schedule D"). Data relating to degree attainment for part-time personnel were not available.

The 2-Year College Instructor: A Profile of Teaching Strategies

In 1998, community college instructors represented roughly one third of all college and university faculty teaching in the United States. Moreover, almost half of all first-year college students were taught by this group (Huber, 1997). Consequently, the teaching strategies that community college instructors employ and the manner in which they interact with students have a significant impact on higher education in this country (Outcalt, 2002). This is particularly relevant in light of the fact that 31% of courses offered in community colleges in 2005 were Web-enhanced (EDUCAUSE, 2005), and research suggests that employing appropriate teaching strategies in Web-enhanced courses promotes active learning and student engagement (Jonassen, Peck, & Wilson, 1999; Lowerison et al., 2006; Newlin & Wang, 2002).

Schuetz (2002) broadly defined instructional practices as behaviors that promote learning (p. 40). Using data from the 2000 survey of the Center for the Study of Community Colleges (CSCC), which included 1,500 responses from faculty teaching at over one hundred 2-year institutions across the country, the author divided instructional practices into two categories—teaching methods and instructional practices outside of the classroom—and compared the practices of full- and part-time instructors. Comparing these two groups is important given the increasing number of part-time instructors utilized on 2-year college campuses and the fact that

research findings are inconsistent in terms of the impact of employment status on teaching effectiveness (Banachowski, 1996).

When examining teaching methods, the researcher found little difference between the two groups. Regardless of employment status, 69% of class time was consumed with lectures, discussions, and tests, activities generally associated with traditional forms of teaching. Despite the variety of instructional techniques available, lectures dominated the responses, accounting for 43% of class time, which is consistently supported in the literature (Cohen & Brawer, 2003; Palmer, 2002; Schuetz, 2002). According to a separate report, *Effective Educational Practice: What We're Learning from Community College Faculty* (McClenney & Peterson, 2006), which described the findings of the Community College Faculty Survey of Student Engagement (CCFSSE), computer/Internet use was not a priority.

The criticality of student-instructor interaction outside the classroom as a means through which to increase intellectual development (Pascarella & Terenzini, 1991), to increase student involvement (Astin, 1984; Chickering & Ehrmann, 1996) and motivation (Chickering & Ehrmann, 1996), to encourage student development (Astin, 1984; Chickering,1969; Chickering & Ehrmann, 1996; Kuh, 1993), and to increase persistence (Astin, 1977; Astin, 1993; Pascarella & Terenzini, 1991) has been espoused in the literature. Yet, 35% of part-time faculty responding to the CSCC survey reported that after class on their last workday, they had no contact with students. Results from the CCFSSE indicated similar findings. However, full-time faculty responding to the CSCC survey were much more likely to spend non-classroom time with students. On their last work day, 84% of instructors reported spending time outside class time with students (p. 42). The results of CCFSSE were much bleaker. Thirty-three percent of full-time instructors responding reported not interacting with students outside class time at all.

Institutional Types: Classification Systems and the 2-Year College

According to McCormick and Zhao (2005), "classification is a ubiquitous human activity, an essential part of how we perceive and make sense of the world. It helps us collect, organize, store, and retrieve complex information" (p. 53). Consequently, it is not surprising that classification systems have been developed through which to examine higher education, (Zemsky, Shaman, & Shapiro, 2001). However, it is the Carnegie Classification that is widely recognized as the framework of choice to describe the diversity that exists among colleges and universities in the United States ("The Carnegie Classification," 2007, para. 1).

Originally developed in 1970 by the Carnegie Commission on Higher Education, a group established to explore critical issues in higher education in the United States, the Carnegie Classification provided researchers within the commission a framework through which to categorize higher education institutions that was applicable to the work of the commission (McCormick & Zhao, 2005). Although unintended, the system soon became the definitive classification scheme used by other researchers and eventually morphed into a system used for a number of different purposes by a broad array of users.

In its original form and subsequent revisions, the Carnegie Classification System, now referred to as the *Basic Classification*, ("The Carnegie Classification," 2007, para. 2) failed to acknowledge the diversity of the 2-year college (Cohen, 2001; Hardy & Katsinas, 2006; Katsinas, 1993, 1996, 2003). In fact, it was the only institutional type within Carnegie's initial classification scheme that did not contain subcategories to capture the unique characteristics of the 2-year college (Bailey, 2003; McCormick & Cox, 2003; McCormick & Zhao, 2005). Katsinas (2003), too, recognized the extreme limitations of the Carnegie Classification System as it related to 2-year colleges and saw the need for a more representative system that accurately

depicted the diversity found among these institutions in relation to geography, governance, institutional control, and size. The researcher argued that the lack of a classification scheme effectively eliminated stratified sampling when researching these institutions, forcing researchers to target the 2-year college population on a regional, state, or national level, resulting in low response rates and skewed findings (Katsinas, 1996; Katsinas, 2003). Hardy (2005) supported this argument, noting that due to the variations that exist among 2-year colleges in terms of governance and geography, among other things, the Carnegie Classification and its broad characterization of these institutions did not accurately reflect their differences, making it difficult for researchers to use for purposes of comparative analysis.

In 2003, Katsinas and other researchers proposed classification models that specifically targeted the 2-year college (Cohen, 2003; Katsinas, 2003; Merisotis & Shedd, 2003; Schuyler, 2003; Shamon & Zemsky 2003). These models were published in the monograph, *New Directions for Community Colleges* (McCormick & Cox, 2003). In fact, the subject of the entire monograph was classification systems for 2-year colleges, and it included critiques of the proposed models from several prominent community college scholars and practitioners. De los Santos (2003), one of the reviewers, examined each of the proposed schemes by applying criteria he established based on the suggestions of the models' developers along with his experience as a practitioner in the field. He concluded that the Katsinas-Lacey model met the majority of the established criteria and suggested that the model, with modifications, might be the most functional.

Katsinas began his work toward the development of a classification model a decade earlier. The researcher proposed a multilevel scheme for 2-year colleges that incorporated the three primary elements used to develop the original, widely accepted, easy-to-use Carnegie

Classification system: the use of unbiased data from sources recognized at a national level, the use of relevant criteria in terms of the number of awards and the level at which they were awarded, and the use of major categories that demonstrated some measure of constancy (Katsinas, 2003).

Katsinas (1993) formally presented his conceptual model for the first time in a paper at the 1993 Annual Meeting of the Council on Universities and Colleges. Three years later, he proposed *A Classification System for Community Colleges* as a lens through which graduate students pursuing advanced degrees in community college leadership could examine the rich diversity that exists among 2-year colleges (Katsinas, 1996). Katsinas and Lacey (1996) refined Katsinas' original model to include 3 major categories and 11 subcategories that represented three primary characterizations: institutional control, location, and size. Until 2005, the model underwent one major revision to reflect the findings of relevant research. Applying Katsinas's original model to rural institutions, researchers conducting two separate studies found that a significant difference in size was only present between small and large rural institutions. Consequently, rural community colleges were no longer classified as small, medium or large. Instead, they were characterized as being either small or large. This characterization would change once again in 2005.

The original classification model proposed by Katsinas (1993) and the subsequent revised model developed by Katsinas and Lacey (1996) were modified again by Hardy, Katsinas, and Lacey in 2005 using feedback from leading scholars and practitioners in the field, expanded sources for data, and more current data (Hardy & Katsinas, 2006). In his dissertation, *A Two-year College Typology for the 21st Century: Updating and Utilizing the Katsinas-Lacey Classification System*, Hardy (2005) updated the Katsinas and Lacey model to include more

current data, primarily from the 2000 U.S. Census and 2000-01/2001-02 IPEDS data. Hardy and Katsinas (2006) identified data elements—not available when the earlier models were developed—that would more accurately encapsulate institutional profiles of those being classified in terms of population and enrollment. For example, researchers were able to disaggregate the consolidated metropolitan statistical areas (CMSAs), which are made up of central cities and counties, provided in 2000 U.S. Census data into primary statistical areas (PMSAs) and metropolitan statistical areas (MSAs). This allowed the researchers to more easily identify urban and suburban population areas and to include areas previously excluded based on their lack of centrality to the CMSA. The researchers also established population limits to distinguish urban/suburban institutions from rural institutions. For example, an institution with a reported population of 500,000 or more (according to 2000 U.S. Census data) and PMSA or MSA borders was considered urban/suburban. Conversely, if the reported population was less than 500,000, regardless of its location within or outside of a PMSA or MSA, the institution was identified as rural ("Basic Classification," 2007, para. 3; Hardy & Katsinas, 2006).

In addition to modifying elements relating to geography, Hardy and Katsinas (2006) considered what enrollment figures would best determine rural subclassification assignments and lead to a more accurate enrollment profile. Reintroducing the Rural-Medium subclassification to the model, the researchers decided that unduplicated annual enrollment provided a better representation of the 2-year college. They then established enrollment ranges for small, medium, and large institutions (Hardy & Katsinas, 2006). Based on 2000-01 IPEDS data that represents an annual unduplicated credit headcount, a campus is considered small if it has less than 2,500 students; medium if it has between 2,500 and 7,500 students; and large if it has more than 7,500 students (Hardy & Katsinas, 2006).

After strengthening the geographical and enrollment data elements of the model, the researchers, based on feedback from scholars and practitioners in the field, determined that every campus administered by public higher education institutions should be included in the classification scheme (Hardy & Katsinas, 2006). According to the authors, this addition would (a) lead to a better organized and more clearly illustrated picture of the 2-year college and (b) simplify the analysis and presentation of 2-level data when applying the model.

One additional attribute defined by the *Carnegie 2005 Basic Classification System* and the operational model developed by Katsinas, Lacey, and Hardy in 2005 and its earlier iterations that is used to further distinguish 2-year colleges relates to the number of campuses for which an institution has complete control and authority ("Basic Classification," 2007, para. 6; Katsinas, 2003; Katsinas & Lacey, 1996). Whether an institution is designated as a single campus or multicampus depends on its governance structure and the level at which the course requirements for the associate's degree can be met (Katsinas, 2003). This designation applies only to suburban and urban institutions. An institution where students can take all of the coursework required for an associate's degree on one main campus that is exclusively controlled and governed by the institution is considered a single campus. The designation of multicampus, on the other hand, requires that the institution has more than one site for which it has total control while providing a full-range of education services at each site or be a part of a system of multiple institutions that falls under one governing structure or body ("Basic Classification," 2007, para. 6; Katsinas, 2003; Katsinas & Lacey, 1996).

Consequently, the Basic Carnegie Classification system was revised in 2005 to incorporate the *Katsinas, Lacey, and Hardy 2005 Classification System*. This system now serves as the foundation for 2-year college category assignments ("Basic Classification," 2007, para. 2).

The Classification of Alabama 2-year Colleges

Based on the *Carnegie 2005 Basic Classification* system, the majority of the community colleges and all of the technical colleges in the state of Alabama are considered rural (see Appendix B for a complete list of Alabama community colleges and their institutional designations). In fact, a review of data extracted from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS) indicated that 22 of the 26 community and technical colleges (84%) within the state were considered rural, a much higher percentage than the 59% reported nationally (NCES, 2006b). The Carnegie system was applied further to categorize the public rural-serving institutions according to size. Nine of the 22 (41%) were classified as small, 7 (32%) were classified as medium, and 6 (27%) were classified as large (NCES, 2006b). Comparatively speaking, there are twice as many medium-sized institutions as there are small and large institutions at the national level, where 22% of rural colleges are considered small, 54% are considered medium, and 24% are considered large.

Among the four remaining community colleges in the state, three (12%) are designated as urban-serving multicampuses, and one (4%) is designated as a suburban-serving multicampus (NCES, 2006b). This presents a slightly different picture than when looking at the national landscape, where 21% of publicly controlled community and technical colleges are categorized as being suburban, and 20% are categorized urban.

Web-Enhanced Instruction: A Working Definition

In a traditional classroom setting (i.e., face-to-face), instructors and students are required to meet at the same location and at the same time. The instructor regulates the pace at which the class as a whole moves through the content, regardless of scheduling demands or the students' and/or instructor's interest in the topic or past experiences (Berge et al., 2000). Unfortunately,

this teacher-centered, lecture-based environment often disengages the student from the learning process, making him or her a passive recipient rather than an active learner (Laurillard, 2002). Over the last decade, the availability of Web-based technologies has expanded the possibilities for interaction, both inside and outside the traditional walls of the classroom. In addition to interacting with course content, students can now collaborate more easily with their instructors and peers (Vaughan, 2007). Consequently, the Web-enhanced course is becoming an increasingly popular alternative to traditional classroom instruction (Frey et al., 2003; Wilson-Jones & Caston, 2006).

A review of the literature revealed a number of definitions for Web-enhanced instruction (Frey et al., 2003; Palloff & Pratt, 2001). In their discussion of instructional design, Berge et al. (2000) simply defined the Web-enhanced course as one that supplemented the traditional face-to-face class. In other words, the class continues to meet but uses the Web to provide additional learning opportunities along with a venue through which to more effectively manage the course. Investigating student perceptions of Blackboard®, a course management application, Landry et al. (2006) supported this definition, defining Web-enhanced instruction as a means to complement classroom lectures with course materials that are available on the Internet.

In an effort to focus on student-centered instruction, some researchers defined Web-enhanced instruction from more of a learning perspective rather than a teaching perspective. Sanders and Morrison-Shetlar (2001) referred to this instructional strategy as computer-enhanced learning, whereby students learn in a traditional face-to-face classroom environment that is supplemented with Web-based and computer technologies. Although some researchers defined Web-enhanced instruction from a learner perspective, others focused on the seat-time associated with the traditional course, stressing the value of face-to-face interaction. For example, Frey et

al. (2003) defined the Web-enhanced classroom as one that utilizes technology yet maintains the time spent in class.

A variety of other terms have been used to describe traditional, face-to-face courses that utilize the Web for support (e.g., *Web assisted, Web supported, computer-mediated instruction*). For the purposes of this study, however, Web-enhanced instruction will be used to describe the traditional face-to-face course that utilizes a course management system (e.g., Blackboard®, e-College®, etc.) as a supplemental tool to enhance teaching and learning without sacrificing face-to-face instruction.

From Computer-Assisted to Web-Enhanced Instruction: Historical and Technological Perspectives

Computer-assisted instruction (CAI) as it is now known is relatively new; however, research into this instructional medium began in the 1950s when IBM researchers "developed the first CAI author language and designed one of the first CAI programs to be used in public schools" (Reiser, 2001, p. 59). It was first introduced into both public school and higher education settings in the 1960s by Patrick Suppes and Richard Atkins, who are among the recognized pioneers of this instructional medium (Molnar, 1997; Reiser, 2001). According to Molnar, the two Stanford professors started a "program of research and development on computer-assisted instruction in mathematics and reading" (p. 65). Although several major initiatives involving CAI occurred in the 1960s and 1970s, including the Stanford project and the University of Illinois' Program Logic for Automated Teaching Operations (PLATO) learning system, ultimately, their impact on education during that time was minimal (Alderman, Appel, & Murphy, 1978; Pagliaro, 1983).

The popularity of computers as an instructional tool did not begin to blossom until the early 1980s when the personal computer was first introduced (Reiser, 2001). Molnar (1997)

dated this event to the mid-1970s. According to the author, the computer became a necessity for many stakeholders in education. "What began as a grassroots revolution driven by students, teachers and parents, was now a new educational imperative as important as having books and libraries" (p. 67). During this time, computers were primarily used for drill and practice exercises and rote memorization (Palak, Walls, & Wells, 2006), activities typically associated with a teacher-centered learning environment. Regardless, the enthusiasm over the computer and the grand projections regarding its impending impact on education did not take root in the country's classrooms. Reiser (2001) contended that the effect of computers on instructional strategies was not felt to the degree that many in educational circles predicted, noting that as late as 1995, when survey findings indicated that the student-to-computer ratio was 9:1, the impact of this medium continued to have little influence on instructional strategies. In fact, the three most common instructional strategies utilized before the 20th Century—the instructor, the chalkboard, and the textbook—were still the most frequently used at the beginning of the 21st Century (Reiser, 2001).

Although instructors continued to hold fast to traditional forms of instruction (Cohen & Brawer, 2003), 1995 appears to be the tipping point in terms of Web-enhanced instruction. Advances in technology and increased access to the Internet brought with them new opportunities and a renewed interest in the use of technology in the classroom (Reiser, 2001). However, when the Web was first introduced as a tool to supplement face-to-face classes, instructor-developed websites served as an extension of the teacher-centered classroom where instructors typically posted static, print-based materials (Kandies & Stern, 1999; Landry, 2003; Signer, Hall, & Upton, 2000). Consequently, utilization of the Internet as an effective teaching and learning tool was minimal (Kandies & Stern, 1999; Maddux & Cummings, 2000; Malikowski, Thompson, & Theis, 2007). In fact, Maddux and Cummings (2000) contended that

"the Web is littered with higher education course-related pages that are technically and/or pedagogically flawed" (p. 148). Kandies and Stern provided a succinct illustration of the deficits found in many Web pages designed to support face-to-face courses:

> The traditional "static" Web page is used to deliver information and to provide links to other information sources. It cannot collect data such as student responses to a survey or quiz. It cannot record the pages assessed as the student navigates through an assignment. It cannot redirect the progress of a lesson in response to a student's entry in a tutorial or guided exercise. (p. 4)

In their discussion of Web-enhanced courses, the authors described an evolutionary process, one that initially provided a passive learning environment but progressed to an experience that was completely interactive and based on constructivist principles. Course management systems, such as Blackboard® and WebCT®, provided the much needed functionality and interactivity for those instructors who did not have the technical skills required to create them on their own (Apedoe, 2005; Kandies & Stern, 1999).

Course Management Systems

Katz (2003) credited the development of the course management system (CMS) as one of four key developments occurring after 1970 that not only tested the traditions associated with academia but also led to the advancement of higher education. Although the development of these systems can be attributed to a number of individuals from a number of institutions, the author asserted that the University of British Columbia's Murray Goldberg was among the most notable innovators in terms of CMS development.

According to Morgan (2003), course management systems (CMS) were fairly new to higher education, having been introduced within the prior 15 years. However, Katz (2003) dated the introduction of these systems to the 1970s. Describing an evolutionary process, the author maintained that in the beginning these systems were "used by quirky faculty to streamline efforts

or to illustrate points with students in new and novel ways" and acknowledged that the transition from being somewhat of a novelty to key components of the academy's technology infrastructure occurred only within the prior 10 years (p. 54), which is more in line with Morgan's (2003) and others' timetables (Carmean, & Brown, 2005). Nevertheless, it is clear that these systems are significantly impacting the teaching and learning process in higher education. In fact, Simonson (2007) claimed that CMS is among the most critical tools available to educators in terms of technology.

When first introduced into the mainstream of higher education, the CMS was the primary vehicle through which distance education courses were administered. However, these systems have emerged as the tool of choice among educators wanting to support their traditional courses with technology (Landry et al., 2006; Simonson, 2007; Wernet et al., 2000). In fact, Morgan (2003) credited the CMS as being the principal means through which faculty are introduced to and adopt technology as a tool for teaching and learning.

Morgan (2003) defined the CMS as a "suite of software tools, usually organized around a class or unit of instruction" (p. 16). According to Malikowski et al. (2007), these systems provide a variety of integrated tools that are Web-based and that have applications for learning and for course management. Included in this suite are the tools instructors need to teach a class, some of which are considered static, others that are interactive, and still others that utilize the integrated nature of CMSs (Malikowski et al., 2007). Static tools include announcements, syllabus, assignments, and content posted for reading. Interactivity comes into play through the communication features provided through these systems (e.g., discussion boards, emails, chats) and other tools such as quizzes and surveys. However, integration is what increases the effectiveness of the CMS (Malikowski et al., 2007). Several illustrations support this assertion.

Statistical tools allow the instructor to determine the degree to which the student is interacting with the system. Quizzes can be set up so that they are graded and posted to the grade book automatically, providing immediate feedback to the student. Learning units give instructors the ability to sequence modules and set controls as to how students navigate through them (Blackboard, 2006, p. 3).

Course management systems are referred to by a variety of names in the literature, including course management software tools (Wernet et al., 2000), course authoring software (Frey et al., 2003), interactive educational tools (Landry et al., 2006), Web-based instructional programs (Sanders & Morrison-Shetlar, 2001), and learning management systems (Simonson, 2007). In fact, in their attempt to distinguish course management systems from learning management systems, Watson and Watson (2007) acknowledged the lack of standardization when it comes to computer applications in education. Regardless of what they are called, these systems serve the same purpose, albeit to varying degrees, depending on the needs of the instructor and learners. Fundamentally, they extend the boundaries of the traditional face-to-face class by providing instructors with an online repository or course shell to which they can post course materials that can be accessed 24 hours a day, 7 days a week, by learners with a computer and Internet access (Landry et al., 2006).

Doyle (2005) estimated that the number of course management systems currently available is close to 1,000. Until recently, Blackboard® and WebCT® were the dominant players in the CMS market, with approximately 3,700 institutions in the United States utilizing one or the other (Roach, 2006). However, in 2006, Blackboard® merged with WebCT, and it is estimated that together they now control 80% of the market in the United States (Bradford et al., 2006-2007). Among Alabama's community colleges, these two giants control an even larger

percentage of the market. A recent review of institutional websites revealed that all but one of the community colleges in the state's 2-year college system (95%) used Blackboard®, WebCT®, or a combination of the two.

Course management systems can be homegrown (developed by individual institutions) or "canned" (also referred to as closed source or proprietary). Open source software (OSS) is also emerging as a viable economic option for educators looking for a place to host the online components of their courses (Koontz, 2006; Simonson, 2007). Each has its advantages, but they all have costs associated with them whether direct or indirect. Canned or proprietary systems may be purchased or licensed but can be costly (Kumar & Merriman, 2005; Shaw & Venkatesh, 2005), inflexible (Shaw & Venkatesh, 2005), and lack interoperability (Shaw & Venkatesh, 2005); however, they can be implemented quickly and provide customer support features often not available through other systems. Homegrown systems can be customized to a greater degree to meet the unique needs of the individual institution (Shaw & Venkatesh, 2005) but can be just as costly in terms of staff, infrastructure, and development time. Although access to the technology is free, there are costs associated with infrastructure, implementation, maintenance, and support (Shaw & Venkatesh, 2005; Simonson, 2007).

Although the overwhelming majority of institutions elect to purchase canned course management systems, open-source software (OSS) has experienced a rebirth in recent years. In fact, this technology was introduced long before the arrival of Microsoft (Koontz, 2006). Although OSS did not experience the same popularity as its private competitors, it is emerging as an alternative to the more expensive proprietary applications (Koontz, 2006). According to *The Campus Computing Project* (K. Green, 2006), a national survey relating to information technology in higher education, and others (Bradford et al., 2006-2007), the use of open-source

course management systems is gaining momentum. Two of the more popular systems currently available are Moodle and Sakai. Approximately 10% of private 4-year colleges reported using Moodle as their campus model. Only 5.5% of public universities and 3.9% of private universities use Sakai; however, interest in this application is growing (Simonson, 2007). The open-source movement has yet to reach Alabama's 2-year community colleges. In fact, a cursory review of institutional websites revealed that none were utilizing OSS.

Web-Enhanced Instruction: Technology from a Generational Perspective

Generational analysis provides a lens through which to examine the students served by institutions of higher learning; it can also be used as a tool for effective policy development and practice (Coomes & Debard, 2004). A review of the literature revealed several researchers who employed this approach in their examination of college students' patterns of technology use (Costello, Lenholt, & Stryker, 2004; Hartman, Moskal, & Dziuban, 2005) and a number of articles that, although not investigational, provided insight into a particular generation's technology use patterns from a teaching and learning perspective. These informational articles provided effective strategies for working with students in a variety of settings—the classroom, the library, and the student support services realm (McGlynn, 2005; Oblinger, 2003; Skiba & Barton, 2006).

In the report, *Educating the Net Generation* produced by EDUCAUSE, Oblinger and Oblinger (2005) contended that because the perspectives of faculty and/or administrators may vary greatly from that of students, issues relating to the differences in generations are pertinent to higher education. In fact, Oblinger (2003) asserted that the majority of faculty teaching in today's colleges and universities represent different generations than those of the majority of the students enrolled there. A comparison of community college faculty and student demographics

as it relates to age supports the author's assertion. According to the fourth *National Study of Postsecondary Faculty (NSOPF)*, the average age of 2-year college instructors, regardless of their employment status was 49 (NCES, 2005). Seventy-one percent and 65%, respectively, represented the number of full- and part-time instructors who were over the age of 45. The percentage of part-time instructors who were under 35 (12%) was slightly higher than their full-time colleagues (7%), but still relatively small. When comparing the age characteristics of 2-year college students for the same period, the picture looks much different. Nationally, the average age of community college students was 28. Seventy-seven percent of this population was under 35, and 15% was over 40 (NCES, 2006c).

On any given day on 2-year college campuses throughout the United States, there are four generations of faculty, staff, and students present (Coomes & Debard, 2004). Strauss and Howe (2003) described a generation as "a society-wide peer group, born over a period roughly the same length as the passage from youth to adulthood (in today's America, around 20 or 21 years), who collectively possesses a common persona" (p. 40). A variety of names have been attached to these generational cohort groups in the literature. For example, the Millennials (Strauss & Howe, 1991), students who began entering college in 2000 and who have received quite a bit of focus in the literature (Coomes, 2004; Coomes & DeBard, 2004; Murray, 1997; Oblinger, 2003; Oblinger & Oblinger, 2005; Zemke, 2001), have been called Echo Boomers (Alch, 2000; Harris, 2005), Digital Natives (Prensky, 2001), and the Net Generation or Net Gen (Alch, 2000; Oblinger & Oblinger, 2005; Skiba & Barton, 2006), among others. However, it is Strauss and Howe's (1991) generational framework that is credited as being the most widely applied in the literature (Coomes & Debard, 2004). In Howe & Strauss's (2000) *Millennials Rising: The Next Great Generation*, the theorists categorized the generations primarily found on

college campuses as follows: Silents (Born 1925-1942), Boomers (Born 1943-1960), Generation X (1961-1981), and Millennials (1982-2002). In terms of technology, each cohort has its own distinct characteristics and expectations, but it is the Millennial students who are the most technologically savvy. Representing 51% of students attending public, 2-year colleges in 2003 (NCES, 2006a), many of these students were born about the same time as the personal computer, and email, the Internet, and instant messaging (IM) have been a part of their lives since birth (Coomes, 2004).

Web-Enhanced Instruction: An Attitudinal Perspective

Kirkwood and Price (2005) contended that integrating technology into the teaching and learning process does not necessarily lead to enhanced learning. Others agreed (Duffy & Kirkley, 2004; Johnston & McCormack, 1996; Lowerison et al., 2006; Palloff & Pratt, 2001; Shuell & Farber, 2001). Shuell and Farber asserted that although technology has the potential to positively influence student learning, neither its presence nor its use necessarily results in an enriched learning experience. Yet, it would be shortsighted to suggest that the impact of Web-based technologies on the fundamental process of learning could be examined effectively without considering the perspectives of two critical players—the student and the instructor.

Student Perspectives on the Web-Enhanced Course

Insight into student perceptions is an important piece of the teaching and learning puzzle, particularly as it relates to Web-enhanced instruction. According to Shuell and Farber (2001), "Although the instructor's use of technology sets the stage for learning, it is the students' reaction to and use of the technology that determines whether the technology has an effect on their learning" (p. 120). Yet, at times, a disconnect exists between Web-assisted strategies utilized by instructors and the strategies considered most useful to students (Frey et al., 2003;

Landry et al., 2006). In recent years, student perspectives on the effectiveness of Web-based technology in the higher education classroom have gained more attention in the literature (Frey et al., 2003; Kirkwood & Price, 2005; Landry et al., 2006; Lu, 2001; Palloff & Pratt, 2001; Sanders & Morrison-Shetlar, 2001; Shuell & Farber, 2001; Wernet, et al., 2000; Wilson-Jones & Caston, 2006). Unfortunately, these studies, almost exclusively, focused on baccalaureate and graduate students. A review of the literature, however, revealed several studies that targeted 2-year college students (Aziz, 2006; Hyllegard & Burke, 2002; Keim & von Destinon, 2008; Tung, 2007; Yang, 2001). Of these, two reported on the relationship between student characteristics and perceptions toward Web-enhanced instruction (Keim & von Destinon, 2008; Tung, 2007). The results of these studies suggest that students generally perceive Web-enhanced instruction to positively impact teaching and learning (Aziz, 2006; Keim & von Destinon, 2008; Tung, 2007; Yang, 2001), to increase interaction between faculty and peers (Aziz, 2006), and to increase computer proficiency (Hyllegard & Burke, 2002). However, issues related to access and proficiency was a theme that emerged in several of the studies (Keim & von Destinon, 2008; Yang, 2001).

Surveying 690 community college students from two districts in California, Aziz (2006) investigated whether or not student learning outcomes were affected by information technology. Respondents reported that computer usage (primarily Internet and email) actively engaged them in the learning process, made them more confident in terms of their ability to learn the course material, simplified remediation on concepts not understood in class, and increased interactions with faculty and fellow students. Although this particular study failed to target Web-enhanced instruction specifically, 41% of respondents reported using a course Web site often or very often,

and 50% reported using email with the same frequency (i.e., often or very often). Websites and email are tools commonly associated with Web-enhanced courses.

In a much smaller mixed-methods study, Yang (2001) investigated community college student attitudes toward the integration of the Internet into an English as a foreign language (EFL) class. Fifty-five second-year students from a single class participated in the study. Results indicated that despite technical problems, the majority of those participating found Internet integration to be "positive," "rewarding," "constructive," "empowering," "exciting," and "challenging" and would recommend integrating the use of the Internet into other courses. It is important to note that technical issues (e.g., access to a computer, access speed, server problems) did influence the attitude of at least some of the learners participating in this study. These participants reported that technical problems outweighed the pedagogical benefits of technology-enhanced education. However, they were not ready to wash their hands of Web-enhanced instruction. In fact, they reported that they would try a Web-enhanced course again if the technological issues were minimized or eliminated.

Hyllegard and Burke (2002) compared 12 Web-enhanced and 18 online courses at an urban community college in New York in the 2001 spring and fall terms. The researchers' primary interest was a comparative analysis of the two instructional delivery methods in terms of academic achievement. As part of the study, students were surveyed to determine their level of satisfaction and perceptions regarding the benefits of the course in which they were enrolled. Students in Web-enhanced courses reported that the delivery method made them more confident, increased their level of comfort with Internet usage and software, and better prepared them for jobs with technology requirements.

The Impact of Student Characteristics on Their Perceptions

Two studies were identified that explored the relationship between specific personal characteristics and the perceptions of community college students as it relates to Web-enhanced instruction (Keim & von Destinon, 2008; Tung, 2007). The first focused on a variety of personal characteristics; the second focused on ethnicity.

In an extremely small national study, Tung (2007) convenience sampled community college students (35 students participated) to examine student attitudes towards the effectiveness of Web-enhanced courses relative to seven personal characteristics: gender, age, native language, academic major, education level, technology skills, and number of Web-enhanced courses completed. Effectiveness was measured by 11 "subscales," which included flexibility, user interface, navigation, getting started, technical assistance, course management (instructor), course management (student), universal design, communications, instructional design, and content.

Across gender, native languages, educational levels, technology skills, and academic majors and the perceptions of student participants, the researcher found no significant difference. Moreover, the researcher found no statistically significant correlation between age or the number of courses completed and student perceptions. The average age of participants was 29.7. Comparatively speaking, this aligns with the national average. The researcher did not specifically address student perceptions from a generational perspective. Based on the reported average age of respondents, however, one could conclude that the group, on average, represented Generation X according to Strauss and Howe's (1991) generational framework and reported no statistically significant correlation between generational cohort and student perceptions. One could also draw the same conclusions as it relates to nontraditional students.

In a mixed-methods study involving a rural community college near the Mexican Border, Keim and von Destinon (2008) explored the impact of the integration of online discussion boards into behavioral science courses. The researchers were attempting to address faculty concerns of class participation, student persistence, and the integration of the Internet into traditional classes. Thirty percent of the college's student population was Hispanic. These students often reported that they were tentative when it came to talking in class and experienced problems with quickly engaging in class discussions. As a result, they reported often being left out of the conversation (Keim & von Destinon, 2003). Consequently, the primary focus of the study was to determine if the rate of participation in class was influenced by the addition of online discussion boards. The researchers also examined differences based on ethnicity, focusing on Caucasian and Hispanic students, because they represented 41% and 48% of the sample, respectively.

Students taking the targeted courses were surveyed at the conclusion of the semester regarding their perceptions of and experiences with the courses. Students were also asked how these courses compared to traditional courses in terms of instruction (Keim & von Destinon, 2008). The results of the study indicate that 72% of study participants reported positive comments that focused on the "increased interaction with instructors and peers and the richness of the threaded discussions" (p. 565). Moreover, students reported participating in class discussions more frequently. Hispanic students reported participating in online discussions at higher levels that in in-class discussions.

Eleven percent of students responding to this study reported negative comments about the courses. The themes that emerged from those comments related to access and computer experience, with the former impacting the later. According to the researchers, 51% of comments relating to the lack of technical proficiency were because respondents could not afford to

purchase a computer for home use. The researchers found no correlation between student perceptions of technical proficiency and language and concluded that the issue was an economic one.

Instructor Perspectives on the Web-Enhanced Course

The critical role that instructors play in the teaching and learning process, particularly as it relates to the adoption of educational technology, is espoused in the literature (Knupfer, 1993; Woodrow, 1991). Knupfer claimed that it is the perceptions of these key players that most influence successful technology integration. Woodrow supported this contention, suggesting that attitudes influence an instructor's acceptance of computers as well as his or her future behaviors in regard to computer usage on a professional level and as a tool for teaching and learning. Consequently, it is important to consider the attitudes of faculty when exploring the influence of Web-enhanced instruction on learning.

Hardy and Laanan (2006) referred to community college faculty as "the very heart and soul of the American community college" (p. 787). Yet, historically, little research had focused on this group. This is particularly true as it related to Web-enhanced instruction (Glasgow & Keim, 2005; Tung, 2007; Witt, 2003). In this sense, it was not surprising that a review of the literature regarding 2-year college faculty perceptions toward Web-enhanced instruction produced minimal results (Glasgow & Keim, 2004; Hyllegard & Burke, 2002; Tung, 2007; Witt, 2003). However, given the substantial financial investment that many institutions are making in the integration of the Web into the classroom (G. Walker, 2005), a growing technically savvy student body (Oblinger & Oblinger, 2005), the "graying" of the community college instructor base (Rifkin, 2000), and, most importantly, a growing knowledge base that supports the active learning provided through this instructional strategy (Jonassen et al. 1999; Lowerison et al.,

2006; Newlin & Wang, 2002; Roberts, Kelley, & Medlin, 2007), it was surprising that more research exploring the attitudes/perceptions of 2-year college faculty was not available.

Among the studies identified in the research, community college faculty generally perceived Web-enhanced instruction to be positive (Glasgow & Keim, 2005; Tung, 2007; Witt, 2003). Like students, findings from these studies revealed that this delivery method improved teaching and learning (Glasgow & Keim, 2005; Witt, 2003), increased interaction (Glasgow & Keim, 2005), and improved technical proficiency in terms of Internet skills (Glasgow & Keim, 2005).

Glasgow and Keim (2005) surveyed 129 full- and part-time faculty from 100 public 2-year institutions in four states in the Midwest and found that those responding believed that this instructional strategy provided educators with an effective tool that improved teaching and learning. The results of a study conducted by Witt (2003) supported these findings. The researcher surveyed 24 instructors who taught at an urban community college in the south and who used websites in their traditional courses. In addition to reporting that Web-enhanced courses improved the teaching and learning process, respondents reported that Web-enhanced instruction increased and enhanced communications and interactions with their students, reduced paperwork, and improved Internet skills.

In a limited national study, Tung (2007) explored student and instructor perceptions of course effectiveness in online and Web-enhanced classes. Course effectiveness was determined by 11 measures, including flexibility, user interface, navigation, getting started, technical assistance, course management (instructor), course management (student), universal design, communications, instructional design, and content. The researcher found that instructors generally perceived Web-enhanced courses to be effective. Moreover, instructors felt that

"communications contributed to student engagement in the online and Web-enhanced classes" (p. 129). It is important to note that the researcher used convenience sampling for this study, and only 88 instructors participated.

The Impact of Instructor Characteristics on Their Perceptions

The results of the review of the literature in terms of the impact of characteristics on instructor perceptions were inconsistent. Tung (2007) explored the relationship between the effectiveness of Web-enhanced courses and seven personal characteristics (i.e., gender, age, native language, academic major, educational level, technology skill, and number of Web-enhanced courses taught). In terms of gender, technology skills, and experience teaching these type courses, the researcher found statistically significant correlations between these characteristics and course effectiveness. However, each of the remaining characteristics (i.e., age, native language, educational level, and academic major) showed no significant correlation with instructor perceptions. As noted in the discussion of student perceptions, the researcher did not examine generational membership in the study. However, the average age of those responding was 49.7 with a standard deviation of 9.2 years, which aligns with the national average. This suggests that within the Strauss and Howe (1991) generational framework, instructor respondents, on average, represented Boomers.

Adams (2002) explored the relationships between faculty levels of concern in regard to educational technology innovation and faculty characteristics. The researcher found significant correlations between computer usage and age, gender, and years teaching, leading the researcher to conclude that younger females who had considerably less teaching experience were more likely to have integrated technology into their instructional strategies, and older males who had

considerably more teaching experience were less likely to have integrated technology into their instructional practices. Dusick and Yildirim (2000) found no such correlation.

Among instructors who were users of technology, several factors were found to influence the decision to adopt Web-enhanced instruction as a teaching strategy and the level at which it was adopted. Among them included computer experience (Dusick & Yildirim, 2000; G. Walker, 2005), training (Adams, 2002; Dusick & Yildirim, 2000; Jackowski, 2005), perceived effectiveness (G. Walker, 2005), faculty status (Jackowski, 2005), compensation (Jackowski, 2005), and organizational support (Jackowski, 2005; G. Walker, 2005). Although each of these factors was found to influence the instructors' decision to move into this realm, G. Walker (2005) found that usefulness was the single, most critical factor. Other studies, however, suggest that computer experience or background and training are the key predictors of technology adoption/integration (Adams, 2002; Dusick & Yildirim, 2000).

Nonusers of educational technologies participating in the Dusick and Yildirim (2000) study reported motivators similar to those of their technology-savvy colleagues. Training and support were cited as factors that would influence their decision to integrate technology into their classrooms. However, this group also reported needing tangible proof in terms of benefits (e.g., reduced problems, time savings, etc.) to motivate them to adopt this instructional strategy.

Web-Enhanced Instruction and Constructivist Theory

As noted previously, it is widely accepted in the literature that the integration of technology in the classroom is not a guarantee that learning will take place (Duffy & Kirkley, 2004; Johnston & McCormack, 1996; Kirkwood & Price, 2005; Lowerison et al., 2006; Palloff & Pratt, 2001; Shuell & Farber, 2001). Regardless of the instructional venue, how people learn must inform instructional strategies (Duffy & Kirkley, 2004). This topic has been given a great

deal of attention in recent decades (Bransford, Brown, & Cocking, 2000; Duffy & Kirkley, 2004; Resnick, 1987). The increasing popularity of the Web-enhanced classroom is leading researchers and instructors to re-examine instructional techniques historically employed in the classroom in an attempt to develop effective strategies to help students learn in these technology-enhanced environments (Casanova, 2004; Ehrmann, 1995; Jonassen & Reeves, 1996; B. McCombs, 2000).

Traditionally, learning has been considered the transmission of knowledge. Gardner (1985) described it as a process, one in which the information provided to students is processed and stored for later retrieval. This process was more teacher-centered; the instructor was the primary source of information. Historically, the same was true for instructional technology (Jonassen et al., 1999).

Resnick (1987) offered a different perspective on how people learn. Instead of the teacher-centered strategy described previously, the researcher asserted that learning should be more student-centered, focusing more on the needs of the learners—taking into consideration their life experiences—and concentrating less on the delivery of content that has no meaning to students. Resnick described the transmission of knowledge as a disconnect between "school knowledge" and "real life" (p. 15). The criticality of life experiences to the educational process is not a new concept. Dewey (1938) asserted that in order for education to be successful, not only for the individual learner but for society as a whole, it must be grounded in the real-life experiences of someone.

In recent decades, a shift from the teacher-centered to the learner-centered classroom has taken place (Svinicki, 1999; Warren, 2003). One theoretical perspective that is learner centered and currently dominating the field of education and influencing instructional design and the strategies used to enhance the learning process is constructivism (Bransford et al., 2000; Duffy &

Kirkley, 2004; Jonassen et al, 1999; B. A. McCombs, 2001; Oliver & Herrington, 2000; Svinicki, 1999).

Simply stated, constructivism is a psychological theory relating to learning and knowledge (Fosnot, 2005; Fosnot & Perry, 2005). What knowledge or "knowing" is and the way in which one "comes to know" are tenets of this framework (Fosnot, 2005, p. ix). Grounded in the social and physical sciences, constructivism posits that knowledge is an evolutionary process, one that is constructed based on the subjective experiences of the learner (Fosnot, 2005; Phillips, 1995). Fosnot (2005) described the process of knowledge production as

> struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as a human meaning-making venture with culturally developed tools and symbols and further negotiating such meaning through cooperative social activity, discourse, and debate in communities of practice. (p. ix)

The application of constructivism to education is a fairly new trend; however, the underlying tenets of the framework are not new to education in the United States (Matthews, 2003). Although the work of Piaget and Vygotsky first informed this theoretical framework (Fosnot & Perry, 2005; Phillips, 1995), its underlying tenets were influenced by Jacques Rousseau, an 18th Century philosopher, Dewey, Hall, and Gessell, among others (Stone, 1996).

Piaget theorized that knowledge construction among children occurred through "assimilation, accommodation, and equilibration, and the construction and internalization of action schemas" (Phillips, 1995, p. 9). The theorist focused little on the influence of one's social environment on knowledge construction, which suggests that the process of producing knowledge is an internal one, stemming from the cognitive processes of the individual (Phillips, 1995). In keeping with the thought that learning is indeed an individualistic process, von Glasersfeld, referred to in the literature as the father of radical constructivism (Fosnot, 2005),

strongly supported the notion that learning occurs in the individual's mind (von Glasersfeld, 2005). In, fact von Glasersfeld asserted that "when we intend to stimulate and enhance a student's learning, we cannot afford to forget that knowledge does not exist outside a person's mind" (p. 5).

Vygotsky supported Piaget's notions of how children learn. However, in his social constructivism theory, the theorist underscored learning within a social context (Lowerison et al., 2006). Consequently, language (Fosnot & Perry, 2005) and social negotiation (Lowerison et al., 2006) are important tenets of Vygotsky's theory.

Social constructivism differs from cognitive constructivism in that the former suggests that learning is co-constructed as a result of social interaction instead of being constructed solely by the learner. In an educational environment, social interaction refers to interaction between and among students and interaction with the instructor (Simpson, 2002).

Regardless of which side of the continuum constructivism lands—knowledge production as a process unique to each knower, knowledge production influenced by social negotiation, or somewhere in between—one thing is constant: constructivism is action oriented (Jonassen et al., 1999; Lowerison et al., 2006; Phillips, 1995; Tomei, 2003), which differs from earlier, more passive theoretical perspectives. According to von Glasersfeld (1991), "The notion that knowledge is the result of a learner's activity rather than that of the passive reception of information or instruction, goes back to Socrates and is today embraced by all who call themselves 'constructivists'" (pp. xiv-xv).

Brown, Collins, and Duguid (1989) supported the principle that learning is an active process. The authors claimed that effective learning that would eventually result in a greater understanding of the subject matter, required students to actively use available tools. A review of

the literature revealed that computer technologies, when used appropriately, engage students, making them active participants in the learning experience rather than passive receivers of information (Jonassen et al., 1999; Lowerison et al., 2006; Newlin & Wang, 2002).

Pedagogical Implications: Web-Enhanced Elements as Teaching Tools

Landry (2003) identified the instructional tools provided through most course management systems as assessments, discussion boards, chat rooms, course documents, email, faculty information, lectures, and online grade book. Many of these tools engage the learner and encourage active learning. For example, Pascarella and Terenzini (2005) cited the use of Internet searches and electronic mail as tools that, when used appropriately, promote "critical thinking and general reasoning skills" (p. 610). Research suggests that asynchronous discussion boards increase interaction (McCracken, 2002; Newlin & Wang, 2002), which positively influences student learning (Astin, 1993; Pascarella & Terenzini, 1991). Moreover, they allow students time to reflect, which, according to Miller and Miller (2000), is critical to "building meaning and knowledge" (p. 164).

Although course management systems do provide tools designed to promote learning, the challenge for educators lies in using these features effectively. Lowerison et al. (2006) contended that the availability of technology is not sufficient. Similarly, Oliver (2001) asserted that posting materials online for students to read is not engaging them. A link between appropriate pedagogy and the learning tools housed within course management systems must be established in order to encourage the "deeper processing of information" (Lowerison et al., 2006, p. 467), thereby enhancing the learning process (Laurillard, 2002; Lowerison et al., 2006).

Conceptual Framework

According to Miles and Huberman (1994), "A conceptual framework explains, either graphically or in narrative form, the main dimensions to be studied—the key factors, or

variables—and the presumed relationships among them (p. 28). To investigate faculty and student perceptions of the impact of Web-enhanced instruction on the educational experience, the *Seven Principles for Good Practice in Undergraduate Education* (hereinafter referred to as the seven principles; Chickering & Gamson, 1987), which are grounded in constructivist principles (Bangert, 2006), will serve as the framework for the study.

Fundamentally, the seven principles were developed to improve teaching and learning (Chickering & Gamson, 1987). The researchers asserted that good practice (1) encourages student-faculty contact, (2) encourages cooperation among students, (3) encourages active learning, (4) gives prompt feedback, (5) emphasizes time on task, (6) communicates high expectations, and (7) respects diverse talents and ways of learning. Each practice can stand independently from the others; however, the more practices that are employed, the greater the quality of the experience (Chickering & Gamson, 1987).

The seven principles as proposed by Chickering and Gamson (1987) were developed following a synthesis of 50 years of research relating to successful practices in terms of teaching and learning in undergraduate education. Reynolds (1995) contended that within a learning environment, the principles "provide a framework for identifying indicators of quality and effectiveness in an education environment" (p. 107). Kuh (2001b) supported this contention, particularly as it relates to student engagement. In fact, the researcher suggested that the seven principles are possibly the most widely acknowledged indicators of engagement (Kuh, 2001b). Consequently, the seven principles have served as the framework for various lines of inquiry (Antilla, 2004; Guidera, 2003-2004; Ritter & Lemke, 2000; Stoudt, 2006), including *The National Survey of Student Engagement*, an instrument designed to measure the degree to which

learners are involved in "educational practices that are strongly associated with high levels of learning and personal development" (Kuh, 2001a, p. 12).

Admittedly, the seven principles were introduced before the Internet became a common staple in colleges and universities. However, the essay, *Implementing the Seven Principles: Technology as Lever* (Chickering & Ehrmann, 1996) provided educators with a practical guide to advancing the seven principles by outlining their applicability to instructional technology. Similarly, Newlin and Wang (2002) applied the seven principles to Web-based courses in an effort to enhance the teaching and learning process by exploiting the possibilities that Web-based technologies made available to them.

In addition to the practical publications noted previously, the seven principles have informed research into the impact of new and different technologies (Chickering & Gamson, 1999). A review of the literature revealed that researchers have utilized the seven principles as the framework to examine technology-based teaching and learning activities from a number of perspectives (Bangert, 2006; Guidera, 2003-2004; Ritter & Lemke, 2000; Stoudt, 2006). Using the seven principles as the conceptual framework for her dissertation, Stoudt examined students' perceptions of WebCT, a CMS. Ritter and Lemke (2000) applied the seven principles when examining student perceptions as to the effectiveness of the Internet in an introductory physical geography course. Guidera (2003-2004) used the seven principles as the framework to examine faculty perceptions of online instruction versus traditional instruction. Bangert (2006) used the seven principles as a framework for developing an instrument to measure student satisfaction with online courses.

Although the seven principles were developed based on research relating to undergraduate education, Chickering and Gamson (1987) argued that they have applicability for

both liberal arts and professional programs and for a variety of students, regardless of their socioeconomic status, educational background, or race/ethnicity. This suggests that the seven principles would be applicable to not only the programs offered at 2-year colleges, but the diverse student populations represented at these institutions. A review of the literature revealed that the seven principles have been applied appropriately to the study of the community college instructional environment. While Guidera (2003-2004) did not focus on community colleges exclusively, the researcher included 2-year college faculty in his investigation of the efficacy of online learning using the seven principles.

How Constructivism Informs the Seven Principles

According to Bangert (2006), "The majority of the learner-centered instructional practices which comprise the seven principles framework are clearly focused on constructivist-based teaching frameworks" (pp. 229-230). The author successfully applied constructivist principles to most of the seven principles. For example, Svinicki (1999) maintained that constructivist theory asserts that learning is an individual process, one that is unique to the individual learner. The author described a process where "the learner comes to create a worldview consistent with past experience and present data" (p. 13). Learning as an individual process, according to Bangert, supported the principle relating to respect for the different ways in which people learn (Chickering & Gamson, 1987).

There are other examples illustrating how constructivist principles are interwoven in the seven principles apart from Bangert's. Jonassen et al. (1999) asserted that active participation on the part of the learner is a fundamental principle of constructivism. Brown et al. (1989) insisted that students must actively use the tools at their disposal for knowledge construction to occur at a deeper level. The constructivist principle relating to active learning clearly supports the practice

of encouraging active learning, one of the seven principles as outlined by Chickering and Gamson (1987).

Although constructivism will not serve as the conceptual framework for this study, its principles do serve as the underpinning for the development of the seven principles (Bangert, 2006). Consequently, it will, at least indirectly, inform the study.

Chickering and Ehrmann (1996) asserted that in order for technology to be used to its fullest potential, educators should find ways to use it that align with the seven principles. The seven principles were derived from years of research relating to effective teaching and learning practices and are well grounded in constructivist theory and in the literature. Moreover, these principles have been used as the lens through which to examine a variety of topics in higher education. For these reasons, the seven principles will inform this study.

Summary

The use of Web-enhanced instruction is gaining momentum in today's colleges and universities (Bates & Poole, 2003; Pack et al., 2003; Wingard, 2004). A review of the literature revealed that when used effectively, Web-enhanced instruction can transform the learning environment from one that is passive where the instructor transmits knowledge to one that is active where students participate in the process (Jonassen et al., 1999; Lowerison et al., 2006; Newlin & Wang, 2002). Course management systems, once used primarily for distance education, have become the vehicles through which many instructors first integrate technology into their face-to-face courses (Landrey et al., 2006; Wernet et al., 2000; Simonson, 2007). The functionality of these systems has improved considerably in recent years to include the interactive tools that, when used effectively, have been shown to promote learning.

Of the extremely limited studies available, community college student and instructor perspectives regarding Web-enhanced instruction are generally positive (Aziz, 2006; Glasgow & Keim, 2005; Witt, 2003; Yang, 2001). Both students and instructors believe that this instructional strategy engages students in the learning process and increases interaction between the two groups (Aziz, 2006; Witt, 2003). Students reported increased confidence in their ability to learn key concepts (Aziz, 2006), and instructors believed that Web-enhanced courses improved students' Internet skills (Witt, 2003). On a more pragmatic level, instructors reported reduced paperwork as an added benefit (Witt, 2003).

Although the literature suggests that Web-enhanced instruction has the potential to positively influence the educational experience, several challenges regarding its effective use were revealed. First, when using course management systems, instructors sometimes fail to take full advantage of the tools specifically designed to enhance the learning process (e.g., discussion boards, chat rooms, assessments, etc.; Lowerison et al. 2006; K. Oliver, 2001). Second, many instructors continue to favor the use of lecture as their primary instructional strategy, which fails to align with more effective constructivist principles (Skiba & Barton, 2006). Third, generational differences resulting from the graying of community college instructors and the corresponding influx of the Millennials suggest that a growing number of students are more technologically savvy than their instructors and have different expectations for their educational experiences in terms of technology, teaching, and learning (Jones & Madden, 2002; Oblinger & Oblinger, 2005; Rifkin, 2000).

In addition to the challenges noted previously, the unique characteristics of 2-year college students in terms of race/ethnicity, income, and age may create additional obstacles in terms of access for the successful integration of Web-enhanced instruction (U.S. Department of

Commerce, 2004; Watson, 2004). These challenges may be compounded for students attending community colleges in Alabama because the overwhelming majority of the state's 2-year colleges are considered rural (Katsinas & Moeck, 2002; NCES, 2006b).

CHAPTER 3

METHODOLOGY

Introduction

The primary purpose of this study was to examine the representative perceptions of a random sample of instructors and students who taught and learned in selected community colleges in the state of Alabama as they related to the impact of Web-enhanced instruction on the educational experience. A review of the literature revealed that research into the impact of this instructional delivery method as it related to community college instruction was limited at best (Glasgow & Keim, 2005). This chapter outlines the research questions, survey design, population and sample, instrumentation, data collection methods, and data analyses used for this study.

Research Questions

The primary purpose of this study was to investigate how 2-year college instructors and students in Alabama's public 2-year community colleges perceived the ability of Web-enhanced instruction to influence the educational experience within the framework of the *Seven Principles* as described by Chickering and Gamson (1987). Secondarily to the main purpose, the researcher sought to determine if there was a difference in the perceptions of each sample (i.e., instructors, students) and certain personal and professional characteristics. Wallen and Fraenkel (2001), in their discussion of descriptive research questions, noted that "We may learn what happened, or where or when (and even how) something happened, but not why it happened. Specifically, this study sought to answer the following research questions:

1. What were the opinions of instructors and students in Alabama's 2-year colleges as they related to Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's (1987) Seven Principles?

2. Did the opinions of Alabama's 2-year college students differ regarding Web-enhanced instruction and its impact on the educational experience based upon their:

a. generational membership?
b. gender?
c. race/ethnicity?
d. institutional classification?
e. educational goal?
f. major?
g. enrollment status?
h. employment status?
i. household income?
j. computer usage patterns?

3. Did the opinions of Alabama's 2-year college faculty differ regarding Web-enhanced instruction and its impact on the educational experience based upon their:

a. generational membership?
b. gender?
c. race/ethnicity?
d. highest degree earned?
e. institutional classification?
f. employment status?
g. years teaching?
h. Internet access point?
i. technology-related professional development?
j. computer usage patterns?
k. student interaction outside the classroom?

Research Design

For this study, a quantitative research approach was used. According to Leedy and Ormrod (2005), quantitative research allows the investigator to "answer questions about relationships among measured variables with the purpose of explaining, predicting, and controlling phenomena" (p. 94). Using this approach, the researcher sought "explanations and

predictions" that could be generalized to a larger population, which, for the purposes of this study, would be community colleges in the state of Alabama (Leedy & Ormrod, 2005). In addition to allowing the researcher to generalize data from a small sample to a bigger population, quantitative research also allows for quick turnaround in terms of data collection and is more economical than other research approaches (Babbie, 1990). A descriptive, cross-sectional research design was applied to this study. Data were collected from instructors using a Web-based, self-administered survey (see Appendix C). This type survey allows the researcher to collect data from a broad geographic area quickly, effectively, and inexpensively. Admittedly, low response rates and software reliance are two drawbacks typically associated with this survey technique (Sue & Ritter, 2007). According to Sue and Ritter, response rates for Web-based surveys are typically around 30%; however, the authors acknowledged that studies utilizing this type survey were rare, citing only two. In a separate study, Crow (2006) conducted a Web-based survey of all full-time community and technical college instructors in Alabama to examine their perceptions toward online education; the response rate for the Crow study was 26%. However, because the instructors selected for the current study were teaching or had taught a Web-enhanced course and, therefore, had access to and were more comfortable with the Internet, it was anticipated that they would be more likely to respond to this type survey.

Students were surveyed on-site using a paper and pencil self-administered survey (see Appendix D). Like online surveys, there were advantages and disadvantages associated with this research method. Fink (2006) maintained that on-site surveys allow the researcher to obtain data immediately and respondents to ask questions if needed, and they can be conducted in groups. The main disadvantage to this research method is that responses are limited to those who are on site at the time the survey is administered (Fink, 2006).

Population and Sample

The targeted population for this study was faculty who were teaching, and students who were enrolled in, Web-enhanced credit courses at public community colleges within the state of Alabama. According to data published by the Alabama Community College System, there were 5,841 full- and part-time instructors, counselors, and librarians working in the state's public community colleges in the fall of 2006, the last term that data was available. In the fall of 2007, there were 78,486 full- and part-time credit students attending Alabama's 2-year colleges.

Currently, there are 22 public 2-year, comprehensive community colleges in the state of Alabama. Under the Carnegie 2005 Basic Classification, 18 are designated as Associate's—Public Rural, 3 are designated as Associate's—Public Urban, and 1 is designated as Associate's—Public Suburban (see Appendix B for a complete list of Alabama community colleges and their institutional designations). Given the low levels of Internet penetration often found in rural communities and the large number of rural institutions found within Alabama's 2-year college system, it was critical that equal representation among the sample be assured. Consequently, a stratified sampling technique was used to select participants for this study. Utilizing this technique, researchers identify the "members of each stratum and then select a random sample for each one" (Leedy & Ormrod, 2005, p. 203). Leedy and Ormrod asserted that this sampling technique is appropriate when the "population contains definite strata that appear in different proportions within the population" (p. 205).

Instructors teaching in rural, urban, and suburban community colleges in Alabama represent 77%, 12%, and 11% of the total instructor population, respectively. Credit students enrolled in rural, urban, and suburban community colleges in Alabama present strikingly similar patterns, representing 77%, 18%, and 5% of the total student population, respectively. To the

extent possible, these proportions were maintained in the samples during data collection. Table 1 provides a summary of the actual sample proportions that were achieved by institutional classification.

Table 1

Summary of Sample Proportions by Institutional Classification

	Actual Sample Proportions					
	Rural		Suburban		Urban	
	N	%	N	%	N	%
Students	258	75%	48	14%	36	11%
Instructors	137	81%	19	11%	14	8%

Ten institutions originally were selected for this study. Because there was only one institution that had been classified as suburban under the Carnegie 2005 Basic Classification (i.e., Faulkner State Community College), it was an obvious choice. However, an identified limitation of having one suburban institution was that it would be difficult to determine if the data generated were representative of the institution or institutional type. To combat this limitation, one institution, which is currently classified as urban according to the Carnegie Classification (i.e., Jefferson State Community College), was reclassified as suburban for the purposes of this study. The justification for the reclassification was that the institution's service area fell primarily outside the city boundaries that had led to its urban designation.

To ensure statewide representation of the sample, geography was a consideration in selecting the remaining study sites. The reclassification of one of the urban institutions left two

for consideration—one located in the north central part of the state (i.e., Lawson State Community College) and one located in the southern part of the state (i.e., Bishop State Community College). Both were targeted in the study. The 19 remaining rural community colleges were divided based on their geographic locations in the northern, central, and southern parts of the state. Two institutions were randomly selected from each region. Table 2 provides a list of the institutions originally targeted for this study.

Table 2

Institutions Originally Targeted for Study

Institution	Location	Institutional Classification
Gadsden State Community College	North	Rural
Northwest Shoals Community College	North	Rural
Lurleen B. Wallace Community College	Central	Rural
Shelton State Community College	Central	Rural
Southern Union Community College	South	Rural
Wallace State Community College	South	Rural
Jefferson State Community College	North	Suburban
Faulkner State Community College	South	Suburban
Lawson State Community College	North	Urban
Bishop State Community College	South	Urban

Note. For the purposes of this study, Jefferson State Community College was reclassified as a suburban institution.

Once the institutions were identified, the president of each college was sent an email (a) requesting permission to conduct the study, (b) outlining the planned research process, and (c)

explaining the institution's role including the staff who needed to be involved and the data that would be requested. All 10 presidents granted permission for the study to be conducted on their campuses. However, as the study progressed, it was determined that 2 institutions would be unable to participate. The first institution to be removed from the study, Bishop State Community College, had not yet begun offering Web-enhanced courses. The second institution, Jefferson State Community College, could not provide the data requested because it had not made a distinction between its Web-enhanced courses and its traditional courses in its administrative software package. The sample that remained included six rural, one urban, and one suburban. Table 3 provides a listing of the institutions participating in the study following the removal of Jeff State and Bishop State as study sites.

Table 3

Institutions Participating in the Study

Institution	Location	Institutional Classification
Gadsden State Community College	North	Rural
Northwest Shoals Community College	North	Rural
Lurleen B. Wallace Community College	Central	Rural
Shelton State Community College	Central	Rural
Southern Union Community College	South	Rural
Wallace State Community College	South	Rural
Faulkner State Community College	South	Suburban
Lawson State Community College	North	Urban

Student Sample

For students, a simple random cluster sampling strategy was used in which Web-enhanced credit courses were randomly selected from among those scheduled at selected institutions. Wallen and Fraenkel (2001) recommended cluster sampling when it is not possible to randomly sample individuals. The researchers also asserted that this strategy is "often far easier to implement in schools" (p. 136).

Each of the targeted institutions was asked to provide a list of Web-enhanced courses currently being taught. To gain the perspectives of a representative audience, day, night, and weekend courses were included. In addition to providing the name of the course, each institution was asked to provide the name and email address of the instructor of record, the location of the class, scheduled meeting dates and times, and the number of students enrolled.

Once the appropriate courses were identified, a proportional number of courses was randomly selected to ensure that the sample size established for the study was met.
The researcher solicited permission from instructors teaching these courses to conduct the surveys during class time (see Appendix E). Students enrolled in those courses where instructors agreed to devote class time to the completion of the survey were asked to participate. Only those present the day the survey was administered and who agreed to participate were surveyed; participation was anonymous and voluntary.

Instructor Sample

As noted earlier, the criterion for participation in this study for instructors was that they had taught or were currently teaching a Web-enhanced credit course. Participating institutions were asked to provide a list with the names, employment statuses, and email addresses of instructors who were teaching or had taught a Web-enhanced course. The names of instructors

whose classes had been selected for the student surveys were removed from the list prior to selection. The researcher purposely did not target instructors who were already participating in the student survey because she felt that it might discourage participation among instructors due to the time involved.

Once instructors who met the criterion were identified and those already selected to assist with the student survey were removed, study participants were selected using a random numbers table. According to Leedy and Ormrod (2005), the use of random numbers tables had been tested and was a commonly used means through which to choose a random sample.

For this study, the sample included 400 students and 400 instructors proportionally distributed based on institutional designation. According to Ladico et al. (2006), a sample size of 350-400 should be sufficient when the population size exceeds 5,000 or more. The original sample size was 500 for both groups; however, the sample size was reduced because for some institutions, Web-enhanced instruction was not a campus-wide initiative. Instead, one or two departments within these institutions offered these courses to their students. Consequently, the entire population of instructors meeting the study criteria at affected institutions rather than a representative sample was invited to participate in the research project.

For students, 357, 49, and 66 were surveyed from among those enrolled in randomly selected Web-enhanced credit courses at rural, urban, and suburban institutions, respectively. For instructors, 272, 75, and 34 were surveyed from among those teaching Web-enhanced credit courses at rural, urban, and suburban institutions, respectively.

It should be noted that due to the low response rate often associated with online surveys, instructors were oversampled where the number of instructors exceeded the needed sample size to ensure an adequate number of responses. Three rural institutions and the sole suburban

institution could not be oversampled because the population of instructors teaching Web-enhanced classes was less than the planned sample size. Table 4 provides a graphical representation of the planned and actual samples by institution.

Table 4

Population and Sample Sizes at Targeted Institutions

		Planned Sample *n* = 400		Actual Sample *n* = 400	
Institution	Location	Instructors	Students	Instructors	Students
Gadsden State	North	51	51	S = 65	S = 51
Northwest Shoals	North	51	51	P = 29	S = 75
LBW	Central	51	51	P = 31	S = 62
Shelton State	Central	51	51	S = 65	S = 39
Southern Union	South	51	51	P = 17	S = 57
Wallace State	South	51	51	S = 65	S = 73
Faulkner State	South	75	40	P = 34	S = 48
Lawson State	North	75	100	S = 75	S = 36

Note. In institutions where Web-enhanced courses were only available within one or two departments, the population was targeted. S = Sample; P = Population.

Sample Demographics

Students. Those completing the student survey were asked to respond to a number of items relating to personal and professional characteristics including age, gender, race/ethnicity, attendance status, employment status, educational goal, household income, and major. Students

were also asked to respond to questions regarding computer usage patterns, which will be presented and discussed in chapter 4.

The mean age of those responding to the survey was 27. Statewide and nationally, the mean age of students was 26 and 28, respectively. From a generational perspective, 68% represented the Millennials, 30% represented Generation X and 2% represented the Boomers. Silents were not represented in the student sample. In terms of gender, 77% of survey respondents were female, and 23% were male. Race/ethnicity revealed that 67% of those responding were White, 22% were African Americans, 1.5% represented Hispanics/Latinos, 1.8% represented American Indians/Alaskan Natives, 1.2% represented Asian/Pacific Islanders, and 2.3% represented other races/ethnicities. In terms of enrollment and employment patterns, part-time students represented 27% of the sample, and students working part-time represented 39% of the sample. Twenty-one percent of the students responding worked full-time, whereas 40% were not employed. The educational goals of student respondents revealed that 36% planned to transfer to a 4-year institution, and 43%, 5%, and 6% were working toward an associate's, a diploma, and a certificate, respectively. Six percent of those responding were attending classes to acquire new skills, and 4% were undecided as to their education goals. In regard to household income, 37% lived in households whose income was less than $20,000, 29% had a household income between $20,000 and $40,000, and 34% lived in a household whose annual income exceeded $40,000.

Twenty-two classes were surveyed for this study. The student sample represented 49 different majors, which were grouped into the following categories: Arts and Humanities, Business, Education, Health, Natural Sciences, Social and Behavioral Sciences, and Technical. The Health Sciences division (67.3%) was inordinately represented in the student sample. This

can be attributed, in part, to the fact that one institution's Health Sciences division was the only division within the college that utilized Web-enhanced instruction. Consequently, all of the students surveyed from that institution represented health sciences. Also, respondents from the three science courses that were surveyed had majors within the Health Sciences division. The student sample was more evenly distributed among the remaining divisions. Table 5 provides a summary of characteristics for the student sample along with state and national comparisons for which data were available.

Table 5

Student Characteristics

	Sample		State*		National**	
Characteristic	*N*	%	*N*	%	*N*	%
Age					N/A	N/A
19-27 (Millennials)	233	67.9%	44,796	53.3%	--	--
28-48 (Generation Xers)	101	29.5%	22,638	26.9%	--	--
49-66 (Boomers)	8	2.3%	3,657	4,35%	--	--
67-84 (Silents)	0	0.0%	212	.25%	--	--
Gender						
Male	78	22.8%	33,563	39.9%	--	41%
Female	264	77.2%	50,489	60.1%	--	59%
Race/Ethnicity						
American Indian/Alaskan Native	6	1.8%	825	1.1%	--	--
African American/Black	76	22.4%	22,314	26.7%	--	15%
Asian/Pacific Islander	4	1.2%	808	1.1%	--	--
Hispanic/Latino	5	1.5%	804	1.1%	--	14%
White	241	70.9%	57,918	69.2%	--	60%
Other	8	2.4%	1,005	1.2%	--	11%
Institutional Classification						
Rural	137	80.6%	4,498	77%	--	--
Suburban	19	11.2%	292	5%	--	--
Urban	14	8.2%	1,051	18%	--	--

Characteristic	Sample		State*		National**	
	N	%	*N*	%	*N*	%
Enrollment Status					N/A	N/A
Full time	247	72.9%	44,996	53.5%	--	--
Part time	92	27.1%	39,056	46.5%	--	--
Employment Status			N/A	N/A		
Full time	70	20.5%	--	--	--	43%
Part time	134	39.3%	--	--	--	38%
Not employed	137	40.2%	--	--	--	19%
Educational Goal					N/A	N/A
Learn skills to get a job	20	5.9%	***	--	--	--
Certificate	19	5.6%	9,852	11.7%	--	--
Diploma	17	5.0%	1,196	1.4%	--	--
Associate's degree	147	43.4%	61,180	72.8%	--	--
Transfer	122	36.0%	***	--	--	--
Undecided	14	4.1%	11,824	14.1%	--	--
Household Income			N/A	N/A		
Less than $20,000	123	37.0%	--	--	--	38%
$20,000-$40,000	98	29.5%	--	--	--	22%
More than $40,000	111	33.4%	--	--	--	40%
Division (Major Area of Study)			N/A	N/A	N/A	N/A
Arts and Humanities	11	3.3%	--	--	--	--
Business	30	9.0%	--	--	--	--
Education	12	3.6%	--	--	--	--
Health	224	67.3%	--	--	--	--
Natural Sciences	6	1.8%	--	--	--	--
Social/Behavioral Sciences	8	2.4%	--	--	--	--
Technical	13	3.9%	--	--	--	--
Undecided	29	8.7%	--	--	--	--
Computer Usage Patterns						
Type Connection			N/A	N/A	N/A	N/A
DSL/Cable	233	78.7%	--	--	--	--
Dialup	20	6.8%	--	--	--	--
Other	43	14.5%	--	--	--	--
Internet Access			N/A	N/A	N/A	N/A
Home	274	84.8%	--	--	--	--
Campus	38	11.8%	--	--	--	--
Other	11	3.4%	--	--	--	--

Characteristic	Sample		State*		National**	
	N	%	*N*	%	*N*	%
Hours Using Computer			N/A	N/A	N/A	N/A
Rarely or Never	22	6.5%	--	--	--	--
1-5	185	54.3%	--	--	--	--
6-10	74	21.7%	--	--	--	--
10+	60	17.6%	--	--	--	--

Note. *Source: Alabama Community College System, Fall 2003. **Source: NCES, 2006a. ***Data not collected. N/A=Data not available.

Instructors. Like students, instructors completing the online survey were asked to respond to a number of personal and professional characteristics relating to age, gender, race/ethnicity, highest degree earned, employment status, teaching experience, and primary teaching discipline. Instructors were also asked to respond to items relating to computer usage patterns. These responses will be presented and discussed in chapter 4.

The mean age for instructors participating in the study was 46. At the state and national level, the mean age for instructors was 48 and 49, respectively. From a generational perspective, 2% of instructors participating in the study represented Millennials, 53% represented Generation X, 44% represented the Boomers, and 1% represented Silents. In regard to gender, 31% of those responding were males; 69% were females. For race/ethnicity, 77% of respondents were White, 12% were African American, 7% were American Indian/Alaskan natives, 1.2% were Asian/Pacific Islanders, 1.2% were Hispanic/Latinos, and 1.2% represented other races/ethnicities. The highest degree earned among respondents revealed that 1% held associate's degrees, 11% held baccalaureate degrees, 66% held master's degrees, 15% held doctoral degrees, 1% held medical degrees, and 6.5% held other type degrees. Twenty-one percent of respondents reported being employed part-time, 74% were employed full-time, and 5% were employed both

part- and full-time. In terms of the number of years of full-time teaching experience respondents had, 11% had no full-time experience, 4% had less than1 year, 22% had 1-5 years, 18% had 6-10 years, 13% had 11-15 years, 10% had 16-20 years, and 22% had more than 20 years. Nineteen percent of instructors reported having no part-time teaching experience, 12% reported have less than 1 year, 44% reported having 1-5 years, 15% reported having 6-10 years, 5% reported having 11-15 years, 4% reported having 16-20 years, and 2% reported having more than 20 years.

Instructors were also asked to provide the primary discipline in which they taught. Disciplines were then grouped into the following categories or divisions: Arts and Humanities, Business, Health, Natural Sciences, Social Sciences, Orientation, and Technical. Three of the divisions—Business, Health, and Technical—are often used by community college officials to group their programs of study. To get a clearer picture of the instructor sample, the General Education division, a fourth category frequently used by community colleges, was expanded to include Arts and Humanities, Natural Sciences, and Social Sciences. A category for Orientation was also included because it did not fit within the divisions noted previously.

Although respondents in the Health division represented the largest category (25%), instructor respondents were more evenly distributed among the divisions than were the student respondents. Of the remaining divisions, Natural Sciences were represented by 25% of the instructor sample, followed by Arts and Humanities (23.5%), Business (11.2%), Social Sciences (6%), Technical (4.7%), and Orientation (2.4%). A summary of instructor characteristics follows in Table 6.

Instrumentation

To collect the data for this study, two instruments using a parallel structure were utilized. Both instruments were developed by the researcher using items selected primarily from a bank of

survey items accessed from the Teaching, Learning, and Technology (TLT) Group's Flashlight Project, which is available for use by organizational members, and to which the researcher subscribed. Items not drawn from TLT's bank were created by the researcher.

Table 6

Instructor Characteristics

	Sample		State*		National**	
Characteristic	*N*	%	*N*	%	*N*	%
Age					N/A	N/A
19-27 (Millennials)	3	1.8%	133	3.1%	--	--
28-48 (GenXers)	89	53.0%	1,993	47.1%	--	--
49-66 (Boomers)	74	44.0%	1,987	47.0%	--	--
67-84 (Silents)	2	1.2%	85	2.1%	--	--
Gender						
Male	53	31.4%	1,971	46.1%	--	51%
Female	116	68.6%	2,301	53.9%	--	49%
Race/Ethnicity						
American Indian/Alaskan Native	12	7.1%	27	1.0%	--	--
African American/Black	20	11.8%	712	16.7%	--	--
Asian/Pacific Islander	2	1.2%	27	1.0%	--	--
Hispanic/Latino	2	1.2%	18	.4%	--	--
White	131	77.5%	3,470	81.3%	--	--
Other	2	1.2%	16	.4%	--	--
Institutional Classification						
Rural	137	80.6%	4,498	77%	--	--
Suburban	19	11.2%	292	5%	--	--
Urban	14	8.2%	1,051	18%	--	--
Employment Status						
Full-time	125	74.0%	1,868	43.7%	--	36%
Part-time	36	21.3%	2,404	56.3%	--	64%
Both full- and part-time	8	4.7%	--	--	--	--
Full-time Teaching Experience			N/A	N/A		
None	18	10.8%	--	--	--	--
Less than 1 year	6	3.6%	--	--	--	--
1-5 years	37	22.3%	--	--	--	--
6-10 years	30	18.1%	--	--	--	--
11-15 years	22	13.3%	--	--	--	--
16-20 years	16	9.6%	--	--	--	--
More than 20 years	37	22.3%	--	--	--	--

Characteristic	Sample		State*		National**	
	N	%	*N*	%	*N*	%
Part-time Teaching Experience			N/A	N/A	N/A	N/A
None	31	18.8%	--	--	--	--
Less than 1 year	20	12.1%	--	--	--	--
1-5 years	72	43.6%	--	--	--	--
6-10 years	25	15.2%	--	--	--	--
11-15 years	8	4.8%	--	--	--	--
16-20 years	6	3.6%	--	--	--	--
More than 20 years	3	1.8%	--	--	--	--
Division (Discipline)			N/A	N/A	N/A	N/A
Arts and Humanities	40	23.5%	--	--	--	--
Business	19	11.2%	--	--	--	--
Health	43	25.3%	--	--	--	--
Natural Sciences	42	24.7%	--	--	--	--
Social/Behavioral Sciences	10	5.9%	--	--	--	--
Technical	8	4.7%	--	--	--	--
Orientation	4	2.4%	--	--	--	--
Computer Usage Patterns			N/A	N/A	N/A	N/A
Internet Access Point						
Campus Only	8	4.7%	--	--	--	--
Campus and Home	162	95.3%	--	--	--	--
Hours using Computer at Work						
No computer at work	1	.06%	--	--	--	--
Less than 1	2	1.2%	--	--	--	--
1-2	5	2.9%	--	--	--	--
3-5	18	10.6%	--	--	--	--
6-10	28	17.0%	--	--	--	--
11-20	46	27.1%	--	--	--	--
More than 20	70	41.2%	--	--	--	--
Hours using Computer at Home			N/A	N/A	N/A	N/A
No computer at home	1	.06%	--	--	--	--
Less than 1	3	1.8%	--	--	--	--
1-2	14	8.2%	--	--	--	--
3-5	31	18.2%	--	--	--	--
6-10	53	31.2%	--	--	--	--
11-20	34	20.0%	--	--	--	--
More than 20	34	20.0%	--	--	--	--

Note. *Source: Alabama Community College System, Fall 2003. **Source: NSOPF, NCES, 2005. ***Data not collected. N/A=Data not available.

The Flashlight Project began in 1994 and was made possible through the *Fund for the Improvement of Postsecondary Education* (FIPSE). Originally, the goal of this project was to determine if the same issues and/or needs in terms of technology existed among five dissimilar institutions (Ehrmann, 1997). A community college was among the original five institutions participating in the project.

As part of the Flashlight Project, survey item banks were developed for both students and faculty, which, according to Ehrmann (1997), could be used to examine how institutions use technology and to provide direction for its future use. The items developed in Flashlight were framed around Chickering and Gamson's (1987) *Seven Principles for Good Practice in Undergraduate Education*, which served as the conceptual framework for this study.

As noted earlier, the structure of the student and instructor surveys were parallel. The first instrument, Student Opinions Toward the Impact of Web-Enhanced Instruction on the Educational Experience (see Appendix D for the complete survey), was developed using statements primarily from Flashlight's Current Student Inventory. The second instrument, Instructor Opinions Toward the Impact of Web-Enhanced Instruction on the Educational Experience (see Appendix C for the complete survey), was developed using statements primarily from Flashlight's Faculty Inventory. Both instruments were constructed similarly to facilitate data analyses; one was framed from the student's perspective, and the other was framed from the instructor's perspective. In addition, both instruments had two distinct sections—Sections I and II. The first related to Web-enhanced instruction; the second related to the personal/professional characteristics of study participants.

Student Survey

Section I of the student survey contained 24 Likert-like items using 5-point rating scales (i.e., *strongly disagree, disagree, agree, strongly agree, not applicable* and *never, rarely, sometimes, often, always*). One checklist was included in Section I that required study participants to choose all that applied from a list of statements describing how they used the course management system in the course. Examples of checklist statements included "I take quizzes so that I can monitor my level of understanding of key concepts in the course" and "I visit other websites that support and/or enhance the ideas/concepts I am trying to learn by clicking on links provided by my instructor." For the checklist item, participants were instructed to select all that apply. As noted earlier, all of the items in Section I were framed around the seven principles.

In Section II, study participants were asked to respond to two open-ended item (i.e., age and major area of study) and 12 forced-choice items. Age was intentionally open-ended so that the researcher could analyze the data based on community college and nontraditional student demography and generational membership demography. Nominal response scales were used to obtain data relating to gender, race/ethnicity, enrollment status, employment status, educational goal, major area of study, primary Internet access point, and type connection. Ordinal scales were used to obtain data relating to income, the degree to which participants were satisfied with their Internet connections, and computer usage patterns.

Faculty Survey

As noted previously, items on the faculty survey were intentionally similar to those on the student survey. Section I included 24 Likert-like items using 5-point rating scales (i.e., *strongly disagree, disagree, agree, strongly agree, not applicable* and *never, rarely, sometimes,*

often, always). One checklist was also included in Section I that required study participants to choose from a list of statements describing how they integrated the course management system into the course. Examples of statements included "I use self-assessments to allow students to monitor their level of understanding of key concepts" and "I post links to other sites to support and/or enhance the ideas/concepts taught in the course." Participants were instructed to select all that apply. As in the student survey, these items were framed around the seven principles.

Section II of the faculty survey included 2 open-ended items (i.e., age and discipline) and 14 forced-choice items. As noted in the preceding section, age was open-ended so that the researcher could analyze the data based on community college instructor demography and generational membership demography. Nominal response scales were used to obtain data relating to gender, race/ethnicity, highest degree earned, employment status, discipline, Internet access, professional development activities relating to technology, and instructional techniques. Ordinal response scales were used to obtain data relating to years teaching, computer usage patterns, professional development hours earned, and hours spent interacting with students outside the classroom.

Validity and Reliability

Content validity had already been established for the items contained in the *Flashlight Current Student Inventory*. According to the Web site,

> an 18-month series of focus groups culminated in meetings with students, faculty and administrators from the five Flashlight institutions; this was just after over 2,000 of their students had responded to surveys created with an earlier version of this Inventory. Where the respondents liked the items and agreed on their interpretation, we retained them. Where they had problems or suggestions, we altered items and added new ones. ("Validity—Flashlight Current Student Inventory," para. 2)

Content validity and reliability had not been established to date for the faculty items according to S. C. Ehrmann, vice president of The Teaching and Learning Technology Group

and director of the Flashlight Program (personal communication, March 10, 2008). However, Dr. Ehrmann noted that the inventory of faculty items "closely parallels" those in the student inventory (S. C. Ehrmann, personal communication, March 10, 2008).

Creswell (2003) maintained that validity and reliability need to be re-established when instruments are modified or combined. In a survey design, this is done during data analysis. To establish content validity for both instruments, an expert associated with the Flashlight Program was asked to review the instruments and to make recommendations. Dr. Ehrmann, the director of the program, agreed to personally assist with this effort. Based on his feedback, two changes were made to both instruments. First, the length of both surveys was reduced significantly. On the student survey, the number of items was reduced from 49 to 38. On the instructor survey, the number of items was reduced from 55 to 41. Second, both instruments were revised so that study participants were no longer asked to compare the Web-enhanced course they were evaluating to one they had taken or taught that was not Web-enhanced (see Appendixes D and C, respectively, for a revised copies of the original surveys).

To establish criterion reliability of the instrument, pilot testing was conducted. According to Creswell (2003), pilot testing is necessary "to improve questions, format, and the scales" (p. 158). Fink (2006) recommended focusing "on the clarity of the questions and the general format of the survey" to establish reliability (p. 40). Leedy and Ormrod (2005) recommended pilot testing a survey with at least six individuals. Suter (2006) recommended approximately 12.

Instructor Pilot

Ten community college instructors who had taught a Web-enhanced course were recruited to pilot the instructor survey. Although all agreed to, 9 of the 10 actually participated in the pilot. Pilot participants were emailed two documents—Pilot Protocol and Interactive Pilot

Feedback Form (see Appendix F). The first document (a) described the purpose of the study, (b) provided an estimate of the time required to finish the survey and the feedback form, (c) and outlined the process to follow as participants completed the activity. The protocol also included a hyperlink to the survey and instructed participants to monitor how much time it took them to complete only the online survey. Finally, the protocol included definitions for each of the measures (i.e., Clear, Adequate Scale, One Response) that were included on the feedback form. The definition for each measure is outlined below:

1. Clear: Was the item "understandable?" That is, did you have to read the item more than once to understand what it was asking? Was the meaning of the question clear and straightforward?
2. Adequate Scale (if applicable): Was the scale (strongly agree…..strongly disagree; never … always) reasonable? That is, did it provide you with an appropriate way to respond?
3. One Response (if applicable): Was the item written in such a way that you could have answered it more than one way? (e.g., Could you have said BOTH "strongly agree" and "strongly disagree" or "never" and "always"?)

The second document, Interactive Feedback Form, was presented in a table format and was interactive so that participants could complete and return it electronically. The document duplicated each survey item; each measure (i.e., Clear, Adequate Scale, One Response) was a column heading. When clicked, a yellow callout box attached to each measure's column heading provided the definition for that measure as a reminder to participants. Users provided feedback for each survey item by clicking on the appropriate *Yes* or *No* checkbox under each measure. If participants clicked *No* on any of the three measures, they were asked to provide an explanation

in a comment box provided for each item. Four open-ended questions were also included on the feedback form:

1. Were the survey instructions clear?
2. How long did it take you to complete the survey?
3. Was the survey length too short, just right, or too long?
4. Did you find any of the items to be "emotionally laden." For example, were any items insulting or offensive?

The results of the pilot for the instructor survey indicated the need for several minor revisions. For example, one item, *I post lecture notes and other course materials for students to review*, needed to be separated into two items: *I post lecture notes for students to review* and *I post other course materials for students to review*. As another example, several pilot participants commented after reviewing the item, *What discipline do you teach?,* that instructors sometimes taught in more than one discipline. Consequently, that item was changed to read: *What is the primary discipline in which you teach?* (See Appendix C for the final version of the instructor survey instrument.)

Student Pilot

For the student pilot, one instructor was recruited from the local community college to identify 10 students whom he felt would take the activity seriously and provide meaningful feedback to the researcher. At this particular institution, all courses at the institution were Web-enhanced. Although 10 students agreed to participate in the pilot, only 5 students actually returned completed surveys and feedback forms. To ensure the integrity of the pilot, 5 additional students who had taken or were taking a Web-enhanced course were recruited to take the survey, all of whom completed the activity. Because student surveys were to be completed by hand, all

participants received hard copies of three documents—Pilot Protocol, Pilot Feedback Form, and the survey instrument (see Appendix G). The Pilot Protocol and Pilot Feedback Form paralleled the documents that were used for the instructor pilot. Like the instructor pilot, participants were asked to monitor how long it took them to complete only the survey.

Although 10 students participated, the pilot study did not produce any significant recommendations for change, only minor edits. However, because the survey items on the student survey intentionally aligned closely with the instructor survey, the researcher split the item, *I download and/or review posted lecture notes and other course materials*, into two items: *I download and/or review posted lecture notes*, and *I download and/or review course materials* so that the two surveys mirrored one another. (See Appendix D for a final version of the survey instrument.)

Results from the pilot tests were used solely to improve the survey instruments. Therefore, data collected from the pilots were not used in the larger study.

Data Collection

Surveys were administered during the 2009 spring term. Before conducting this study, however, permission was requested and granted from The University of Alabama's Institutional Review Board for the Protection of Human Subjects (IRB; see Appendix H). To answer the questions posed within the context of this study, the data collection method that was employed by the researcher was self-administered surveys administered online to randomly selected instructors and onsite to students in classes selected using cluster sampling techniques.

Following IRB approval, the researcher first sought support for the study from the chancellor of the Alabama Community College System. The chancellor sent the president at each of the targeted institutions an email expressing his endorsement of and requesting his or her input

into the research project. Immediately following the distribution of the chancellor's email, the researcher sent an email to the president of each of the institutions targeted for this study explaining the purpose of the study, requesting permission to conduct the study, and encouraging participation (see Appendix I). According to Gall, Borg, and Gall (1996), precontact is critical when conducting surveys.

Once approval was granted from the president, the individual responsible for data collection at each institution was contacted and asked to provide specific information on (a) instructors who were currently teaching or had taught Web-enhanced courses and (b) Web-enhanced courses that were currently being offered as outlined earlier in this chapter. Upon receipt of the requested information, the chief instructional officer at each institution was sent an email explaining the purpose of the study and asking for his or her support by encouraging identified instructors to participate (see Appendix J). Attached to the email was a list of classes targeted for the student survey and a list of instructors targeted for the online survey along with recruitment emails for both groups. One instructional officer was prohibited from sending the email as requested due to institutional policy. A second instructional officer delegated the task of facilitating the study at his college to a department chair. That individual was not asked to send an email to instructors because it was felt that she would have little influence over instructors.

Student Survey

For the student survey, study participants were asked to complete paper-and-pencil instruments in classes where the instructor had agreed to devote class time to completion of the survey. A Statement of Informed Consent was provided to study participants and read aloud prior to participants' completing the survey. The consent statement, among other things, outlined

the objectives of the study and informed students that their participation was voluntary and that the decision not to participate would involve no negative ramifications (see Appendix K).

Due to the fact that this study encompassed the entire state of Alabama and classes were randomly selected, instructors of targeted classes were asked to administer the surveys. Research packets were prepared and mailed to those instructors who agreed (see Appendix L). Each packet contained the same materials in the same order: (a) thank you letter, (b) instructions for administering and collecting the surveys, (c) recruitment script, (d) copies of the Statement of Informed Consent, (e) copies of the survey instrument, and (f) a self-addressed, stamped envelope in which to return completed surveys. Instructors were asked not to interpret items contained in Section I for study participants; however, they were allowed to respond to questions regarding items in Section II (i.e., personal/professional characteristics). Of the 473 students who were asked to take the survey, 342 students actually completed a survey, resulting in a response rate of 73%. According to M. B. Hamilton (2003), a response rate of 50% for classroom paper surveys was considered good.

Instructor Survey

Instructors were asked to complete a Web-based survey (see Appendix C). To easily identify institutional responses, a separate survey was created and a URL generated for each of the targeted institutions. A recruitment email describing the study and requesting participation was sent to instructors (see Appendix M). The email included a hyperlink to the survey. The Statement of Informed Consent, which described the study objectives and informed them that participation was strictly voluntary and that the decision not to participate would involve no negative consequences, was attached to the email (see Appendix N). Instructors were asked to read the statement before clicking on the link to the survey and were informed that by

completing the survey, they were consenting to be research participants. Once instructors logged on to the survey site by clicking on the hyperlink provided in the email, they were again reminded to read the consent statement before launching the survey and that launching the survey was an indication that they had read the Statement of Informed Consent and were consenting to participate in this research study.

Data collection occurred in waves; instructors had a total of three opportunities to complete the online survey. Once the initial email was sent, follow-up emails with the hyperlink to the survey and a copy of the informed consent statement were sent 2 successive weeks to targeted instructors. This strategy was recommended by Creswell (2003) to ensure an adequate response rate. As noted, waves occurred every 7 days, which according to M. B. Hamilton (2003) was sufficient for online surveys. A summary of the online surveys completed during each wave may be found in Table 7). Of the 381 instructors who were asked to take the online survey, 170 actually completed the survey, resulting in a response rate of 45%.

Confidentiality and Anonymity

Student Surveys. Before the student survey was administered, participants were informed that their responses would remain anonymous. Consequently, they were instructed not to write their names or any other means of identification (e.g., student identification numbers) on the survey. Participants were asked to place their completed surveys in a self-addressed, stamped envelope, and the last person completing the instrument was asked to seal it. The instructor collected the sealed envelope at the end of the activity and mailed it to the researcher. Other than the study investigator, no one else had access to the completed surveys.

Table 7

Summary of Online Surveys Completed During Each Wave

	Wave 1		Wave 2		Wave 3			
Institution	*N*	%*	*N*	%*	*N*	%*	Total *N*	% of Total
Gadsden State	17	47%	11	31%	8	22%	36	11%
Northwest Shoals	9	53%	5	29%	3	18%	17	8%
LBW	7	41%	5	29%	5	29%	17	21%
Shelton State	12	60%	6	30%	2	10%	20	10%
Southern Union	4	67%	2	33%	0	0%	6	10%
Wallace State	28	68%	10	24%	3	7%	41	12%
Faulkner State	6	32%	12	63%	1	5%	19	4%
Lawson State	12	86%	2	14%	0	0%	14	24%
Total *N* Returned	95	56%	53	31%	22	13%	170	100%

Note. *Percentage of Total *N* for institution.

To ensure that all data collected remained confidential, surveys were stored in a locked file cabinet. Once the data analysis was complete, all surveys were shredded.

Instructor Surveys. Before accessing the online survey, instructors were informed that the information they provided would be kept confidential and that only the researcher would have access to the data collected. Once data analysis was complete, the survey and all data associated with it were erased from the survey site.

Data Analyses

For all data analyses, SPSS 13.0, a statistical software package, was used. Before analyses began, constructs that aligned with the seven principles were established and labeled *Vector 1-Vector 7*. Relevant items from Section 1 of both surveys were grouped under each construct and tested for reliability using Cronbach's Alpha. Once the constructs were tested and

found to be reliable ($\alpha > .60$), descriptive statistics (i.e., medians, standard deviations, frequency distributions, and percentages) for each group were used to examine Research Question 1, "What are the opinions of instructors and students in Alabama's community colleges in terms of Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's *Seven Principles*?" (see Appendix O for SPSS output). Two items on the student and instructor surveys (i.e., Items 24 and 25) were not included within the established constructs. Descriptive statistics (i.e., medians, standard deviations, frequencies, and percentages) were used to examine these items as well.

To answer Research Questions 2 and 3, inferential statistics were used, including parametric tests (i.e., *t* tests, ANOVAs) and multiple linear regression analysis. For *t* tests, Levene's test for equality of variances determined whether to perform a *t* test that assumed or did not assume equal variances. Similarly, Levene's test of homogeneity of variances was used to test this assumption on ANOVAs. In instances where the assumption of the equality of variances was not met, Games-Howell was used to analyze the data. Because both samples were larger than 40, normality was not tested as recommended by Elliott and Woodward (2007).

For the student sample, separate *t* tests were used to determine if there were significant differences in opinions between gender and differences between groups (i.e., students, instructors) toward Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, and Vectors 1-7 or between groups (i.e., students, instructors). For the instructor sample, separate *t* tests were used to test for significant differences between gender or between groups (i.e., students, instructors) and Item 19 and Vectors 1-7. The remaining personal/professional characteristics and student and instructor opinions were measured using either *t* tests, one-way between groups ANOVAs, depending on the item. For example, to

determine if there were differences between students enrolled part-time and full-time and their opinions toward Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, and Vectors 1-7, a *t* test was used. To determine if there were mean differences between groups for highest degree earned and instructor opinions, ANOVA was used to test Item 19, Educational Experience Enhanced, Vector 1, Student-Instructor Interaction, Vector 5, Time on Task, Vector 6, High Expectations, and Vector 7, Respect for Diversity, because these items met the assumption of homogeneity. Vector 2, Cooperation among Students, Vector 3, Active Learning, and Vector 4, Rich and Rapid Feedback were tested using Games-Howell, because they did not meet the assumption of homogeneity based on the Levine test. Post hoc comparisons (i.e., Scheffe) were used for further analysis of the ANOVAs meeting the assumption of homogeneity once significance was established. For all statistical tests, a significance value of .05 was applied.

A multiple linear regression model was used to determine whether or not combined independent or predictor variables for students (i.e., age in terms of generational membership, gender, race/ethnicity, institutional classification, educational goals, enrollment status, employment status, computer usage patterns, family income) and instructors (i.e., generational membership, gender, race/ethnicity, highest degree earned, institutional classification, employment status, years teaching, Internet access point, technology related professional development, computer usage patterns, and student interaction outside the classroom) predicted opinions for each construct or vector along with student and instructor survey Items 17, Would take other courses that were Web-enhanced, and 19, Educational Experience Enhanced. The test also calculated the *R square*, a measure used to determine the amount of variance that existed between the predictor independent variables (Muijs, 2007). This measure explained the strength

of the overall model in predicting instructor and student opinions toward the impact of Web-enhanced instruction on the educational experience. Benchmarks provided by Muijs were used to determine the degree to which the data supported the model: < 0.1 = poor, 0.11-0.3 = modest, 0.31-0.5 = moderate, > 0.5 = strong. Finally, the model served to establish the statistical significance of the predictor variables independently for each construct and Items 17 and 19. Because a linear regression model requires that variables be either ordinal or continuous, dummy variables were set up for variables that were nominal in nature prior to running the test. A list of statistical tests that were used for data analyses may be found in Table 8.

Table 8

Summary of Statistical Tests Used to Answer Research Questions

Research Question	Characteristic	Test
Students		
2	All Characteristics	Multiple linear regression
2a	Generational Membership	ANOVA
2b	Gender	ANOVA
2c	Race/Ethnicity	ANOVA
2d	Institutional Classification	ANOVA
2e	Educational Goal	ANOVA
2f	Division (Major)	*t* test
2g	Enrollment Status	*t* test
2h	Employment Status	ANOVA
2i	Household Income	ANOVA
2j	Computer Usage	ANOVA
Instructors		
3	All Characteristics	Multiple linear regression
3a	Generational Membership	ANOVA
3b	Gender	*t* test
3c	Race/Ethnicity	ANOVA
3d	Highest Degree Earned	ANOVA
3e	Institutional Classification	ANOVA
3f	Employment Status	ANOVA
3g	Years Teaching	ANOVA
3h	Internet Access	*t* test
3i	Technology Related PD-Hours	ANOVA
3j	Technology Related PD-Topic	ANOVA
3k	Computer Usage Patterns	ANOVA
3l	Student Interaction	ANOVA

Reliability

As noted previously, constructs were established that aligned with Chickering and Gamson's (1987) *Seven Principles* (i.e., Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, Vector 5, Time on Task, Vector 6, High Expectations, and Vector 7, Respect for Diversity).

Relevant individual items from Section I were grouped within the established constructs. To establish construct validity, the items within each construct were averaged and calculated using Cronbach's Alpha (α >. 60), an acceptable measure for exploratory research according to Schuessler (1971). S. B. Green and Salkind (2005) asserted, however, that a review of individual survey items should be conducted to determine if any needed to be reverse-coded before internal consistency reliability could be calculated. Following this review, it was determined that four items on both surveys (i.e., 20, 21, 22, and 23) needed to be reverse coded. Once the reverse coding was complete, internal consistency reliability analysis was conducted on each construct.

The analysis revealed that the validity of two constructs (i.e., Vector 4, Rich and Rapid Feedback, and Vector 5, Time on Task) would have improved slightly by the removal of items. For example, Item 15, "I am more likely to monitor my progress in the course by checking the grade book," was originally assigned to Vector 4, Rich and Rapid Feedback. Cronbach's Alpha for Vector 4 was .687. If deleted, the alpha would have been .781 for the vector. Similarly, the alpha would have improved for Vector 5, Time on Task, (α = .653) with the removal of Item 10, "I am more likely to complete assignments on time," (α = .660) and Item 13, "I am better able to juggle my course work with my work and/or home responsibilities" (α = .670). However, the researcher determined that keeping these items might provide additional insight into the overall variance despite the conceptual clarity dropping the items might have provided. Table 9 provides a summary of the alpha reliability coefficient for each construct and the alpha for deleted items where applicable.

Table 9

Results of Internal Consistency Reliability Tests

Construct	*N* of Items	Item(s)	Cronbach's Alpha (α)	If Item Deleted Item	If Item Deleted α
Vector 1					
Student-Instructor Interaction	4	1, 2, 7, 18	.728	N/A	
Vector 2					
Cooperation among Students	2	8, 9	.721	N/A	
Vector 3					
Active Learning	3	5, 6, 16	.627	N/A	
Vector 4					
Rich and Rapid Feedback	3	3, 4, 15	.687	15	.781
Vector 5					
Time on Task	5	10, 13, 20, 21, 23	.653	10	.660
				13	.670
Vector 6					
High Expectations	1	11	N/A		
Vector 7					
Respect for Diversity	1	12	N/A		

Note. Vector 6 and Vector 7 only had one item within each construct. Therefore, the alpha was not calculated on these vectors.

Conclusion

This study sought to explore the representative opinions of a random sample of instructors and students from Alabama's community colleges regarding the importance of Web-enhanced instruction to the educational experience. In addition to presenting the research questions, this chapter provided a detailed map of the methodology that guided the study, including the survey design, population and sample, instrumentation, data collection methods,

and data analyses. Sample demographics were also presented. Chapter 4 presents the results of the study.

CHAPTER 4

PRESENTATION OF DATA

The primary purpose of this study was to examine instructor and student opinions regarding the impact of Web-enhanced instruction on the educational experience. Secondary to the main purpose, the study sought to determine if student and instructor opinions differed based upon specific personal and professional characteristics. Finally, the study sought to examine the extent to which students' and instructors' generational membership, gender, race/ethnicity, institutional classification, and computer usage patterns predicted their opinions toward the value of this instructional delivery method to the educational experience. This chapter presents the study findings using descriptive and inferential statistics and concludes with a chapter summary.

Research Question 1

The broader question to be answered in this study was, "What were the opinions of instructors and students in Alabama's 2-year colleges as they relate to Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's seven principles?" Descriptive statistics were used to examine the two groups' opinions as they related to Web-enhanced instruction.

In addition to instructor and student opinions as to the impact of Web-enhanced instruction on the educational experience, there are several underlying indicators of effectiveness when it comes to teaching and learning that relate to Web-enhanced instruction (whether directly or indirectly) on which students and instructors were not asked to give an opinion but data were collected. These indicators are relevant because they have been shown to influence the

effectiveness of CMSs in terms of teaching and learning as well as the quality of the educational experience. For the purposes of this study, these indicators included CMS tool use, teaching techniques, and student-faculty interaction. Consequently, the researcher also used descriptive statistics to explore what CMS tools were being used and the frequency in which they were used, teaching methods instructors employed and the frequency with which they were employed, and the levels of interaction with students outside the classroom. A summary of these findings follows.

Student and Instructor Opinions

To investigate student and instructor opinions regarding the impact of Web-enhanced instruction on the educational experience, the researcher focused primarily on nine items. Two of the items (i.e., Item 17 and Item 19) were directly from the student and instructor surveys. The other items (Vectors 1-7) were the constructs established based on Chickering and Gamson's seven principles. These constructs included additional survey items. A summary of the items is presented in Table 10.

Students

The majority of students responding to the survey perceived Web-enhanced instruction as having a positive impact on the educational experience. For the statement, "My educational experience has been enhanced," students had five possible responses from which to choose: (1 = *Strongly Agree*, 2 = *Agree*, 3 = *Disagree*, 4 = *Strongly Disagree,* 5 = *Not Applicable*). The values for students responding *Not Applicable* were not included in the aggregate. Of the 329 responding, 80.9% agreed or strongly agreed that their educational experience was improved as a result of this instructional strategy. Students also were asked to respond to the statement, "I would take other courses that are Web-enhanced." Of the 333 responding, 77.2% agreed or

strongly agreed that they would take additional Web-enhanced courses. Student responses to the seven constructs or vectors produced similar positive results. At least two thirds of those responding to Vector 1, Student-Instructor Interaction (76.6%), Vector 2, Cooperation among Students (65.7%), Vector 3, Active Learning (74.6%), Vector 4, Rich and Rapid Feedback (93.0%), Vector 6, High Expectations (90.8%), and Vector 7, Respect for Diversity (71.6%) agreed or strongly agreed with the statements. Over one half of those responding to Vector 5, Time on Task (57.9%), agreed or strongly agreed with the statement. These results further support initial findings that students perceived Web-enhanced instruction to positively impact the educational experience.

Table 10

Items Used to Explore Student and Instructor Opinions

Item/Topic	Survey Number
Item 17 Would take other Web-enhanced courses	17
Item 19 Education Experience Enhanced	19
Vector 1 Student-Instructor Interaction	1, 2, 7, 18
Vector 2 Cooperation among Students	8, 9
Vector 3 Active Learning	5, 6, 16
Vector 4 Rich and Rapid Feedback	3, 4, 15
Vector 5 Time on Task	10,13, 20, 21,23
Vector 6 High Expectations	11
Vector 7 Respect for Diversity	12

Instructors

Instructors were asked to respond to questions similar to those described above. The perceptions of the majority of instructors responding to the statement, "My students' educational experience has been enhanced," were positive. Of the 167 responding, 87% either agreed or strongly agreed with the statement, which was slightly higher than the percent of student respondents. Eighty-two percent of the 150 instructors responding also agreed or strongly agreed with the statement, "My students say that they would take other courses that are Web-enhanced."

The results of instructor opinions toward the vectors were lower than student opinions and appeared contradictory, at least in some instances, given their opinions regarding the overall value of Web-enhanced instruction in terms of teaching and learning. Still, instructor opinions were generally positive toward six of the seven vectors. Study participants agreed or strongly agreed with the items relating to Vector 1, Student-Instructor Interaction (66.3%), Vector 2, Cooperation among Students (50.7%), Vector 3, Active Learning (59.8%), Vector 4, Rich and Rapid Feedback (79.6%), Vector 6, High Expectations (65.9%), and Vector 7, Respect for Diversity (55.1%). However, instructor opinions toward Vector 3, Active Learning (18.8%) were significantly lower. Table 11 provides a summary of descriptive statistics for both student and instructor participants. Frequency distributions for both groups may be found in Table 12.

Table 11

Descriptive Statistics Regarding Opinions toward Impact on Educational Experience

Item	*N*	*M*	*SD*
Students			
Item 17 Would take other Web-enhanced courses	333	1.99	.870
Item 19 Education Experience Enhanced	329	1.94	.804
Vector 1 Student-Instructor Interaction	337	1.96	.621
Vector 2 Cooperation among Students	327	2.06	.733
Vector 3 Active Learning	342	2.11	.603
Vector 4 Rich and Rapid Feedback	341	1.71	.581
Vector 5 Time on Task	342	2.36	.482
Vector 6 High Expectations	337	1.70	.716
Vector 7 Respect for Diversity	290	2.08	.850
Instructors			
Item 17 Would take other Web-enhanced courses	150	2.10	.599
Item 19 Education Experience Enhanced	167	1.90	.623
Vector 1 Student-Instructor Interaction	166	2.26	.606
Vector 2 Cooperation among Students	144	2.34	.660
Vector 3 Active Learning	169	2.35	.620
Vector 4 Rich and Rapid Feedback	169	1.77	.536
Vector 5 Time on Task	170	2.76	.448
Vector 6 High Expectations	167	2.30	.780
Vector 7 Respect for Diversity	127	2.43	.740

Course Management Systems

In an effort to determine what CMS tools were being used by students, Item 24 on the student survey asked students to respond to the question, "How do you use the tools on Blackboard®, WebCT®, e-Learning®, or e-College® in this Web-enhanced class?" Students were given a list of tools typically associated with CMSs and were asked to select all that applied. Instructors were asked to respond to a similar item to obtain data from their perspective.

Table 12

Frequency Distributions Regarding Opinions toward Impact on Educational Experience

	n/%			
Item	*SA*	*A*	*D*	*SD*
Students				
Item 17 Would take other Web-enhanced courses	(103)	(154)	(52)	(24)
	30.9%	46.2%	15.6%	7.2%
Item 19 Education Experience Enhanced	(99)	(167)	(46)	(17)
	30.1%	50.8%	14.0%	5.2%
Vector 1 Student-Instructor Interaction	(65)	(193)	(68)	(11)
	19.3%	57.3%	20.1%	3.3%
Vector 2 Cooperation among Students	(57)	(158)	(93)	(19)
	17.4%	48.3%	28.5%	5.8%
Vector 3 Active Learning	(58)	(197)	(80)	(7)
	17.0%	57.6%	23.4%	2.1%
Vector 4 Rich and Rapid Feedback	(130)	(187)	(20)	(4)
	38.1%	54.9%	5.8%	1.2%
Vector 5 Time on Task	(4)	(194)	(143)	1
	1.2%	56.7%	41.8%	.3%
Vector 6 High Expectations	(141)	(165)	(21)	(10)
	41.8%	49.0%	6.2%	3.0%
Vector 7 Respect for Diversity	(80)	(137)	(68)	(18)
	26.4%	45.2%	22.4%	5.9%
Instructors				
Item 17 Would take Web-enhanced courses	(16)	(107)	(23)	(4)
	10.7%	71.3%	15.3%	2.7%
Item 19 Educational Experience Enhanced	(39)	(107)	(19)	(2)
	23.4%	64.1%	11.4%	1.2%
Vector 1 Student-Instructor Interaction	(9)	(101)	(46)	(10)
	5.4%	60.9%	27.7	6.0%
Vector 2 Cooperation among Students	(8)	(65)	(62)	(9)
	5.6%	45.1%	43.1%	6.2%
Vector 3 Active Learning	(15)	(86)	(61)	(7)
	8.9%	50.9%	36.1%	4.1%
Vector 4 Rich and Rapid Feedback	(54)	(104)	(9)	(2)
	32.0%	61.5%	5.3%	1.2
Vector 5 Time on Task	(2)	(30)	(129)	(9)
	1.2%	17.6%	75.9%	5.3%
Vector 6 High Expectations	(20)	(90)	(44)	(13)
	12.0%	53.9%	26.3%	7.8%
Vector 7 Respect for Diversity	(11)	(59)	(49)	(8)
	8.7%	46.5%	38.6%	6.3%

Note. SA = *Strongly Agree*, A = *Agree*, D = *Disagree,* SD = *Strongly Disagree.*

Item 24 on the instructor survey asked study participants to respond to the question, "How do you integrate the tools on Blackboard®, WebCT®, e-Learning®, or e-College® in this Web-enhanced class?" Instructors were given the same list of tools provided through these systems and were asked to select all that applied. Table 13 provides a summary of student and instructor responses to course management tools used.

In addition to responding to questions relating to tool use, students and instructors were asked to rate the frequency in which they used the tools (i.e., 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, 5 = *Always*). Table 14 provides descriptive statistics and frequency distributions on the responses for both groups.

Table 13

Frequency Distributions for Course Management Tool Use for Students and Instructors

	Students		Instructors	
Item	*N*	%	*N*	%
Syllabus	282	82.5%	159	93.5%
Announcements	309	90.4%	145	85.3%
Instructor Information	232	67.8%	156	91.8%
Lecture Notes	262	76.6%	105	61.8%
Other Course Materials	242	70.8%	145	85.3%
Content Related Websites	161	47.1%	115	67.1%
Discussion Boards	80	23.4%	67	39.4%
Chats	34	9.9%	15	8.8%
Quizzes	224	65.5%	55	32.4%
Online Examinations	165	48.2%	84	49.4%
Email fellow students	183	53.5%		
Email instructor	268	78.4%		
Email students individually			156	91.8%
Email class as a whole			143	84.1%
Document Submission	234	68.4%	115	67.6%
Gradebook	294	86.0%	137	80.6%

Table 14

Descriptive Statistics and Frequency Distributions for Course Management Tool Frequency of Use

Item	*M*	*SD*	Frequency of Use (*n*)/%				
			1	2	3	4	5
Students							
Syllabus	3.60	1.151	(22)	(29)	(100)	(100)	(88)
			6.5%	8.6%	29.5%	29.5%	26.0%
Announcements	3.81	1.233	(25)	(31)	(54)	(105)	(126)
			7.3%	9.1%	15.8%	30.8%	37.0%
Instructor Information	2.66	1.266	(73)	(90)	(94)	(43)	(39)
			21.5%	26.5%	27.7%	12.7%	11.5%
Course Documents	3.94	1.151	(23)	(15)	(52)	(119)	(131)
			6.8%	4.4%	15.3%	35.0%	38.5%
Discussion Boards	2.48	1.407	(120)	(64)	(69)	(43)	(43)
			35.4%	18.9%	20.4%	12.7%	12.7%
Chats	1.69	1.072	(204)	(70)	(30)	(18)	(12)
			61.1%	21.0%	9.0%	5.4%	3.6%
Assessments	3.50	1.408	(54)	(24)	(63)	(91)	(105)
			16.0%	7.1%	18.7%	27.0%	31.2%
Email	3.67	1.274	(31)	(35)	(60)	(105)	(110)
			9.1%	10.3%	17.6%	30.8%	32.3%
Electronic Submission	4.00	1.404	(49)	(25)	(55)	(89)	(117)
			14.6%	7.5%	16.4%	26.6%	34.9%
Gradebook	4.02	1.202	(20)	(27)	(41)	(91)	(162)
			5.9%	7.9%	12.0%	26.7%	47.5%
Instructors							
Syllabus	4.73	.793	(4)	(2)	(6)	(11)	(145)
			2.4%	1.2%	3.6%	6.5%	86.3%
Announcements	3.86	1.217	(13)	(8)	(34)	(46)	(65)
			7.8%	4.8%	20.5%	27.7%	39.2%
Instructor Information	3.90	1.411	(17)	(13)	(23)	(20)	(84)
			10.8%	8.3%	14.6%	12.7%	53.5%
Course Documents	4.47	.983	(7)	(1)	(14)	(29)	(115)
			4.2%	.6%	8.4%	17.5%	69.3%
Discussion Boards	2.58	1.460	(53)	(31)	(33)	(16)	(27)
			33.1%	19.4%	20.6%	10.0%	16.9%
Chats	1.59	.927	(99)	(35)	(15)	(5)	(3)
			63.1%	22.3%	9.6%	3.2%	1.9%
Assessments	3.38	1.495	(27)	(25)	(25)	(30)	(55)
			16.7%	15.4%	15.4%	18.5%	34.0%
Email	4.51	.862	(2)	(5)	(14)	(32)	(115)
			1.2%	3.0%	8.3%	19.0%	68.5%
Electronic Submission	3.49	1.563	(31)	(15)	(22)	(26)	(64)
			19.6%	9.5%	13.9%	16.5%	40.5%
Gradebook	4.23	1.402	(20)	(6)	(6)	(15)	(115)
			12.3%	3.7%	3.7%	9.3%	71.0%

Note. 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, 5 = *Always*.

Instructional Strategies

To determine the instructional strategies used by instructors teaching Web-enhanced courses, instructors were asked to rate the frequency (i.e., 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, 5 = *Always*) with which they utilized a variety of classroom activities or instructional techniques in their Web-enhanced course. Table 15 provides descriptive statistics and frequency distributions of their responses.

Table 15

Descriptive Statistics Frequency Distributions for Instructional Strategies: Frequency of Use

			Frequency of Use (*n*)/%				
Item	*M*	*SD*	1	2	3	4	5
Lecture	3.70	1.356	(21) 12.5%	(11) 6.5%	(27) 16.1%	(47) 28.0%	(27.6) 36.9%
Teacher-led Discussion	3.24	1.306	(28) 16.7%	(17) 10.1%	(35) 20.8%	(62) 36.9%	(26) 15.5%
Student-led Discussion	2.35	1.084	(48) 28.6%	(40) 23.8%	(57) 33.9%	(19) 11.3%	(4) 2.4%
Case Studies	2.08	1.202	(78) 46.2%	(29) 17.2%	(39) 23.1%	(16) 9.5%	(7) 4.1
Group Activities	2.64	1.212	(40) 23.7%	(34) 20.1%	(51) 30.2%	(34) 20.1%	(10) 5.9%
Student Presentations	2.11	1.127	(66) 39.5%	(40) 24.0%	(44) 26.3%	(10) 6.0%	(7) 4.2%
In-class Writing Assignments	2.61	1.371	(51) 30.4%	(28) 16.7%	(47) 28.0%	(20) 11.9%	(22) 13.1%
Experiential Activities	2.82	1.201	(44) 26.8%	(22) 13.4%	(40) 24.4%	(35) 21.3%	(23) 14.0%
Hands-on Activities	3.09	1.476	(38) 22.8%	(22) 13.2%	(32) 19.2%	(37) 22.2%	(38) 22.8%

Note. 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, 5 = *Always*.

Student-Faculty Interaction

Instructors were asked to respond to two questions relating to student interaction. The first one was, "On average, how many hours outside class time each week do you spend interacting with students enrolled in this Web-enhanced course?" The second one was, "How does this compare with the number of hours outside class time each week you spend interacting with students enrolled in your courses that are not Web-enhanced?" Of those responding, 10% reported interacting with students outside class more than 10 hours each week. Another 10% reported interacting with students outside class 6-10 hours per week. Seventeen percent of those responded indicated that they interacted with their students outside class 3-5 hours per week; 33% reported interacting with students 1-2 hours per week. Respectively, 17% and 5% of instructors reported that they interacted with their students less than one hour per week or not at all.

When asked how their level of interaction compared to traditional courses they were teaching, 18% reported spending more time interacting with students enrolled in Web-enhanced courses. Twelve percent reported spending less time interacting with students enrolled in Web-enhanced courses. One third of respondents (33%) said there was no difference in the level of interaction between the two instructional delivery methods, and 2% reported not interacting with their students outside class time at all. The remaining respondents (34%) were not currently teaching traditional courses. Table 16 provides a summary of descriptive statistics and frequency distributions for student interaction.

Table 16

Descriptive Statistics and Frequency Distributions for Student Interaction

Item	*N*	%	*M*	*SD*
Hours of Interaction	169		3.47	1.282
None	8	4.7%		
Less than 1	29	17.2%		
1-2	55	32.5%		
3-5	45	26.6%		
6-10	16	9.5%		
More than 10	16	9.5%		
Interaction Compared with Traditional Courses	166		2.91	1.133
I spend more time interacting with students enrolled in my Web-enhanced courses.	30	18.1%		
I spend less time interacting with students enrolled in my Web-enhanced courses.	20	12.0%		
There is no difference in the amount of time I spend interacting with students.	55	33.1%		
I do not teach courses that are not Web-enhanced.	57	34.3%		
I do not interact with my students outside scheduled class time.	4	2.4%		

Overall, part-time instructors reported spending less time interacting with students outside class than their full-time counterparts. Table 17 provides a summary of interaction patterns between full- and part-time faculty and those employed both full- and part-time.

Table 17

Student Interaction Patterns Based on Employment Status

	PT		FT		PT & FT	
Item (Hours Per Week)	*N*	%	*N*	%	*N*	%
None	4	2.4%	4	2.4%	0	0.0%
Less than 1	13	7.7%	15	8.9%	1	0.6%
1-2	12	7.1%	41	24.4%	2	1.2%
3-5	4	2.4%	36	21.4%	5	3.0%
6-10	1	0.0%	15	8.9%	0	0.0%
More than 10	2	1.2%	13	7.7%	0	0.0%
Total	36	21.4%	124	73.8%	8	4.8%

Note. FT = Full-time, PT = Part-time.

Student Versus Instructor

An independent samples *t* test was used to test for differences between students and instructors and their opinions. The results of the test indicate that there was no significant difference in student and instructor opinions for Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, or Vector 4, Rich and Rapid Feedback. For the remaining items, there was a significant difference between student and instructor opinions. Table 18 provides a summary of the results of the independent sample *t* test for students and instructors.

Table 18

Results of T Test for Students and Instructors

Item	*t*	*p**	Students *M*	Students *SD*	Instructors *M*	Instructors *SD*
Item 17 Would take other Web-enhanced courses	-1.596	.111	1.99	.870	2.10	.599
Item 19 Educational Experience Enhanced	.581	.561	1.94	.804	1.90	.623
Vector 1 Student-Faculty Interaction	-5.156	.000	1.96	.621	2.26	.606
Vector 2 Cooperation among Students	-4.523	.000	2.06	.685	2.34	.583
Vector 3 Active Learning	-4.238	.000	2.11	.603	2.35	.620
Vector 4 Rich and Rapid Feedback	-1.293	.197	1.71	.581	1.77	.536
Vector 5 Time on Task	-9.257	.000	2.36	.482	2.76	.448
Vector 6 High Expectation	-8,537	.000	1.70	.716	2.30	.780
Vector 7 Respect for Diversity	-4.228	.000	2.08	.850	2.43	.740

*$p < .05$.

Summary of Findings for Research Question 1

The results of the descriptive analysis of Research Question 1, "What were the opinions of instructors and students in Alabama's 2-year colleges as they relate to Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's seven principles?," indicate that the majority of students and instructors believed that Web-enhanced instruction positively influenced the educational experience. Moreover, respondents from the student sample reported that they would take additional Web-enhanced courses. Instructors reported hearing similar comments from their students.

This section also explored the use of the features provided through CMSs. Ranking how the tools were used based on student and instructor responses revealed that for students, checking for announcements was the most popular feature, followed by referencing the syllabus and monitoring grades. The least used tools among students were chats, discussion boards, and content-related websites. For instructors, the tool that ranked highest in terms of use was the one that allowed them to post a syllabus. An equal number of respondents reported that posting instructor information and emailing students individually were two of the more popular features after posting the syllabus. Chats, quizzes, and online examinations were among the least used tools by instructors.

In addition to teaching techniques, instructor interaction with students outside the classroom was also examined. The data showed that the overwhelming majority of instructors interacted with students outside of class time at some level. Further analysis revealed that for those teaching both Web-enhanced courses and traditional face-to-face courses, the former did not definitively increase student-instructor interaction. In fact, approximately one third of respondents reported that there was no difference in the level of student interaction between face-to-face and Web-enhanced courses. Of those remaining, the percentages reporting an increase in student interaction with Web-enhanced courses were slightly higher than those reporting a decrease in the level of interaction. Part-time instructors reported interacting with students fewer hours than full-time instructors.

Research Question 2

Research Question 2 asked, "Did the opinions of Alabama's 2-year college students differ regarding Web-enhanced instruction and its impact on the educational experience based upon their personal and professional characteristics?" Specifically, the researcher wanted to

determine how the opinions of students related to generational membership, gender, race/ethnicity, educational goal, enrollment status, employment status, computer usage patterns, and family income. Previous research as to the impact of student characteristics on community college student opinions as it relates to Web-enhanced instruction is limited at best.

To answer Research Question 2, inferential statistics in the form of *t* tests and ANOVAs were used to determine if there were differences between the means of each of the independent variables and student opinions. When the homogeneity of variances was not met for the ANOVA, the Games-Howell post-hoc test was run. For those items meeting the homogeneity assumption for the ANOVAs, the Scheffe post hoc test was used to allow for further analysis.

Further analysis of the data was conducted to determine whether generational membership, gender, race/ethnicity, institutional classification, educational goal, enrollment status, employment status, computer usage patterns, and/or family income predicted student opinions toward the educational experience using multiple regression analyses. The procedure was performed for Item 17, Item 19, and Vectors 1-7, the dependent variables.

Generational Membership

Although there were four categories for generational membership (i.e., Millennials, GenXers, Boomers, Silents), the student sample represented the first three groups. Of those responding, 67.9% (233 of 341) were considered Millennials (i.e., 19-27 years of age), and 29.5% (100 of 341) of students represented GenXers (i.e., 28-48 years of age). Boomers (i.e., 49-66 years of age) were represented by 2.3% (8 of 341) of the student sample. Silents (i.e., 67-84 years of age) were not represented in the sample.

Because Vector 2 ($p = .003$) and Vector 3 ($p = .015$) did not meet the test of homogeneity of variances as indicated by the Levene test, the Games-Howell was used to explore differences

in the distribution of student opinions among generational cohorts for these items. The results of the post hoc test indicate that the differences in the distribution of student opinions based on generational membership for either item were not statistically significant. A summary of the results of the Games-Howell test based on generational membership is provided is Table 19.

Table 19

Results of Games-Howell Post Hoc Based on Generational Membership (Students)

Generational Membership	*p**	Item	*M*	Item	*M*
Vector 2 Cooperation among Students	.999	1 (Millenials)	2.05	2 (GenXers)	2.04
	.175	1 (Millenials)	2.05	3 (Boomers)	2.57
	.295	2 (GenXers)	2.04	3 (Boomers)	2.57
Vector 3 Active Learning	.109	1 (Millenials)	2.14	2 (GenXers)	2.01
	.576	1 (Millenials)	2.14	3 (Boomers)	2.35
	.275	2 (Gen Xers)	2.01	3 (Boomers)	2.35

**p < .05.*

A one-way, between-groups ANOVA was used for the remaining items. The results indicate that the differences between generational membership groups and student opinions for Item 17, Would take other Web-enhanced courses ($p < .001$), Item 19, Educational Experience Enhanced ($p = .049$), Vector 1, Student-Instructor Interaction ($p = .046$), and Vector 4, Rich and Rapid Feedback ($p = .015$), were statistically significant. The remaining items, Vector 5, Time on Task, Vector 6, High Expectations, and Vector 7, Respect for Diversity, were not. Table 20 provides a summary of the results for the ANOVA for generational membership.

Further analysis using the Scheffe post hoc test indicated that there was a significant mean difference between Millennials and GenXers, as well as between GenXers and Boomers, for Item 17 and Vector 4, Rich and Rapid Feedback. The mean difference was lower for

GenXers (*M* = 1.75) than it was for Millennials (*M* = 2.07) or Boomers (*M* = 2.75), suggesting that GenXers had a more favorable opinion toward Item 17 than Millennials or Boomers. For Vector 4, Rich and Rapid Feedback, the mean difference for GenXers (*M* = 1.61) was lower than it was for Boomers (*M* = 2.17), suggesting that GenXers had a more favorable opinion toward Vector 4, Rich and Rapid Feedback, than Boomers. The post hoc comparisons for Item 19 and Vector 1, Student-Instructor Interaction, were not statistically significant (see Table 21).

Table 20

ANOVA for Generational Membership (Students)

				Millennials		GenXers		Boomers	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	8.205	2, 329	.000	2.07	.899	1.75	.705	2.75	1.165
Item 19 Educational Experience Enhanced									
	3.054	2, 325	.049	1.99	.814	1.81	.769	2.43	.787
Vector 1 Student-Instructor Interaction									
	3.108	2, 333	.046	1.99	.648	1.85	.532	2.28	.700
Vector 4 Rich and Rapid Feedback									
	4.259	2, 337	.015	1.73	5.78	1.61	.544	2.17	.873
Vector 5 Time on Task									
	1.153	2, 338	.317	2.39	.472	2.30	.478	2.38	.719
Vector 6 High Expectations									
	.861	2, 333	.424	1.73	.750	1.62	.634	1.75	.707
Vector 7 Respect for Diversity									
	1.376	2, 299	.254	2.09	.860	2.02	.802	2.57	1.134

*$p < .05$.

Table 21

Scheffe Comparison for Generational Membership (Students)

Generational Membership	*p**	Item	*M*	Item	*M*
Item 17 Would take other Web-enhanced courses	.008	1 (Millenials)	2.07	2 (GenXers)	1.75
	.088	1 (Millenials)	2.07	3 (Boomers)	2.75
	.006	2 (GenXers)	1.75	3 (Boomers)	2.75
Vector 4 Rich and Rapid Feedback	.200	1 (Millenials)	1.73	2 (GenXers)	1.61
	.110	1 (Millenials)	1.73	3 (Boomers)	2.17
	.031	2 (Gen Xers)	1.61	3 (Boomers)	2.17

*$p < .05$.

Gender

Of the students responding, 77.2% (264 of 342) were female. Male students made up 22.8% (78 of 342) of the student sample.

An independent samples *t* test was used to test for differences between the opinions of male and female students. The results of the test indicate that with the exception of Vector 6, High Expectations, there was no significant difference between male and female students and their opinions. Table 22 provides a summary of the results of the independent sample *t* test for gender. For Vector 6, High Expectations, female students had a more favorable opinion toward the vector than did male students. Cohen's *d* was used to test for effect size for Vector 6 ($d = .04$). The results indicate a medium effect size ($d = .4$, $r^2 = .038$).

Table 22

Results of T Test for Gender (Students)

Item	*t*	*p**	Males *M*	Males *SD*	Females *M*	Females *SD*
Item 17 Would take other Web-enhanced courses	1.77	.08	2.15	.93	1.95	.85
Item 19 Educational Experience Enhanced	1.19	.23	2.04	.82	1.91	.80
Vector 1 Student-Instructor Interaction	1.89	.06	2.09	.72	1.92	.59
Vector 2 Cooperation among Students	1.72	.09	2.20	.84	2.01	.70
Vector 3 Active Learning	.95	.34	2.16	.58	2.09	.61
Vector 4 Rich and Rapid Feedback	1.82	.07	1.81	.60	1.67	.57
Vector 5 Time on Task	.73	.47	2.40	.47	2.35	.49
Vector 6 High Expectations	3.09	.00	1.92	.79	1.64	.68
Vector 7 Respect for Diversity	.57	.57	2.13	.84	2.06	.85

*$p < .05$.

Race/Ethnicity

Students who were White made up 70.9% (241 of 340) of the sample; African American students represented 22.4% (76 of 340). Other races (i.e., American Indian/Alaskan Native, Asian/Pacific Islander, Hispanic/Latino, Other) represented 6.9% (23 of 340) of the student sample.

A one-way, between-groups ANOVA was used to examine the differences in the distribution of student opinions among White students, African American students, and students of other races/ethnicities for those items meeting the test of homogeneity of variances. Vector 1,

Student-Instructor Interaction (p = .004), Vector 4, Rich and Rapid Feedback (p = .019), and Vector 6, High Expectations (p = .031) did not meet the assumption of homogeneity. Consequently, the Games-Howell post hoc test was used to analyze these items. The results of the test indicate that there was a significant difference in opinions between White students (M = 2.00) and African American students (M = 1.76) and African American students and students of other races/ethnicities (M = 2.21) regarding Vector 1, Student-Instructor Interaction. African Americans had more favorable opinions toward this item than both White students and students of other races/ethnicities. For Vector 4, Rich and Rapid Feedback, the findings indicate that there was a difference in opinions based on race/ethnicity between African American students (M = 1.58) and those of other races/ethnicities (M = 1.91). African American students had more favorable opinions toward the vector. There was also a difference in opinions between White students (M = 1.76) and African American students (M = 1.51) for Vector 6, High Expectations. African American students had more favorable opinions than White students. Table 23 provides a summary of the results of the Games-Howell test.

Table 23

Results of the Games-Howell Test for Race/Ethnicity (Students)

Race/Ethnicity	*p**	Item	*M*	Item	*M*
Vector 1 Student-Instructor Interaction	.002	1 (Whites)	2.00	2 (African Americans)	1.76
	.002	1 (Whites)	2.00	3 (Other)	2.21
	.001	2 (African Americans)	1.76	3 (Other)	2.21
Vector 4 Rich and Rapid Feedback	.066	1 (Whites)	1.73	2 (African Americans)	1.58
	.168	1 (Whites)	1.73	3 (Other)	1.91
	.008	2 (African Americans)	1.58	3 (Other)	1.91
Vector 6 High Expectations	.020	1 (Whites)	1.76	2 (African Americans)	1.51
	.988	1 (Whites)	1.76	3 (Other)	1.77
	.082	2 (African Americans)	1.51	3 (Other)	1.77

*$p < .05$.

An ANOVA was used to test Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, Vector 2, Cooperation among Students, Vector 3, Active Learning, Vector 5, Time on Task, and Vector 7, Respect for Diversity. The results of the ANOVA reveal that the mean differences between races/ethnicities and student opinions for Item 17 ($p = .197$) were not statistically significant; however, the results for Item 19, $F(2,324) = 7.205$, $p = .001$; Vector 2, $F(2,334) = 6.280$, $p = .002$; Vector 3, $F(2,337) = 3.426$, $p = .034$); Vector 5 $F(2,337) = 6.562$, $p = .002$); and Vector 7, $F(2,298) = 4.697$, $p = .010$) were. Table 24 presents the results of the ANOVA based on Race/Ethnicity.

Table 24

ANOVA for Race/Ethnicity (Students)

				White		African American		Other	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	1.633	2, 328	.197	1.96	.870	2.00	.844	2.30	.926
Item 19 Educational Experience Enhanced									
	7.205	2, 324	.001	2.03	.810	1.63	.755	2.00	.674
Vector 1 Student-Instructor Interaction									
	6.349	2, 332	.002	2.00	.660	1.76	.475	2.21	.486
Vector 2 Cooperation among Students									
	6.280	2,323	.002	2.12	.745	1.80	.660	2.25	.618
Vector 3 Active Learning									
	3.426	2,337	.034	2.12	.618	1.99	.576	2.35	.463
Vector 4 Rich and Rapid Feedback									
	3.566	2, 336	.029	1.73	.614	1.58	.479	1.91	.429
Vector 5 Time on Task									
	6.562	2, 337	.002	2.38	.474	2.24	.483	2.63	.454
Vector 6 High Expectations									
	3.422	2, 332	.034	1.76	.750	1.51	.646	1.77	.429
Vector 7 Respect for Diversity									
	4.697	2, 298	.010	2.18	.852	1.84	.834	1.88	.697

*$p < .05$.

Further analysis was conducted using the Scheffe post hoc test on each of the items that were statistically significant (i.e., Item 19, Educational Experience Enhanced ($p = .001$), Vector

2, Cooperation among Students (p = .002), Vector 3, Active Learning (p = .034), Vector 5, Time on Task (p = .002), and Vector 7, Respect for Diversity (p = .010). Results indicate that there was a significant difference (p = .001) in the means of African American students (M = 1.63) and White students (M = 2.03) for Item 19, Educational Experience Enhanced, suggesting that African American students had more favorable opinions toward Item 19 than White students did. There was a significant difference (p = .004) in the means between African American students (M = 1.80) and White students (M = 2.12) for Vector 2, Cooperation among Students, suggesting that African American students had more favorable opinions towards Vector 2 than White students did. The mean differences of African American students (M = 1.99) and students of other races (M = 2.35) for Vector 3, Active Learning, also were significant (p = .044), suggesting that African American students had more favorable opinions toward Vector 3. The comparisons of mean differences for Vector 5, Time on Task, produced similar results. The mean differences of African American students (M = 2.24) and students of other races/ethnicities (M = 2.63) were statistically significant (p = .002), suggesting that African American students had more favorable opinions toward Vector 5. Finally, the mean differences between African American students (M = 1.84) and White students (M = 2.18) for Vector 7, Respect for Diversity, were statistically significant (p = .012), suggesting that African American Students had more favorable opinions toward the vector than White students had. Table 25 provides a summary of Scheffe comparisons based on race/ethnicity for students.

Table 25

Scheffe Comparisons for Race/Ethnicity (Students)

Race/Ethnicity	*p**	Item	*M*	Item	*M*
Item 19 Educational Experience Enhanced	.001	1 (White)	2.03	2 (African American)	1.63
	.985	1 (White)	2.03	3 (Other)	2.00
	.148	2 (African American)	1.63	3 (Other)	2.00
Vector 2 Cooperation among Students	.004	1 (White)	2.12	2 (White)	1.80
	.004	1 (White)	2.12	3 (White)	2.25
	.049	2 (African American)	1.80	3 (African American)	2.25
Vector 3 Active Learning	.230	1 (White)	2.12	2 (White)	1.99
	.235	1 (White)	2.12	3 (White)	2.35
	.044	2 (African American)	1.99	3 (African American)	2.35
Vector 5 Time on Task	.080	1 (White)	2.38	2 (White)	2.24
	.048	1 (White)	2.38	3 (White)	2.63
	.002	2 (African American)	2.24	3 (African American)	2.63
Vector 6 High Expectations	.004	1 (White)	1.76	2 (White)	1.51
	.004	1 (White)	1.76	3 (White)	1.77
	.049	2 (African American)	1.51	3 (African American)	1.77

*$p < .05$.

Institutional Classification

Students attending rural institutions represented 75.4% (258 of 342) of those responding. Suburban and urban students represented 14.0% (48 of 342) and 10.5% (36 of 342), respectively.

To test for differences in institutional classification and student opinions, the Games-Howell test was run on Vector 4 (p = .013) because the assumption of homogeneity had not been met according to the Levene test. However, the test revealed that mean differences for Vector 4 were not statistically significant.

The remaining items were tested using a one-way, between-groups ANOVA. The results of the ANOVA reveal that mean differences between institutional classifications and student opinions were statistically significant for Vector 2, Cooperation among Students (p = .034), and Vector 6, High Expectations (p = 010). The remaining items (i.e., Item 17, Would take other Web-enhanced courses, p = .462; Item 19, Educational Experience Enhanced, p = .055; Vector 1, Student-Instructor Interaction, p = .633; Vector 3, Active Learning, p = .860; Vector 5, Time on Task, p = .511; and Vector 7, Respect for Diversity, p = .197) were not statistically significant. Post hoc analysis on these items using Scheffe comparisons for Vector 2, Cooperation among Students, and Vector 6, High Expectations, revealed that students attending urban institutions had more favorable opinions toward both vectors than did students attending rural institutions. Table 26 provides a summary of the results of the ANOVA based on Institutional Classification. A summary of Sheffe Comparisons is provided in Table 27.

Table 26

ANOVA for Institutional Classification (Students)

				Rural		Suburban		Urban	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	.774	2,330	.462	1.20	.055	1.88	.981	2.11	.748
Item 19 Educational Experience Enhanced									
	2.934	2,326	.055	1.98	.789	1.96	.977	1.64	.593
Vector 1 Student-Instructor Interaction									
	.458	2,336	.633	1.97	.616	1.95	.725	1.86	.509
Vector 2 Collaborative Learning									
	3.417	2,326	.034	2.10	.697	2.05	.877	1.75	.710
Vector 3 Active Learning									
	.150	2,339	.860	2.11	.600	2.11	.662	2.06	.553
Vector 5 Time on Task									
	.672	2,339	.511	2.38	.476	2.37	.526	2.28	.464
Vector 6 High Expectations									
	4.701	2,334	.010	1.74	.707	1.74	.846	1.36	.487
Vector 7 Respect for Diversity									
	1.635	2,300	.197	2.12	.834	2.02	.886	1.84	.898

*$p < .05$.

Table 27

Scheffe Comparisons Based on Institutional Classification (Students)

Institutional Classification	*p**	Item	*M*	Item	*M*
Vector 2 Cooperation among Students	.923	1 (Rural)	2.10	2 (Suburban)	2.05
	.034	1 (Rural)	2.10	3 (Urban)	1.75
	.181	2 (Suburban)	2.05	3 (Urban)	1.75
Vector 6 High Expectations	1.000	1 (Rural)	1.74	2 (Suburban)	1.74
	.011	1 (Rural)	1.74	3 (Urban)	1.36
	.052	2 (Suburban)	1.74	3 (Urban)	1.36

**p < .05.*

Educational Goals

The goal of 43.4% (147 of 339) of students was to earn an associate's degree. Another 36.0% (122 of 339) planned to transfer to a 4-year institution to earn a baccalaureate degree. Of the remaining students in the sample who had made a decision regarding their educational goal, 5.9% (20 of 339) wanted to learn new skills for employment, 5.6% (19 of 339) wanted to earn a certificate, and 5.0% (17 of 339) wanted to earn a diploma. The percentage of students who were undecided as to their educational goal was 4.1% (14 of 339).

To test for differences among educational goals and student opinions, a Games-Howell test was run on Vector 1, Student-Instructor Interaction ($p = .002$), because the assumption of homogeneity had not been met according to the Levene test. The test revealed that mean differences for Vector 1, Student-Instructor Interaction, were not statistically significant. The remaining items were tested using a one-way, between-groups ANOVA. The test revealed that the mean differences for education goal and student opinions were significant for Item 19, Educational Experience Enhanced, $p = .003$; Vector 2, Cooperation among Students, $p < .001$;

Vector 4, Rich and Rapid Feedback, p = .035; Vector 5, Time on Task, p = .035; and Vector 6, p = .001. Mean differences based on education goal were not significant for the remaining items (i.e., Item 17, p =.181; Vector 3, p = .152; and Vector 7, p = .439). Table 28 provides a summary of the ANOVA based on students' educational goals.

Table 28

ANOVA for Educational Goals (Students)

				Skill		Certificate		Diploma		Associate's		Transfer		Undecided	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses															
	1.526	5,324	.181	2.05	.999	2.05	1.026	2.35	.786	1.86	.790	2.03	.876	2.23	1.091
Item 19 Educational Experience Enhanced															
	1.526	5,320	.003	2.11	.738	1.68	.582	2.24	.664	1.87	.765	1.90	.821	2.64	1.008
Vector 1 Student-Instructor Interaction															
	2.561	5,328	.027	2.16	.713	1.84	.375	1.93	.521	1.85	.517	2.05	.728	2.23	.676
Vector 2 Cooperation among Students															
	4.762	5,318	.000	2.26	.903	1.87	.642	2.27	5.63	1.93	.668	2.09	.768	2.79	.642
Vector 3 Active Learning															
	1.629	5,333	.152	2.15	.587	2.08	.629	2.08	.559	2.06	.575	2.13	.642	2.52	.484
Vector 4 Rich and Rapid Feedback															
	2.374	5,332	.039	1.93	.706	1.49	.501	1.73	.460	1.69	.535	1.68	.614	2.07	.656
Vector 5 Time on Task															
	2.432	5,333	.035	2.38	.460	2.31	.492	2.49	.453	2.35	.464	2.31	.496	2.75	.400
Vector 6 High Expectations															
	4.044	5,329	.001	1.85	.875	1.68	.671	1.88	.697	1.57	.633	1.74	.748	2.38	.768
Vector 7 Respect for Diversity															
	.966	5,295	.439	2.44	1.42	1.89	.676	1.94	.680	2.05	.847	2.10	.885	2.09	.701

*p < .05.

Further analysis using Scheffe post hoc comparisons revealed that significant differences existed between the students seeking a certificate (*M* = 1.68), a diploma (*M* = 1.87) and students seeking transfer (*M* = 1.90) and those who were undecided as to their educational goals (*M* = 2.64), suggesting that students seeking a formal award had more favorable opinions toward Item 19, Educational Experience Enhanced, than students who were undecided as to their educational goal. The same was true for Vector 2, Cooperation among Students, where the mean difference for students seeking a certificate (*M* = 1.87), a diploma (*M* = 1.93), and transfer (*M* = 2.09) were slightly lower than those of students who were undecided (*M* = 2.79). For Vector 6, High Expectations, the mean differences between opinions of students seeking a diploma (*M* = 1.57) and undecided students (*M* = 2.38) suggested that students who were seeking a diploma had more favorable opinions toward the vector than students who were undecided. Table 29 provides of summary of Scheffe comparisons based on students' educational goal.

Table 29

Scheffe Comparisons Based on Educational Goal (Students)

Educational Goal	*p**	Item	*M*	Item	*M*
Item 19 Educational Experience Enhanced	.737	1 (Skills)	2.11	2 (Certificate)	1.68
	.998	1 (Skills)	2.11	3 (Associate's)	2.24
	.905	1 (Skills)	2.11	4 (Diploma)	1.87
	.947	1 (Skills)	2.11	5 (Transfer)	1.90
	.577	1 (Skills)	2.11	6 (Undecided)	2.64
	.486	2 (Certificate)	1.68	3 (Associate's)	2.24
	.969	2 (Certificate)	1.68	4 (Diploma)	1.000
	.945	2 (Certificate)	1.68	5 (Transfer)	1.90
	.035	2 (Certificate)	1.68	6 (Undecided)	2.64
	.641	3 (Associate's)	2.24	4 (Diploma)	1.000
	.731	3 (Associate's)	2.24	5 (Transfer)	1.90
	.836	3 (Associate's)	2.24	6 (Undecided)	2.64

Educational Goal	*p**	Item	*M*	Item	*M*
	1.000	4 (Diploma)	1.87	5 (Transfer)	1.90
	.030	4 (Diploma)	1.87	6 (Undecided)	2.64
	.046	5 (Transfer)	1.90	6 (Undecided)	2.64
Vector 2 Cooperation among Students	.715	1 (Skills)	2.26	2 (Certificate)	1.87
	1.000	1 (Skills)	2.26	3 (Associate's)	2.27
	.588	1 (Skills)	2.26	4 (Diploma)	1.93
	.966	1 (Skills)	2.26	5 (Transfer)	2.09
	.506	1 (Skills)	2.26	6 (Undecided)	2.79
	.760	2 (Certificate)	1.87	3 (Associate's)	2.27
	1.000	2 (Certificate)	1.87	4 (Diploma)	1.93
	.903	2 (Certificate)	1.87	5 (Transfer)	2.09
	.023	2 (Certificate)	1.87	6 (Undecided)	2.79
	.686	3 (Associate's)	2.27	4 (Diploma)	1.93
	.976	3 (Associate's)	2.27	5 (Transfer)	2.09
	.576	3 (Associate's)	2.27	6 (Undecided)	2.79
	.090	4 (Diploma)	1.93	5 (Transfer)	2.09
	.003	4 (Diploma)	1.93	6 (Undecided)	2.79
	.039	5 (Transfer)	2.09	6 (Undecided)	2.79
Vector 6 High Expectations	.990	1 (Skills)	1.85	2 (Certificate)	1.68
	1.000	1 (Skills)	1.85	3 (Associate's)	1.88
	.718	1 (Skills)	1.85	4 (Diploma)	1.57
	.995	1 (Skills)	1.85	5 (Transfer)	1.74
	.472	1 (Skills)	1.85	6 (Undecided)	2.38
	.982	2 (Certificate)	1.68	3 (Associate's)	1.88
	.993	2 (Certificate)	1.68	4 (Diploma)	1.57
	1.000	2 (Certificate)	1.68	5 (Transfer)	1.74
	.178	2 (Certificate)	1.68	6 (Undecided)	2.38
	.685	3 (Associate's)	1.88	4 (Diploma)	1.57
	.989	3 (Associate's)	1.88	5 (Transfer)	1.74
	.584	3 (Associate's)	1.88	6 (Undecided)	2.38
	.515	4 (Diploma)	1.57	5 (Transfer)	1.74
	.007	4 (Diploma)	1.57	6 (Undecided)	2.38
	.085	5 (Transfer)	1.74	6 (Undecided)	2.38

**p* < .05.

Because 49 different majors were represented by the student sample, they were grouped into seven categories or divisions (i.e., Arts and Humanities, Business, Education, Health, Natural Sciences, Behavioral and Social Sciences, Technical). An eighth category was added for undecided students. As noted in chapter 3, the Health Sciences division was inordinately represented in the student sample. Of the 335 responding, 66.9% (224) had majors relating to the Health Sciences. The student sample was more evenly distributed among the remaining divisions. Arts and Humanities majors were represented by 3.3% (11) of students; Business majors were represented by 9.0% (30) of students; Education majors were represented by 3.6% (12) of students; Natural Sciences majors were represented by 1.8% (6) of students; Behavioral and Social Sciences majors were represented by 2.4% (8) of students; and Technical majors were represented by 3.9% (13) of students. The percentage of students who were undecided was 9.3% (31).

To test for differences among the divisions/undecided category and student opinions, a Games-Howell test was run on Item 17 (p = .009), Vector 1, Student-Instructor Interaction (p = .007), Vector 6, High Expectations (p = .004), and Vector 7, Respect for Diversity (p = .022) because the assumption of homogeneity had not been met for these items according to the Levene test. However, the test revealed that there was no significant difference between groups for any of the items.

The remaining items were tested using a one-way, between-groups ANOVA. The test revealed that with the exception of Vector 3, Active Learning $F(7,327) = 6.359$, p = .013, the mean differences between divisions were not significant (i.e., Item 19, Educational Experience Enhanced, p = .122; Vector 2, Cooperation among Students p = .106; Vector 4, Rich and Rapid Feedback, p = .162; Vector 5, Time on Task, p = .651). Table 30 provides a summary of the

results of the ANOVA based on students' majors. Further analysis of Vector 3, Active Learning, using Scheffe post hoc comparisons indicated no significant difference between mean groups.

Table 30

ANOVA for Major (Students)

				Arts/ Humanities		Natural Sciences		Technical		Business		Social Sciences		Orientation		Health		Undecided	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses																			
	1.564	7,318	.145	2.43	1.13	2.27`	.980	1.92	.669	1.90	.790	1.60	.548	1.71	1.25	2.17	.718	2.16	1.098
Item 19 Educational Experience Enhanced																			
	1.647	7,315	.122	2.39	1.13	1.97	.964	1.50	.674	1.90	.765	1.40	.548	2.00	.926	2.33	.651	2.07	.814
Vector 1 Student-Instructor Interaction																			
	4.376	7,322	.000	2.80	1.01	2.02	.623	1.71	.487	1.89	.575	1.79	.641	2.31	.943	2.06	.447	1.92	.463
Vector 2 Cooperation among Students																			
	1.710	7,314	.106	2.55	.864	2.08	.744	1.96	.620	1.97	.700	2.00	.935	2.38	.791	2.15	.427	2.25	.855
Vector 3 Active Learning																			
	2.590	7,327	.013	2.68	.864	2.22	.538	1.97	.521	2.07	.600	1.67	.558	2.17	.909	228	.427	2.01	.443
Vector 4 Rich and Rapid Feedback																			
	1.512	7,326	.162	2.09	.668	1.76	.606	1.42	.352	1.68	.558	1.47	.400	1.83	1.054	1.77	.498	1.64	.510
Vector 5 Time on Task																			
	.725	7,327	.651	2.29	.554	2.39	.523	2.29	.443	2.33	.472	2.42	.615	2.33	.427	2.42	.413	2.52	.511

				Arts/ Humanities		Natural Sciences		Technical		Business		Social Sciences		Orientation		Health		Undecided	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Vector 6 High Expectations																			
	3.661	7,322	.001	2.27	1.104	1.83	.648	1.33	.492	1.61	.655	2.00	.707	2.38	.916	1.75	.452	1.83	.834
Vector 7 Respect for Diversity																			
	.919	7,289	.492	2.14	1.069	2.24	.912	1.55	.688	2.08	.876	2.00	.000	2.38	.916	2.10	.316	2.04	.793

*$p < .05$.

Enrollment Status

Students enrolled full-time 72.2% (247) made up the majority of the sample. Students attending part-time totaled 27.1% (92).

An independent *t* test was run to determine if there were differences in the distribution of student opinions for students enrolled full-time and those enrolled part-time. Table 31 provides a summary of the results.

Table 31

Summary of Results of T Test for Enrollment Status (Students)

			Full-time		Part-time	
Item	*t*	*p**	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses	1.016	.311	2.02	.847	1.91	.927
Item 19 Educational Experience Enhanced	.659	.511	1.98	.775	1.89	.885
Vector 1 Student-Faculty Interaction	3.260	.001	2.02	.628	1.77	.568
Vector 2 Cooperation among Students	1.946	.053	2.10	.683	1.94	.682
Vector 3 Active Learning	3.117	.002	2.17	.599	1.94	.587
Vector 4 Rich and Rapid Feedback	3.592	.000	1.77	.596	1.52	.505
Vector 5 Time on Task	1.395	.164	2.38	.466	2.30	.510
Vector 6 High Expectations	1.620	.106	1.74	.698	1.60	.761
Vector 7 Respect for Diversity	2.529	.012	2.15	.833	1.88	.877

*$p < .05$.

The results indicated that there was a significant difference between the two groups for Vector 1, Instructor-Student Interaction ($p = .001$), Vector 3, Active Learning, ($p = .002$), Vector

4, Rich and Rapid Feedback (p = .000), and Vector 7, Respect for Diversity, (p = .012). In each case, part-time students had more favorable opinions than full-time students. Cohen's d was used to test for effect size. The findings revealed medium effect sizes (Vector 1, d = .4, r^2 = .038; Vector 3, d = .4, r^2 = .038; Vector 4, d = .5, r^2 = .059; Vector 7, d = .3, r^2 = .022).

Employment Status

Of the 341 students responding, 20.5% (70) worked full-time and 39.3% (134) worked part-time. Students who were unemployed accounted for 40.2% (137) of the sample.

To test for differences among the employment status groups and student opinions, a Games-Howell test was run on Item 19 (p = .005), Vector 1 (p = .022), Vector 2 (p = .003), and Vector 7 (p = .003) because the assumption of homogeneity had not been met for these items according to the Levene test. The test revealed that with the exception of Vector 1 Student-Instructor Interaction, none of the group differences was statistically significant. There was a difference in the means between students employed full-time (M = 1.78) and unemployed students (M = 2.05), suggesting that students working full-time had more favorable opinions toward Vector 1 than students who were unemployed.

Item 17, Would take other Web-enhanced courses, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, Vector 5, Time on Task, and Vector 6, High Expectations, were tested using a one-way, between-groups ANOVA. The test revealed that the mean differences between full-time, part-time, and not employed students and their opinions were not significant for Item 17, p = .144; Vector 3, p = .121; Vector 5, p = .308, and Vector 6, p = .343. However, Vector 4 was significant (p = .032). Table 32 provides a summary of the ANOVA based on employment status for students. Further analysis of Vector 4, Rich and Rapid Feedback, using Scheffe post hoc comparisons indicated a significant difference between students who were employed full-

time (M = 1.59) and those who were not employed (M = 1.80), suggesting that students who were working full time had more favorable opinions toward Vector 4 than students who were not employed.

Table 32

ANOVA for Employment Status (Students)

				Full-time		Part-time		Unemployed	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	1.948	2,329	.144	1.81	.738	2.01	.957	2.06	.833
Vector 3 Active Learning									
	2.126	2,338	.121	1.99	.525	2.11	.653	2.17	.585
Vector 4 Rich and Rapid Feedback									
	3.469	2,337	.032	1.59	.551	1.67	.602	1.80	.562
Vector 5 Time on Task									
	1.182	2,338	.308	2.29	.464	2.40	.452	2.37	.518
Vector 6 High Expectations									
	1.074	2,333	.343	1.69	.626	1.74	.804	1.72	.665

*$p < .05$.

Household Income

Of the 331 students responding, 37.0% (123) reported living in a house with annual earnings of less than $20,000. An additional 29.5% (98) lived in a house where the annual income was between $20,000 and $40,000. The annual household earnings of 33% (111) of the respondents were more than $40,000.

A Games-Howell test was used to test for differences among household income groups and student opinions for Vector 4 Rich and Rapid Feedback (p = .009) and Vector 7 Respect for Diversity (p = .011) because these items did not meet the test of homogeneity of variances according to the Levene test. The results of the test indicate that the differences between household income and student opinions were not significant for either vector.

An ANOVA was run on Item 17, Would take other Web-enhanced courses; Item 19, Educational Experience Enhanced; Vector 1, Student-Instructor Interaction; Vector 2, Cooperation among Students; Vector 3, Active Learning; Vector 5, Time on Task; and Vector 6, High Expectations. There was no statistical significance in the distribution of student opinions among household income groups. Table 33 provides a summary of the ANOVA based on Household Income for students.

Table 33

ANOVA for Household Income (Students)

				<$20,000		$20-$40,000		>$40,000	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	.874	2,320	.430	2.00	.891	2.065	.832	1.91	.860
Item 19 Educational Experience Enhanced									
	.366	2,318	.694	1.95	.757	1.874	.747	1.96	.868
Vector 1 Student-Instructor Interaction									
	2.641	2,324	.073	1.93	.568	1.85	.519	1.94	.610
Vector 2 Collaborative Learning									
	2.920	2,315	.055	2.07	.731	1.92	.654	2.17	.765

Item	*F*	*df*	*p**	<$20,000 *M*	<$20,000 *SD*	$20-$40,000 *M*	$20-$40,000 *SD*	>$40,000 *M*	>$40,000 *SD*
Vector 3 Active Learning									
	.243	2,329	.785	2.10	.557	2.08	.593	2.14	.665
Vector 5 Time on Task									
	1.730	2,329	.179	2.42	.456	2.30	.480	2.36	.502
Vector 6 High Expectations									
	.234	2,325	.791	1.69	.731	1.69	.601	1.75	.795

**p < .05.*

Computer Usage Patterns

Main Internet Access Point. Of the 323 students responding, 84.8% (274) identified their home as their primary Internet access point. Another 11.8% (38) utilized the college campus as their main source of access to the Internet. The remaining 3.4% (11) of students responding reported that they accessed the Internet from some place other than the college or home.

With the exception of Item 17, Would take other Web-enhanced courses ($p = .009$), all items met the equality of variances assumption based on Levene's test. For Item 17, a Games-Howell test revealed that there was a significant difference ($p = .013$) between the means for students who accessed the Internet from campus ($M = 2.39$) and those who accessed it from home ($M = 1.94$), suggesting the students who accessed the Internet from home had a more favorable opinion toward Item 17 than those whose primary Internet access point was on campus.

An ANOVA was run on Item 19, Educational Experience Enhanced; Vector 1, Instructor-Student Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, Vector 5, Time on Task, Vector 6, High Expectations, and Vector 7, Respect for Diversity, to determine if there were differences in student opinions based on Internet access point. With the exception of Vector 5, Time on Task (p = .020), there was no statistical significance in the distribution of student opinions among Internet access points (i.e., Item 19, p =. 074; Vector 1, p = .798; Vector 2, p = 776; Vector 3, p = .338; Vector 4, p = .763; Vector 6, p = .479; Vector 7, p = .489). Further analysis using Scheffe post hoc comparisons for Vector 5, Time on Task, revealed that there was a significant difference (p = .013) in the means between students who accessed the Internet primarily from the college campus (M = 2.56) and those who accessed it from home (M = 2.35), suggesting that students whose primary Internet access point was at home had more favorable opinions toward that vector than those who accessed it primarily from campus. A summary of the ANOVA for Internet access point is provided in Table 34.

Table 34

ANOVA for Internet Access Point (Students)

				On Campus		At Home		Other	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced									
	2.632	2,307	.074	2.22	.831	1.91	.781	1.82	.874
Vector 1 Student-Instructor Interaction									
	.226	2,315	.073	2.03	.609	1.95	.631	1.95	.430

Item	*F*	*df*	*p**	On Campus *M*	On Campus *SD*	At Home *M*	At Home *SD*	Other *M*	Other *SD*
Vector 2 Collaborative Learning									
	.254	2,306	.776	2.08	.795	2.07	.731	2.23	.518
Vector 3 Active Learning									
	1.088	2,320	.338	2.23	.668	2.10	.597	1.97	.526
Vector 4 Rich and Rapid Feedback									
	.270	2,319	.763	1.76	.464	1.69	.594	1.73	.317
Vector 5 Time on Task									
	3.948	2,320	.020	2.56	.491	2.35	.476	2.51	.513
Vector 6 High Expectations									
	.738	2,315	.479	1.59	.644	1.73	.738	1.60	.516
Vector 7 Respect for Diversity									
	.718	2,283	.489	2.16	.969	2.09	.835	1.78	.833

*$p < .05$.

Type Connection. Of the 296 students responding, 78.7% (233) reported having high-speed Internet connections via DSL or cable. Dial-up was still being used by 6.8% (20) of the student respondents. Of the remaining students, 14.5% (43) reported that they connected to a Work Lan or that they did not know what type connection they had.

A one-way, between-groups ANOVA was used to test for differences in the type of Internet connection to which students had access and their opinions. All items (i.e., Item 17, Item 19, and Vectors 1-7) met the assumption of homogeneity of variance according to the Levene

test. With the exception of Item 17 (p = .041), the items were not statistically significant. Further analysis using Scheffe post hoc comparisons revealed that mean differences between the groups for Item 17 were not statistically significant. Table 35 provides a summary of the ANOVA for Type Connection.

Table 35

ANOVA Based on Type Internet Connection (Students)

				Dial Up		Cable/DSL		Other	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses									
	3.220	2,286	.041	1.70	.979	1.92	.822	2.22	.822
Item 19 Educational Experience Enhance									
	.695	2,282	.500	1.70	.657	1.92	.825	1.90	.709
Vector 1 Student-Instructor Interaction									
	.691	2,289	.691	1.96	.579	1.92	.613	2.01	.696
Vector 2 Collaborative Learning									
	.057	2,280	.945	2.11	.774	2.06	.719	2.04	.720
Vector 3 Active Learning									
	.300	2,293	.741	2.12	.462	2.08	.615	2.16	.565
Vector 4 Rich and Rapid Feedback									
	.234	2,292	.792	1.70	.733	1.68	.609	1.75	.412
Vector 5 Time on Task									
	.220	2,293	.802	2.29	.465	2.34	.480	2.38	.472

Item	*F*	*df*	*p**	Dial Up *M*	Dial Up *SD*	Cable/DSL *M*	Cable/DSL *SD*	Other *M*	Other *SD*
Vector 6 High Expectations									
	.083	2,289	.921	1.65	.745	1.72	.748	1.71	.602
Vector 7 Respect for Diversity									
	.925	2,263	.398	2.22	.943	2.09	.846	1.92	.759

*$p < .05$.

Hours Using Computer. Of the 341 students responding, 54.3% (185) reported using a computer between 1 and 5 hours per week for the course in which they were being surveyed. Another 21.7% (74) reported using the computer between 6 and 10 hours per week, and 17.6% (60) reported spending more than 10 hours per week on the computer. Students reporting that they rarely or never used a computer (including e-mail) totaled 6.5% (22).

A Games-Howell test was used to test for differences in the distribution of student opinions based on hours using a computer for Vector 3 ($p = .005$) and Vector 6 ($p = .010$) because the items did not meet the test of homogeneity of variance according to the Levene test. The results of the test indicate significant mean differences for both vectors. For Vector 3, Active Learning, there was a significant difference in the means between students who rarely or never used a computer for the course in which they were being surveyed ($M = 2.64$) and those who used a computer 1-5 hours ($M = 2.15$), 6-10 hours ($M = 2.00$), and more than 10 hours ($M = 1.91$) per week, indicating that students who rarely or never used a computer had a less favorable opinion than those who did, regardless of the amount of time invested. For Vector 6, High Expectations, mean differences existed between students who never or rarely used a computer ($M = 2.27$) during the week for the course and those who used one for more than 10 hours ($M =$

1.61) per week, suggesting that students who used the computer more than 10 hours per week for the course had more favorable opinions than those who did not use or rarely used the computer. Table 36 provides a summary of the results of the Games-Howell for Vectors 3 and 6 based upon hours of computer use.

Table 36

Results of Games-Howell for Hours of Computer Use for Vectors 3 and 6 (Students)

Hours of Computer Use	*p**	Item	*M*	Item	*M*
Vector 3 Active Learning	.037	1 (Rarely/Never)	2.64	2 (1-5 Hours)	2.15
	.005	1 (Rarely/Never)	2.64	3 (6-10 Hours)	2.00
	.001	1 (Rarely/Never)	2.64	4 (>10 Hours)	1.91
	.155	2 (1-5 Hours)	2.15	3 (6-10 Hours)	2.00
	.017	2 (1-5 Hours)	2.15	4 (>10 Hours)	1.91
	.732	3 (6-10 Hours)	2.00	4 (>10 Hours)	1.91
Vector 6 High Expectations	.061	1 (Rarely/Never)	2.27	2 (1-5 Hours)	1.67
	.092	1 (Rarely/Never)	2.27	3 (6-10 Hours)	1.70
	.042	1 (Rarely/Never)	2.27	4 (>10 Hours)	1.61
	.979	2 (1-5 Hours)	1.67	3 (6-10 Hours)	1.70
	.934	2 (1-5 Hours)	1.67	4 (>10 Hours)	1.61
	.833	3 (6-10 Hours)	1.70	4 (>10 Hours)	1.61

**p < .05.*

An ANOVA was used to test Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 4, Rich and Rapid Feedback, Vector 5, Time on Task, and Vector 7, Respect for Diversity, to determine if there were mean differences for hours using a computer. With the exception of Vector 7 ($p = .152$), there was a statistical significance between the mean differences of hours of computer use and student opinions and the remaining items. Table 37 provides a summary of the ANOVA based on computer use.

Table 37

Results of the ANOVA based on Hours of Computer Use (Students)

				Never/Rarely		1-5 Hours		6-10 Hours		>10 Hours	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 17 Would take other Web-enhanced courses											
	7.198	3,328	.000	2.74	.991	2.04	.863	1.75	.703	1.91	.904
Item 19 Educational Experience Enhanced											
	3.796	3,324	.011	2.53	.943	1.96	.804	1.88	.749	1.81	.776
Vector 1 Student-Instructor Interaction											
	5.650	3,332	.001	2.47	.749	1.94	.587	1.89	.543	1.90	.686
Vector 2 Cooperation among Students											
	5.943	3,323	.001	2.62	.805	2.07	.719	2.00	.682	1.86	.718
Vector 4 Rich and Rapid Feedback											
	3.733	3,336	.012	2.07	.695	1.71	.533	1.61	.542	1.67	.681
Vector 5 Time on Task											
	2.531	3,337	.057	2.50	*.527*	*2.41*	.480	2.28	.439	2.29	.506
Vector 7 Respect for Diversity											
	2.038	3,298	.109	2.26	.872	2.15	.852	2.05	.825	1.84	.834

*$p < .05$.

Results of Scheffe comparisons, which provided further analysis, indicate that for Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, Vector 1, Student-Instructor Interaction, and Vector 2, Cooperation among Students, mean differences between students who never or rarely used a computer for the course for which they were being

surveyed were significantly different than those who used a computer, regardless of the number of hours the computer was used. The distribution of student opinions among the mean groups was also statistically significant for Vector 4, Rich and Rapid Feedback; however, the differences only existed between students who never or rarely used a computer ($M = 2.07$) and those who used a computer 6-8 hours per week ($M = 1.61$). Scheffe comparisons for Item 5, Time on Task, were not statistically significant. In each statistically significant group, the opinions of students who reported rarely or never using the computer for the course were lower than those who used it more frequently. A summary of the results of the Scheffe comparisons is provided in Table 38.

Table 38

Scheffe Comparisons for Hours of Computer Use (Students)

Hours of Computer Use	*p**	Item	*M*	Item	*M*
Item 17 Would take other Web-enhanced courses	.009	1 (Rarely/Never)	2.74	2 (1-5 Hours)	2.04
	.000	1 (Rarely/Never)	2.74	3 (6-10 Hours)	1.75
	.004	1 (Rarely/Never)	2.74	4 (>10 Hours)	1.91
	.118	2 (1-5 Hours)	2.04	3 (6-10 Hours)	1.75
	.812	2 (1-5 Hours)	2.04	4 (>10 Hours)	1.91
	.762	3 (6-10 Hours)	1.75	4 (>10 Hours)	1.91
Item 19 Educational Experience Enhanced	.046	1 (Rarely/Never)	2.53	2 (1-5 Hours)	1.96
	.027	1 (Rarely/Never)	2.53	3 (6-10 Hours)	1.88
	.014	1 (Rarely/Never)	2.53	4 (>10 Hours)	1.81
	.913	2 (1-5 Hours)	1.96	3 (6-10 Hours)	1.88
	.702	2 (1-5 Hours)	1.96	4 (>10 Hours)	1.81
	.979	3 (6-10 Hours)	1.88	4 (>10 Hours)	1.81
Vector 1 Student-Instructor Interaction	.002	1 (Rarely/Never)	2.47	2 (1-5 Hours)	1.94
	.002	1 (Rarely/Never)	2.47	3 (6-10 Hours)	1.89
	.003	1 (Rarely/Never)	2.47	4 (>10 Hours)	1.90
	.968	2 (1-5 Hours)	1.94	3 (6-10 Hours)	1.89
	.983	2 (1-5 Hours)	1.94	4 (>10 Hours)	1.90
	1.000	3 (6-10 Hours)	1.89	4 (>10 Hours)	1.90
Vector 2 Cooperation among Students	.013	1 (Rarely/Never)	2.62	2 (1-5 Hours)	2.07
	.008	1 (Rarely/Never)	2.62	3 (6-10 Hours)	2.00
	.001	1 (Rarely/Never)	2.62	4 (>10 Hours)	1.86
	.909	2 (1-5 Hours)	2.07	3 (6-10 Hours)	1.91
	.277	2 (1-5 Hours)	2.07	4 (>10 Hours)	1.86
	.739	3 (6-10 Hours)	2.00	4 (>10 Hours)	1.86
Vector 4 Rich and Rapid Feedback	.058	1 (Rarely/Never)	2.07	2 (1-5 Hours)	1.71
	.013	1 (Rarely/Never)	2.07	3 (6-10 Hours)	1.61
	.051	1 (Rarely/Never)	2.07	4 (>10 Hours)	1.67
	.631	2 (1-5 Hours)	1.71	3 (6-10 Hours)	1.61
	.964	2 (1-5 Hours)	1.71	4 (>10 Hours)	1.67
	.950	3 (6-10 Hours)	1.61	4 (>10 Hours)	1.67

*$p < .05$.

Multiple Regression Analysis Results

As indicated earlier, multiple regression procedures using the enter method were used to determine whether or not students' personal and professional characteristics predicted their

opinions toward the impact of Web-enhanced instruction on the educational experience. Item 17, Would take other Web-enhanced courses, and Item 19, Educational Experience Enhanced, from the student survey and Vectors 1-7, the effect variables, were each tested using the procedure. The results are presented below.

Item 17, Would Take Other Web-Enhanced Courses. The results of the multiple regression test for Item 17 indicate that the linear combination of the identified predictor variables was not significantly related to Item 17 (R^2 = .129, R^2_{adj} = .031, $F_{17,151}$ = 1.314, p = .191). Table 39 provides a summary of the results of the regression analysis for the individual characteristics.

Item 19, Educational Experience Has Been Enhanced. The results of the multiple regression test for Item 19 indicate that the linear combination of the identified predictor variables was not significantly related to Item 19 (R^2 = .158, R^2_{adj} = .061, $F_{17,148}$ = 1.635, p = .062). Table 40 provides a summary of the results of the regression analysis for the individual characteristics.

Vector 1, Student-Instructor Interaction. The results of the multiple regression test for Vector 1 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 1 (R^2 = .150, R^2_{adj} = .054, $F_{17,150}$ = 1.557, p = .083). Table 41 provides a summary of the results of the regression analysis for Vector 1.

Table 39

Results of Multiple Regression Analysis for Item 17, Would Take Other Web-enhanced Courses (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.580	.097	.045	.543	.588
Race (White)		-.020	-.014	-.145	.885
Race (African American)		.157	.073	.716	.475
Enrollment Status		-.091	-.052	-.622	.535
Institutional Classification (Rural)		-.201	-.104	-1.023	.308
Institutional Classification (Urban)		.079	.027	.265	.791
Employment Status (Full-time)		.340	.201	1.743	.083
Employment Status (Not Employed)		.291	.175	1.582	.116
Educational Goal (Certificate)		.446	.155	.679	.498
Educational Goal (Associate's)		.380	.135	1.643	.103
Internet Access (Campus)		-.088	-.069	-.758	.450
Internet Access (Home)		-.278	-.102	-.446	.656
Type Connection (Modem)		.106	.059	.640	.523
Type Connection (DSL)		-.143	-.073	-.779	.437
Hours Per Week Using Computer		-.167	-.226	-2.507	.013
Household Income		.022	.022	.258	.797
Age (Generational)		-.090	-.058	-.684	.495

Note. Eight variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status (Full-time), Educational Goal (Skills), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Table 40

Results of Multiple Regression Analysis for Item 19, Educational Experience Enhanced (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	3.525	.007	.004	.044	.965
Race (White)		-.070	-.054	-.565	.573
Race (African American)		-.060	-.031	-.304	.761
Enrollment Status		-.104	-.066	-.788	.432
Institutional Classification (Rural)		-.136	-.078	-.768	.444
Institutional Classification (Urban)		-.251	-.096	-.945	.346
Employment Status (Part-time)		.005	.004	.031	.975
Employment Status (Not Employed)		.107	.071	.641	.522
Educational Goal (Certificate)		.194	.075	.331	.741
Educational Goal (Associate's)		.278	.110	1.345	.181
Internet Access (Campus)		-.175	-.149	-1.630	.105
Internet Access (Home)		-.467	-.190	-.837	.404
Type Connection (Modem)		-.062	-.038	-.416	.678
Type Connection (DSL)		.071	.039	.437	.668
Hours Per Week Using Computer		-.199	-.294	-3.256	.001
Household Income		-.018	-.020	-.237	.813
Age (Generational)		-.087	-.062	-.741	.460

Note. Seven variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status (Full-time), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Table 41

Results of Multiple Regression Analysis for Vector 1, Student-Instructor Interaction (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.369	.096	.071	.855	.394
Race (White)		.058	.064	.668	.505
Race (African American)		-.156	-.116	-1.153	.251
Enrollment Status		.185	.167	1.989	.049
Institutional Classification (Rural)		.002	.002	.019	.985
Institutional Classification (Urban)		.155	.085	.836	.404
Employment Status (Full-time)		.026	.038	.450	.653
Employment Status (Part-time)		.012	.011	.130	.896
Education Goal (Skills)		-.086	-.170	-1.777	.078
Educational Goal (Certificate)		.071	.039	-.173	.863
Educational Goal (Associate's)		.037	.021	.254	.799
Internet Access (Home)		-.224	-.130	-.568	.517
Type Connection (Modem)		-.053	-.046	-.489	.626
Type Connection (DSL)		-.133	-.106	-1.111	.269
Hours Per Week Using Computer		-.100	-.215	-2.410	.017
Household Income		.044	.070	.843	.400
Age (Generational)		.008	.008	.100	.920

Note. Eight variables were excluded due to collinearity: that is, Race (Other), Institutional Classification (Suburban), Employment Status (Not Employed), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Campus), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Vector 2, Cooperation among Students. The results of the multiple regression analysis for Vector 2 reveal that the linear combination of the identified predictor variables was significantly related to Vector 2 (R^2 = .230, R^2_{adj} = .140, $F_{17,145}$ = 2.552, p = .001). However, the overall strength of the relationship was modest. The sample multiple correlation coefficient was .48; 14% of the variance in student opinions in the sample can be explained by the linear combination of identified student personal and professional characteristics. Analysis of the items independently revealed that Educational Goal (Certificate), p = .030; Internet access at home, p = .016; the number of hours spent using the computer each week, p < .001; and generational membership, p = .028 were significant predictors of student opinions. The relationship between Internet access and student opinions was negative (β = -.534); student opinions improved when they had access to the Internet from home. The relationship between the number of hours spent using the computer each week was also negative. Student opinions improved by .322 as the number of hours using the computer declined. The relationship between generational membership and student opinions was positive. Student opinions improved by .180 the younger the generational cohort. Table 42 provides a summary of the results of the regression analysis for Vector 2.

Table 42

Results of Multiple Regression Analysis for Vector 2, Cooperation among Students (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	3.185	.040	.022	.280	.780
Race (White)		.144	.122	1.319	.189
Race (African American)		-.292	-.164	-1.702	.091
Enrollment Status		-.230	.-.159	-1.947	.054
Institutional Classification (Rural)		.022	.014	.141	.888
Institutional Classification (Urban)		-.041	-.017	-.174	.862
Employment Status (Part-time)		.075	.054	.488	.626
Employment Status (Not Employed)		.150	.109	1.027	.306
Education Goal (Certificate)		1.130	.491	2.191	.030
Educational Goal (Associate's)		.325	.134	1.712	.089
Internet Access (Campus)		-.136	-.128	-1.468	.144
Internet Access (Home)		-1.188	-.534	-2.432	.016
Type Connection (Modem)		-.235	-.157	-1.741	.084
Type Connection (DSL)		-.148	-.090	-.987	.325
Hours Per Week Using Computer		-.198	-.322	-3.768	.000
Household Income		.019	.022	.277	.782
Age (Generational)		.238	.180	2.218	.028

Note. Eight variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status (Full-time), Educational Goal (Skills), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Vector 3, Active Learning. The results of the multiple regression test for Vector 3 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 3 (R^2 = .138, R^2_{adj} = .031, $F_{17,153}$ = 1.323, p = .185). Table 43 provides a summary of the results of the regression analysis for Vector 3.

Vector 4, Rich and Rapid Feedback. The results of the multiple regression test for Vector 4 indicate that the linear combination of the identified predictor variables was significantly related to Vector 4 (R^2 = .167, R^2_{adj} = .074, $F_{17,152}$ = 1.791, p = .034). However, the overall strength of the relationship was moderate. The sample multiple correlation coefficient was .41; 7% of the variance in student opinions in the sample can be explained by the linear combination of identified student personal and professional characteristics. Analysis of the items independently revealed that Enrollment Status (p = .047) and the number of hours spent using the computer each week (p = .017) were significant predictors of student opinions. The relationship between enrollment status and student opinions was positive; student opinions improved by .202 point when they were enrolled full-time. Conversely, hours spent using a computer and student opinions was negative; student opinions increased .106 point as the hours of computer use decreased. Table 44 provides a summary of the results of the regression analysis for Vector 4.

Vector 5, Time on Task. The results of the multiple regression test for Vector 5, Time on Task, indicate that the linear combination of the identified predictor variables was not significantly related to Vector 5 (R^2 = .121, R^2_{adj} = .024, $F_{17,153}$ = 1.243, p = .238). Table 45 provides a summary of the results of the regression analysis for Vector 5.

Table 43

Results of Multiple Regression Analysis for Vector 3, Active Learning (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.541	.041	.028	.338	.736
Race (White)		.065	.065	.674	.501
Race (African American)		-.052	-.035	-.346	.730
Enrollment Status		.085	.071	.842	.401
Institutional Classification (Rural)		-.100	-.075	-.736	.463
Institutional Classification (Urban)		.142	.071	.691	.491
Employment Status (Full-time)		.050	.067	.794	.428
Employment Status (Part-time)		.056	.048	.549	.584
Educational Goal (Skills)		-.016	-.028	-.296	.768
Educational Goal (Certificate)		-.066	-.033	-.146	.884
Educational Goal (Associate's)		.011	.006	.069	.945
Internet Access (Home)		.123	.065	.283	.778
Type Connection (Modem)		.001	.001	.009	.993
Type Connection (DSL)		-.143	-.105	-1.132	.259
Hours Per Week Using Computer		-.157	-.308	-3.429	.001
Household Income		.007	.009	.113	.910
Age (Generational)		-.006	-.005	-.066	.948

Note. Eight variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment (Not Employed), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Campus), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Table 44

Results of Multiple Regression Analysis for Vector 4, Rich and Rapid Feedback (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	1.928	.104	.074	.905	.367
Race (White)		.058	.060	.634	.527
Race (African American)		-.112	-.079	-.793	.429
Enrollment Status		.192	.165	2.005	.047
Institutional Classification (Rural)		-.024	-.019	-.186	.853
Institutional Classification (Urban)		.074	.038	.384	.701
Employment Status (Full-time)		.059	.081	.985	.326
Employment Status (Part-time)		.090	.079	.930	.354
Education Goal (Skills)		-.046	-.187	-.923	.348
Educational Goal (Certificate)		.568	.294	1.323	.188
Educational Goal (Associate's)		.059	.032	.394	.694
Internet Access (Home)		-.746	-.409	-1.821	.071
Type Connection (Modem)		-.057	-.047	-.524	.601
Type Connection (DSL)		-.172	-.131	-1.443	.151
Hours Per Week Using Computer		-.105	-.214	-2.425	.017
Household Income		.035	.053	.646	.519
Age (Generational)		.091	.087	1.063	.289

Note. Eight variables were excluded due to collinearity: Race (0ther), Institutional Classification (Suburban), Employment Status (Not Employed), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Campus), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Table 45

Results of Multiple Regression Analysis for Vector 5, Time on Task (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.521	-.022	-.019	-.223	.824
Race (White)		.121	.148	1.527	.129
Race (African American)		-.276	-.229	-2.252	.026
Enrollment Status		.043	.044	.517	.606
Institutional Classification (Rural)		-.006	-.005	-.050	.960
Institutional Classification (Urban)		-.098	-.060	-.583	.561
Employment Status (Full-time)		-.013	-.021	-.252	.801
Employment Status (Part-time)		.099	.104	1.194	.234
Education Goal (Skills)		.007	.016	.168	.867
Educational Goal (Certificate)		.020	.012	.055	.956
Educational Goal (Associate's)		.069	.043	.525	.600
Internet Access (Home)		-.032	-.021	-.091	.928
Type Connection (Modem)		-.006	-.006	-.068	.946
Type Connection (DSL)		-.015	-.013	-.142	.887
Hours Per Week Using Computer		-.068	-.162	-1.795	.075
Household Income		-.031	-.056	-.663	.508
Age (Generational)		-.014	-.016	-.189	.850

Note. Eight variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status(Not Employed), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Campus), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Vector 6, High Expectations. The results of the multiple regression test for Vector 6 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 6 (R^2 = .120, R^2_{adj} = .021, $F_{17,152}$ = 1.216, p = .258). Table 46 provides a summary of the results of the regression analysis for Vector 6.

Vector 7, Respect for Diversity. The results of the multiple regression test for Vector 7 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 7 (R^2 = .172, R^2_{adj} = .070, $F_{17,138}$ = 1.687, p = .052). Table 47 provides a summary of the results of the regression analysis for Vector 7.

Summary of Findings for Research Question 2

This section explored the second research question, "How did the opinions of students attending Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience differ as they related to personal and professional characteristics?" Generational membership, gender, race/ethnicity, institutional classification, educational goal, major/division, enrollment status, employment status, computer usage patterns, and family income were examined to determine whether or not a difference existed between each characteristic and each of the seven vectors along with Items 17 and 19. Of the characteristics examined, household income was not shown to influence student opinions. The remaining characteristics were shown to have influenced student opinions; however, the level of influence varied in scope, with race/ethnicity and hours spent using the computer having the broadest impact on student opinions.

Table 46

Results of Multiple Regression Analysis for Vector 6, High Expectations (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	1.936	.050	.143	1.715	.088
Race (White)		.042	.036	.365	.715
Race (African American)		-.129	-.074	-.724	.470
Enrollment Status		-.095	-.067	-.786	.433
Institutional Classification (Rural)		-.096	-.060	-.590	.556
Institutional Classification (Urban)		-.334	-.141	-1.365	.174
Employment Status (Part-time)		.128	.092	.794	.429
Employment Status (Not Employed)		.180	.132	1.185	.238
Educational Goal (Certificate)		-.047	-.020	-.086	.931
Educational Goal (Associate's)		.194	.084	1.022	.308
Internet Access (Campus)		-.102	-.097	-1.065	.289
Internet Access (Home)		.012	.005	.023	.981
Type Connection (Modem)		.077	.053	.566	.572
Type Connection (DSL)		.192	.119	1.275	.204
Hours Per Week Using Computer		-.056	-.092	-1.019	.310
Household Income		-.020	-.024	-.283	.777
Age (Generational)		-.111	-.087	-1.025	.307

Note. Eight variables were excluded due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status (Full-time), Educational Goal (Skills), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Table 47

Results of Multiple Regression Analysis for Vector 7, Respect for Diversity (Students)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	3.932	-.048	-.023	-.269	.788
Race (White)		-.189	-.128	-1..234	.219
Race (African American)		-.137	-.063	-.588	.558
Enrollment Status		.017	.010	.114	.910
Institutional Classification (Rural)		-.178	-.092	-.901	.369
Institutional Classification (Urban)		-.257	-.085	-.820	.413
Employment Status (Part-time)		.038	.023	.195	.845
Employment Status (Not Employed)		.200	.122	1.083	.281
Educational Goal (Certificate)		.443	.157	.689	.492
Educational Goal (Associate's)		-.033	-.012	-.145	.885
Internet Access (Campus)		-.226	-.181	-1.952	.053
Internet Access (Home)		-.670	-.252	-1.104	.271
Type Connection (Modem)		-.143	-.088	-.844	.400
Type Connection (DSL)		-.104	-.053	-.555	.580
Hours Per Week Using Computer		-.171	-.240	-2.606	.010
Household Income		.065	.066	.752	.453
Age (Generational)		-.071	-.045	-.521	.603

Note. Eight variables were excluded from analysis due to collinearity: Race (Other), Institutional Classification (Suburban), Employment Status (Full-time), Educational Goal (Skills), Educational Goal (Diploma), Educational Goal (Baccalaureate), Internet Access (Other), Type Connection (Other).
*$p < .05$.

Summary of Findings for Research Question 2

Race/ethnicity impacted student opinions toward Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, and all but one of the vectors (i.e., Vector 1, Student-Instructor Interaction). Generally, where differences were statistically significant, African American students had more favorable opinions than students of other races/ethnicities. Like race/ethnicity, it was the number of hours students spent using the computer each week in the course that had the broader impact on student opinions. For this characteristic, students who rarely or never used the computer for the course had lower opinions than those who used the computer more frequently. Further analysis using multiple regression revealed that hours spent using the computer each week was a predictor of student opinions for Vectors 1-6 with similar outcomes. Students who reported never or rarely using the computer were less likely to take another Web-enhanced course than those who used it more often.

Although the effect of the remaining characteristics (i.e., generational membership, gender, institutional classification, educational goal, major/division, enrollment status, employment status, Internet access point, and type connection) on student opinions was not as broad as race/ethnicity and hours using the computer, several characteristics more broadly impacted student opinions (i.e., generational membership, educational goals, major/division, and enrollment status) than others. From a generational perspective, the data showed that Generation Xers were more likely to take another Web-enhanced course than Millennials or Boomers and had more favorable opinions toward Vector 4, Rich and Rapid Feedback, than Boomers. This characteristic was also a predictor of student opinions for Vector 2, Cooperation among Students. Results indicate that the older the cohort, the more positive the opinions. A second characteristic, educational goal, was shown to more broadly impact student opinions than some of the others.

Students seeking a formal award had more favorable opinions toward Item 19, Educational Experience Enhanced, Vector 2, Cooperation among Students, and Vector 6, High Expectations, than students who were undecided as to their educational goals. A third characteristic, major/division, was shown to influence student opinions for Vector 1, Student-Instructor Interaction, Vector 3, Active Learning, and Vector 6, High Expectations; however, the differences between the means were not statistically significant. The final characteristic that impacted student opinions more broadly but that did not rise to the level of influence that race/ethnicity and hours spent using the computer did was enrollment status (i.e., part-time, full-time). Part-time students had more favorable opinions toward Vector 1, Student-Instructor Interaction, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, and Vector 7, Respect for Diversity. Although it appears contradictory, this characteristic was also a predictor of student opinions toward Vector 4. However, results indicated that student opinions improved when they were enrolled full-time.

The remaining characteristics (i.e., gender, institutional classification, employment status, Internet access point, and type connection) had a much more limited impact on student opinions. The first characteristic, gender, only influenced student opinions toward Vector 6, High Expectations. Female students had more favorable opinions than male students toward the vector. The second characteristic, institutional classification, produced similar findings in terms of the breadth in which student opinions toward the vectors were influenced. Students attending the sole urban institution participating in the study had more favorable opinions toward Vector 2, Cooperation among Students, and Vector 6, High Expectations, than students attending rural institutions. The third characteristic, Employment Status, influenced student opinions toward Vector 1, Student-Instructor Interaction, and Vector 4, Rich and Rapid Feedback. The final two

characteristics, Internet Access point and Type Connection, were just as limited in terms of their impact on student opinions. With the exception of Item 17, Would take another Web-enhanced course, and Vector 5, Time on Task, for Internet Access Point and Item 17 for Type Connection, the two characteristics had little influence on student opinions toward the educational experience. However, students who had Internet access at home were more likely to take another Web-enhanced course (Item 17) and had more favorable opinions toward Vector 5. Although there was a difference in student opinions toward Vector 5 based on the type of Internet connection students had, the difference between groups was not statistically significant.

Research Question 3

Research Question 3 asked, "How did the opinions of instructors teaching in Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience differ based on personal and professional characteristics?" Specifically, the researcher sought to explore how the opinions of instructors differed based upon generational membership, gender, race, highest degree earned, institutional classification, employment status, years teaching (full- and part-time), hours spent and topics covered in technology-related professional development, hours of student interaction outside the classroom, and computer usage patterns.

To answer Research Question 3, inferential statistics in the form of *t* tests and ANOVAs were used to determine if there were differences between the means of each of the independent variables and instructor opinions. The Games-Howell test was used instead of ANOVAs when the assumption of homogeneity of variance was not met.

Further analysis of the data was conducted to determine whether identified variables predicted instructor opinions toward the educational experience using multiple regression analyses. The procedure was performed for Item 19, and Vectors 1-7, the dependent variables.

Generational Membership

The instructor sample represented all generational cohorts. Of the 168 responding, Millennials were represented by 1.8% (3) of instructors, GenXers, Boomers, and Silents were represented by 53.0% (89), 44.0% (74), and 1.2% (2) of instructors, respectively.

A Games-Howell test was used to test for differences in the distribution of instructor opinions based on generational membership for Vector 4, Rich and Rapid Feedback, ($p = .007$) because it did not meet the test of homogeneity of variances according to the Levene test. The results of the test indicate that the differences between groups were not statistically significant.

An ANOVA was used to test Item 19, Educational Experience Enhanced, Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, Vector 5, Time on Task, Vector 6, High Expectations, and Vector 7, Respect for Diversity. With the exception of Item 17 ($p = .001$), the results indicate that there was no statistical significance between the mean differences for generational membership for Item 19, Educational Experience Enhanced, $p = .061$; Vector 1, Student-Instructor Interaction, $p = .144$; Vector 2, Cooperation among Students, $p < .421$; Vector 3, Active Learning, $p = .051$; Vector 5, Time on Task, $p = .342$; Vector 6, High Expectations, $p = .395$; and Vector 7, Respect for Diversity, $p = .065$. Table 48 provides a summary of the ANOVA based on Generational Membership for the instructor sample.

Table 48

ANOVA Based on Generational Membership (Instructors)

				Millenials		GenXers		Boomers		Silents	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*[1]
Item 19, Educational Experience Enhanced											
	2.505	3,161	.061	1.67	.577	1.87	.568	1.90	.636	3.00	.000
Vector 1, Student-Instructor Interaction											
	1.831	3,160	.144	2.25	.000	2.19	.564	2.28	.611	3.13	1.237
Vector 2, Cooperation among Students											
	.945	3,138	.421	2.00	1.000	2.29	.674	2.40	.603	3.00	--
Vector 3, Active Learning											
	2.638	3,163	.051	2.44	.962	2.30	.588	2.35	.602	3.50	.707
Vector 4, Rich and Rapid Feedback											
	4.637	3,163	.004	1.44	.385	1.76	.463	1.74	.509	3.00	1.414
Vector 5, Time on Task											
	1.122	3,164	.342	3.18	*.501*	*2.73*	.388	2.77	.496	2.88	.177
Vector 6, High Expectations											
	.999	3,161	.395	3.00	1.000	2.25	.773	2.31	.767	2.50	.707
Vector 7, Respect for Diversity											
	2.476	3,122	.065	3.00	.000	2.45	.718	2.31	.722	4.00	--

[1]SD not computed for groups with only one case.
*$p < .05$.

Gender

Of the 169 responding, 31.4% (53) of instructors were male. Females represented 68.6% (116) of the instructor sample.

An independent samples *t* test was used to determine if differences existed between male and female instructors and their opinions. There were no significant difference between the opinions of males and females. Table 49 provides a summary of these findings.

Table 49

Results of Independent Samples T Test for Gender (Instructors)

			Males		Females	
Item	*t*	*p**	*M*	*SD*	*M*	*SD*
Item 19 Would take other Web-enhanced courses	-.531	.596	1.87	.595	1.92	.640
Vector 1 Student-Instructor Interaction	1.020	.580	2.33	.602	2.23	.610
Vector 2 Cooperation among Students	-.700	.537	2.29	.670	2.37	.659
Vector 3 Active Learning	-.416	.678	2.32	.607	2.36	.630
Vector 4 Rich and Rapid Feedback	1.002	.318	1.84	.545	1.75	.530
Vector 5 Time on Task	.166	.868	2.77	.366	2.76	.484
Vector 6 High Expectations	.645	.520	2.36	.811	.227	.771
Vector 7 Respect for Diversity	-1,758	.081	2.26	.785	2.51	.713

*$p < .05$.

Race/Ethnicity

Of the 169 responding, White instructors accounted for 77.5% (131) of the sample. African American instructors comprised 11.8% (20) of the sample, and instructors of other races/ethnicities represented 11.8% (20) of the sample.

For race/ethnicity, all items met the assumption of homogeneity according to the Levene test (Item 19, Educational Experience Enhanced, $p = .806$; Vector 1, Student-Instructor Interaction, $p = .273$; Vector 2, Cooperation among Students, $p = .629$; Vector 3, Active Learning, $p = .293$; Vector 4, Rich and Rapid Feedback, $p = .054$; Vector 5, Time on Task, $p = .763$; Vector 6, High Expectations, $p = .938$; Vector 7, Respect for Diversity, $p = .600$).

A one-way, between-groups ANOVA was used to determine if there were differences in the distribution of instructor opinions based on race/ethnicity. Findings indicated that with the exception of Vector 4, Rich and Rapid Feedback ($p = .014$), there was no significant mean differences between groups based on race/ethnicity (i.e., Item 19, Educational Experience Enhanced, $p = .128$; Vector 1, Student-Instructor Interaction, $p = .496$; Vector 2, Cooperation among Students, $p = .696$; Vector 3, Active Learning, $p = .951$; Vector 5, Time on Task, $p = .146$; Vector 6, High Expectations, $p = .850$; Vector 7, Respect for Diversity, $p = .646$). Table 50 provides a summary of the ANOVA for instructors based on Race/Ethnicity. Further analysis using Scheffe post hoc comparisons for Vector 4, Rich and Rapid Feedback, indicated that there was a significant difference ($p = .019$) in the means for African American instructors ($M = 1.48$) and instructors of other races ($M = 1.97$), suggesting that African American instructors had more favorable opinions toward the vector than instructors of other races.

Table 50

ANOVA for Race/Ethnicity (Instructors)

Item	*F*	*df*	*p**	White *M*	White *SD*	African American *M*	African American *SD*	Other *M*	Other *SD*
Item 19 Educational Experience Enhanced									
	2.081	2,163	.128	1.91	.620	1.70	.571	2.11	.676
Vector 1 Student-Instructor Interaction									
	.703	2,162	.496	2.26	.557	2.11	.779	2.32	.696
Vector 2 Collaborative Learning									
	.364	2,141	.696	2.37	.656	2.26	.752	2.25	.606
Vector 3 Active Learning									
	.050	2,165	.951	2.35	.606	2.39	.547	2.33	.818
Vector 4 Rich and Rapid Feedback									
	4.374	2,165	.014	1.79	.473	1.48	.489	1.97	.856
Vector 5 Time on Task									
	1.949	2,166	.146	2.80	.433	2.63	.454	2.64	.529
Vector 6 High Expectations									
	.163	2,163	.850	2.32	.780	2.21	.787	2.28	.826
Vector 7 Respect for Diversity									
	.439	2,124	.646	2.42	.717	2.56	.727	2.31	.947

*$p < .05$.

Highest Degree Earned

Of the 170 responding, 10.6% (18) held a baccalaureate degree, 65.9% (112) held a master's degree, and 15.3% (26) held a doctoral degree. Fourteen (8.2%) of instructors held some other type of degree.

All items met the assumption of homogeneity according to Levine's Test of Homogeneity of Variances (Item 19, Educational Experience Enhanced, $p = .223$; Vector 1, Student-Instructor Interaction, $p = .032$; Vector 2, Cooperation among Students, $p = .060$; Vector 5, Time on Task, $p = .148$; Vector 6, High Expectations, $p = .312$; Vector 7, Respect for Diversity, $p = .697$) except for Vector 3, Active Learning ($p = .016$) and Vector 4, Rich and Rapid Feedback ($p = .011$). Further analysis of both vectors using the Games-Howell test indicated that the differences between the mean groups for Vectors 3 and 4 were not significant.

A one-way, between-groups ANOVA was conducted on the remaining items to examine mean differences in instructor opinions based on the highest degree earned (i.e., BA/BS, MA/MS, EdD/PhD, Other). The findings indicated that there was no significance (Item 19, Educational Experience Enhanced, $p = .812$; Vector 1, Student-Instructor Interaction, $p = .364$; Vector 2, Cooperation among Students, $p = .415$; Vector 5, Time on Task, $p = .235$; Vector 6, High Expectations, $p = .971$; Vector 7, Respect for Diversity, $p = .917$). Table 51 summarizes the results of the ANOVA based on highest degree earned.

Table 51

ANOVA Based on Highest Degree Earned (Instructors)

				Baccalaureate		Masters		Doctorate		Other	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*[1]
Item 19, Educational Experience Enhanced											
	.318	3,163	.812	1.82	.636	1.93	.586	1.92	.796	1.79	.579
Vector 1, Student-Instructor Interaction											
	1.068	3,162	.364	2.33	.733	2.22	.551	2.42	.771	2.11	.452
Vector 2, Cooperation among Students											
	.956	3,140	.415	2.22	.521	2.32	.642	2.54	.865	2.35	.474
Vector 3, Active Learning											
	1.123	3,165	.341	2.24	.739	2.33	.590	2.54	.748	2.29	.327
Vector 4, Rich and Rapid Feedback											
	.503	3,165	.681	1.86	.413	1.76	.473	1.84	.787	1.67	.613
Vector 5, Time on Task											
	1.431	3,166	.235	2.75	.480	*2.79*	.420	2.77	.436	2.53	.608
Vector 6, High Expectations											
	.079	3,163	.971	2.33	.767	2.29	.746	2.35	.936	2.23	.832
Vector 7, Respect for Diversity											
	.169	3,123	.917	2.36	.633	2.41	.740	2.52	.814	2.40	.894

*$p < .05$.

Institutional Classification

Instructors teaching in rural institutions accounted for 80.6% (137) of the 170 instructors responding. Suburban institutions were represented by 11.2% (19) of instructors, and urban institutions comprised 8.2% (14) of instructors.

With the exception of Vector 1, Student-Instructor Interaction (p = .012) and Vector 7, Respect for Diversity (p = .011), all items met the equal variance assumption based on the Levine test (Item 19, Educational Experience Enhanced, p =.658; Vector 2, Cooperation among Students, p =.370; Vector 3, Active Learning, p =.569; Vector 4, Rich and Rapid Feedback, p =.771; Vector 5, Time on Task, p =.156; Vector 6, High Expectations p =.175). Further analysis using the Games-Howell test was conducted on Vector 1, Student-Instructor Interaction, and Vector 7, Respect for Diversity. However, the mean differences were not statistically significant.

A one-way, between-groups ANOVA was conducted to examine mean differences for institutional classification and instructor opinions for items where the assumption of homogeneity had been met. The results of the ANOVA indicated that the mean differences between institutional classification were not statistically significant (i.e., Item 19, Educational Experience Enhanced, p = .599; Vector 2, Cooperation among Students, p = .634; Vector 3, Active Learning, p = Vector 4, Rich and Rapid Feedback, p = .842; Vector 5, Time on Task, p = .781; Vector 6, High Expectations, p = .304). Table 52 provides a summary of the ANOVA results based on Institutional Classification.

Table 52

Results of ANOVA Based on Institutional Classification (Instructors)

				Rural		Suburban		Urban	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced									
	.515	2,164	.599	1.90	.631	2.00	.594	1.77	.599
Vector 2 Collaborative Learning									
	.457	2,141	.634	2.37	.689	2.27	.458	2.21	.611
Vector 3 Active Learning									
	.535	2,166	.587	2.34	.639	2.47	.515	2.25	.558
Vector 4 Rich and Rapid Feedback									
	.172	2,166	.842	1.76	.548	1.84	.486	1.77	.513
Vector 5 Time on Task									
	.247	2,167	.781	2.77	.425	2.79	.647	2.69	.365
Vector 6 High Expectations									
	1.200	2,164	.304	2.34	.794	2.26	.733	2.00	.679
Vector 7 Respect for Diversity									
	1.833	2,124	.164	2.49	.698	2.15	.689	2.18	1.079

*$p < .05$.

Employment Status

Instructors working full-time represented 74.0% (125) of the 169 instructors responding. Part-time instructors accounted for 21.3% (36) of the sample. The remaining 4.7% (8) of instructors were employed both full- and part-time.

Because Item 19 and Vectors 1-7 met the assumption of equal variances based on the Levene test (Item 19, Educational Experience Enhanced, p =.109; Vector 1, Student-Instructor Interaction, p =.780; Vector 2, Cooperation among Students, p =.731; Vector 3, Active Learning, p =.989; Vector 4, Rich and Rapid Feedback, p =.960; Vector 5, Time on Task, p =.779; Vector 6, High Expectations, p =.725; Vector 7, Respect for Diversity, p =.545), an ANOVA was used to test for mean differences based on employment status (i.e., full-time, part-time, full- and part-time). The findings indicated that the mean differences for Vector 1, Student-Instructor Interaction, were significantly different (p = .018). The differences for the remaining items were not (Item 19, Educational Experience Enhanced, p =.818; Vector 2, Cooperation among Students, p =.350; Vector 3, Active Learning, p =.403; Vector 4, Rich and Rapid Feedback, p =.435; Vector 5, Time on Task, p =.353; Vector 6, High Expectations, p =.288; Vector 7, Respect for Diversity, p =.585). Post hoc Scheffe comparisons revealed no significant difference in instructor opinions based on employment status for Vector 1, Student-Instructor Interaction. Table 53 provides a summary of the ANOVA based on Employment Status.

Table 53

ANOVA Based on Employment Status (Instructors)

Item	*F*	*df*	*p**	Full-Time *M*	Full-Time *SD*	Part-Time *M*	Part-Time *SD*	Full-Time & Part-Time *M*	Full-Time & Part-Time *SD*
Item 19 Educational Experience Enhanced									
	.201	2,163	.818	1.85	.702	1.90	.604	2.0	.535
Vector 1 Student-Instructor Interaction									
	4.136	2,162	.018	2.44	.618	2.18	.585	2.59	.654
Vector 2 Collaborative Learning									
	1.059	2,140	.350	2.42	.589	2.31	.675	2.64	.690
Vector 3 Active Learning									
	.913	2,165	.403	2.37	.614	2.32	.623	2.63	.628
Vector 4 Rich and Rapid Feedback									
	.837	2,165	.435	1.87	.610	1.75	.518	1.67	.504
Vector 5 Time on Task									
	1.049	2,166	.353	2.69	.514	2.79	.430	2.65	.438
Vector 6 High Expectations									
	1.256	2,163	.288	2.17	.775	2.32	.785	2.63	.744
Vector 7 Respect for Diversity									
	.539	2,124	.585	2.29	.845	2.44	.732	2.57	.535

*$p < .05$.

Years Teaching (Full- and Part-time)

Full-Time Teaching Experience. Of the 166 instructors responding, 10.8% (18) had no previous full-time teaching experience; 3.6% (6) had less than one year of full-time experience. Instructors with 1-5 years of experience represented 22.3% (37) of the sample, and those with 6-10 years of experience represented 18.1% (30). Instructors with 11-15 years of full-time teaching experience totaled 13.3% (22), whereas 9.6% (6) had 16-20 years. Instructors with more than 20 years full-time teaching experience comprised 22.3% (37) of the sample.

All items met the assumption of equal variances (Item 19, Educational Experience Enhanced, p =.757; Vector 1, Student-Instructor Interaction, p =.950; Vector 2, Cooperation among Students, p =.921; Vector 3, Active Learning, p =.636; Vector 4, Rich and Rapid Feedback, p =.149; Vector 5, Time on Task, p =.505; Vector 6, High Expectations, p =.318; Vector 7, Respect for Diversity, p =.636). An ANOVA was used to determine if differences between the means existed. There were no significant differences in instructor opinions based on full-time teaching experience (Item 19, Educational Experience Enhanced, p =.274; Vector 1, Student-Instructor Interaction, p =.061; Vector 2, Cooperation among Students, p =.415; Vector 3, Active Learning, p =.407; Vector 4, Rich and Rapid Feedback, p =.864; Vector 5, Time on Task, p =.783; Vector 6, High Expectations, p =.275; Vector 7, Respect for Diversity, p =.908).

Part-Time Teaching Experience. Of the 165 instructors responding, 18.8% (31) had no previous part-time teaching experience; 12.1% (20) had less than one year of part-time experience. Instructors with 1-5 years of experience represented 43.6% (72) of the sample, and those with 6-10 years of experience represented 15.2% (25). Instructors with 11-15 years of part-time teaching experience totaled 4.8% (8), whereas 3.6% (6) had 16-20 years of part-time

teaching experience. Instructors with more than 20 years of part-time teaching experience accounted for 22.3% (37) of the sample.

With the exception of Vector 6, High Expectations (p = .003), all items met the assumption of equal variances (Item 19, Educational Experience Enhanced, p =.979; Vector 1, Student-Instructor Interaction, p =.126; Vector 2, Cooperation among Students, p =.521; Vector 3, Active Learning, p =.411; Vector 4, Rich and Rapid Feedback, p =.593; Vector 5, Time on Task, p =.385; Vector 7, Respect for Diversity, p = .057). A Games-Howell test was run for Vector 6, High Expectations, to determine if the mean differences based on years of part-time teaching experience were statistically significant. Findings indicated that they were not.

An ANOVA was used to test the remaining items. The results revealed that the mean differences between years of part-time teaching experience for Item 19, Educational Experience Enhanced, (p = .015) were significant. No significant differences emerged for the remaining items (Vector 1, Student-Instructor Interaction, p =.053; Vector 2, Cooperation among Students, (p = .056); Vector 3, Active Learning, p =.481; Vector 4, Rich and Rapid Feedback, p =.185; Vector 5, Time on Task, p =.356; Vector 7, Respect for Diversity, p =.113). Scheffe post hoc comparisons for Item 19 indicated no statistical significance between the mean groups. Table 54 and Table 55 provide summaries of the ANOVAs for full- and part-time teaching experience.

Table 54

ANOVA Based on Full-Time Teaching Experience (Instructors)

				No Teaching Experience		<1 Year		1-5 Year(s)		6-10 Years		11-15 Years		16-20 Years		>20 Years	
Item	*F*	*Df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Education Experience Enhanced																	
	1.270	6,156	.274	1.78	.548	2.17	.408	1.81	.570	1.97	.566	1.91	.610	1.63	.500	2.03	.785
Vector 1 Student-Instructor Interaction																	
	2.059	6,155	.061	2.50	.569	2.21	.660	2.07	.597	2.25	.529	2.37	.616	2.02	.622	2.41	.636
Vector 2 Cooperation among Students																	
	1.020	6,135	.415	2.46	.776	2.42	.970	2.15	.674	2.37	.598	2.50	.637	2.20	.592	2.46	.623
Vector 3 Active Learning																	
	1.031	6,158	.407	2.30	.550	2.67	.422	2.27	.617	2.36	.581	2.43	.764	2.09	.580	2.44	.645
Vector 4 Rich and Rapid Feedback																	
	.864	6,158	.864	1.89	.348	1.67	.471	1.72	.495	1.78	.474	1.85	.468	1.70	.510	1.83	.730
Vector 5 Time on Task																	
	.533	6,159	.783	2.84	.409	2.70	.245	2.74	.384	2.84	.398	2.79	.490	2.64	.492	2.73	.544
Vector 6 High Expectations																	
	1.267	6,156	.275	2.44	.784	2.50	.837	2.16	.800	2.24	.830	2.41	.734	1.94	.574	2.46	.817
Vector 7 Respect for Diversity																	
	.351	6,116	.351	2.33	.651	2.50	.548	2.38	.779	2.41	.734	2.63	.619	2.27	.799	2.44	.922

*$p > .05$.

Table 55

ANOVA Based on Part-time Teaching Experience (Instructors)

				No Teaching Experience		<1 Year		1-5 Year(s)		6-10 Years		11-15 Years		16-20 Years		>20 Years	
Item	*F*	*Df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Education Experience Enhanced																	
	2.742	6,155	.015	1.71	.529	1.68	.478	2.04	.685	1.83	.565	2.25	.463	2.17	.408	1.33	.577
Vector 1 Student-Instructor Interaction																	
	2.132	6,154	.053	2.07	.675	1.98	.479	2.33	.521	2.47	.627	2.44	.904	2.38	.565	2.25	.661
Vector 2 Cooperation among Students																	
	2.114	6,133	.056	2.08	.603	2.03	.531	2.45	.688	2.53	.754	2.40	.548	2.60	.418	2.50	.500
Vector 3 Active Learning																	
	.921	6,157	.481	2.24	.699	2.18	.590	2.38	.593	2.42	.675	2.63	.700	2.44	.344	2.00	.333
Vector 4 Rich and Rapid Feedback																	
	1.491	6,157	.185	1.58	.481	1.72	.436	1.87	.545	1.88	.450	1.88	.958	1.61	.443	1.67	.577
Vector 5 Time on Task																	
	1,115	6,158	.356	2.65	.491	2.65	.444	2.83	.475	2.74	.426	2.78	.191	2.90	.276	3.07	.416
Vector 7 Respect for Diversity																	
	1.763	6,117	.113	2.13	.741	2.18	.529	2.65	.668	2.48	.873	2.50	1.049	2.40	.548	2.33	1.155

*$p < .05$.

Internet Access

Instructors accessed the Internet either at the college or at home and at the college. Of the 170 instructors responding, 95.3% (162) were able to access the Internet from home and at the college; 4.7% (9) accessed the Internet at the college.

An independent samples *t* test was used to determine if differences existed in instructor opinions based on their Internet access point. With the exception of Item 19, Educational Experience Enhanced ($p = .036$), all items met Levene's test for equality of variances. The *t* test revealed that the mean differences for Vector 1, Student-Instructor Interaction ($p = .018$), and Vector 2, Cooperation among Students ($p = .012$) were statistically significant. The remaining items were not (Item 19, Educational Experience Enhanced, $p = .562$; Vector 3, Active Learning, $p = .200$; Vector 4, Rich and Rapid Feedback, $p = .149$; Vector 5, Time on Task, $p = .896$; Vector 6, High Expectations, $p = .962$; Vector 7, Respect for Diversity, $p = .592$). In both cases, instructors who had Internet access on campus and at home (Vector 1, $M = 2.23$; Vector 2, $M = 2.32$) had more favorable opinions than instructors who just had access on campus (Vector 1, $M = 2.75$; Vector 2, $M = 3.00$). Cohen's *d* was used to test for effect size. The findings revealed large effect sizes (Vector 1, $d = -0.8$, $r^2 = .138$; Vector 2, $d = -0.9$, $r^2 = .168$). Table 56 summaries the *t* test based on Internet access point for instructors.

Table 56

T Test for Internet Access Point (Instructors)

Item	*T*	*p**	Home & College *M*	Home & College *SD*	College *M*	College *SD*
Item 19 Educational Experience Enhanced	-.612	.562	1.89	.600	2.14	1.069
Vector 1 Student-Instructor Interaction	-2.381	.018	2.23	.594	2.75	.668
Vector 2 Cooperation among Students	-2.536	.012	2.32	.640	3.00	.837
Vector 3 Active Learning	-1.288	.200	2.34	.611	2.63	.765
Vector 4 Rich and Rapid Feedback	-1.451	.149	1.76	.511	2.04	.916
Vector 5 Time on Task	.131	.896	2.77	.440	2.74	.625
Vector 6 High Expectations	.047	.962	2.30	.775	2.29	.951
Vector 7 Respect for Diversity	-.537	.592	2.42	.725	2.60	1.140

*$p < .05$.

Technology-Related Professional Development

Hours of Participation. Of the 169 instructors who responded, 20.1% (34) reported not having participated in any professional development activities related to technology over the past year. Another 48.5% (82) reported participating in 1-4 hours of technology-related professional development activities; 18.3% (31) participated in 5-8 hours of technology-related activities. Of the remaining sample, 7.7% (13) and 5.3% (9) of instructors reported participating in 9-16 hours and more than 17 hours, respectively.

The Games-Howell test was conducted on those items not meeting the homogeneity of variance assumption according to the Levene test (i.e., Item 19, Educational Experience Enhanced, $p = .015$; Vector 6, High Expectations, $p = .046$). The findings revealed that the mean differences between groups based on hours of professional development were significant for Item 19, Educational Experience Enhanced. For this item, instructors who had 1-4 hours ($M = 1.95$), 3-8 hours ($M = 1.55$), and more than 17 hours ($M = 2.0$) of technology-related professional development had more favorable opinions toward Item 19, Educational Experience Enhanced, than instructors who had not participated in any technology related professional development activities ($M = 2.12$). There was no significant difference between means based on the hours spent participating in professional development activities for Vector 6. Table 57 provides a summary of the results of the Games-Howell test for Item 19, Educational Experience Enhanced.

Table 57

Games-Howell Based on Hours of Technology Related Professional Development (Instructors)

Hours of Professional Development	*p**	Item	*M*	Item	*M*
Item 19 Educational Experience Enhanced	.657	1 (None)	2.12	2 (1-4 Hours)	1.95
	.004	1 (None)	2.12	3 (5-8 Hours)	1.55
	.585	1 (None)	2.12	4 (9-16 Hours)	1.85
	.773	1 (None)	2.12	5 (>17 Hours)	2.00
	.029	2 (1-4 Hours)	1.95	3 (5-8 Hours)	1.55
	.971	2 (1-4 Hours)	1.95	4 (9-16 Hours)	1.85
	.955	2 (2-4 Hours)	1.95	5 (>17 Hours)	2.00
	.532	3 (5-8 Hours)	1.55	4 (9-16 Hours)	1.85
	.003	3 (5-8 Hours)	1.55	5 (>17 Hours)	2.00
	.850	4 (9-16 Hours)	1.85	5 (>17 Hours)	2.00

*p < .05.

A one-way, between-groups ANOVA was run on the remaining items. The ANOVA indicated that the mean differences for Vector 5, Time on Task ($p = .150$), and Vector 7, Respect for Diversity ($p = .659$), were not statistically significant; however, the mean differences for Vector 1, Student-Instructor Interaction, $p = .009$; Vector 2, Cooperation among Student, $p = .031$; Vector 3, Active Learning, $p < .001$; and Vector 4, Rich and Rapid Feedback, $p = .030$ were. Table 58 provides a summary of the ANOVA for hours of technology-related professional development activities.

Table 58

ANOVA for Hours of Technology Related Professional Development Activities (Instructors)

				None		1-4 Hours		5-8 Hours		9-16 Hours		>17 Hours	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced													
	3.959	4,161	.004	2.12	.560	1.95	.634	1.55	.624	1.85	.555	2.00	.000
Vector 1 Student-Instructor Interaction													
	3.531	4,160	.009	2.44	.576	2.34	.619	1.96	.550	2.04	.419	2.25	.696
Vector 2 Cooperation among Students													
	2.738	4,138	.031	2.65	.645	2.33	.736	2.08	.475	2.34	.474	2.33	.516
Vector 3 Active Learning													
	5.823	4,163	.000	2.61	.631	2.40	.601	1.97	.540	2.10	.417	2.50	.635
Vector 4 Rich and Rapid Feedback													
	2.742	4,163	.030	1.93	.624	1.83	.550	1.53	.409	1.72	.381	1.63	.423
Vector 5 Time on Task													
	1.709	4,164	.150	2.90	.333	2.77	.481	2.70	.475	2.72	.379	2.51	.459
Vector 6 Time on Task													
	1.616	4,161	.173	2.44	.786	2.37	.819	2.00	.632	2.23	.832	2.33	.707
Vector 7 Respect for Diversity													
	.606	4,121	.659	2.60	.816	2.40	.748	2.41	.734	2.23	.725	2.50	.535

*$p < .05$.

Further analysis of the statistically significant items using Scheffe post hoc comparisons test revealed significant mean differences in opinions between instructors who had participated

in 5-8 hours of professional development activities (*M* = 1.96-Vector 1, *M* = 2.08-Vector 2) and instructors who had participated in no professional development (*M* = 2.44-Vector 1, *M* = 2.65-Vector 2) for Vector 1, Student-Instructor Interaction, and Vector 2, Cooperation among Students, suggesting that instructors who spent between 5 and 8 hours in technology-related professional development activities had more favorable opinions than did those who spent no time in those type professional development activities. Similarly, the mean differences in opinions between instructors who participated in 5-8 hours of professional development (*M* = 1.97) and those who participated in no professional development (*M* = 2.61) for Vectors 3 were significant, as were the differences for instructors who had completed between 1 and 4 hours of technology-related professional development (*M* = 2.40) and those who had completed between 5 and 8 hours of technology-related professional development (*M* = 1.97). This suggests that instructors who spent between 5 and 8 hours in technology-related professional development activities had more favorable opinions than those who spent between 1 and 4 hours in those types of activities and those who spent to time participating in them. There was no significant difference between the means of professional development activities for Vector 4, Rich and Rapid Feedback. Table 59 provides a summary of the Scheffe comparisons for the significant groups.

Table 59

Scheffe Comparisons for Hours of Technology-Related Professional Development (Instructors)

Professional Development Hours	*p**	Item	*M*	Item	*M*
Vector 1 Student-Instructor Interaction	.037	1 (None)	2.44	3 (5-8 Hours)	1.96
Vector 2 Cooperation among Students	.050	1 (None)	2.65	3 (5-8 Hours)	2.08
Vector 3 Active Learning	.001	1 (None)	2.61	3 (5-8 Hours)	1.97
	.017	2 (1-4 Hours)	2.40	3 (5-8 Hours)	1.97

**p < .05.*

Topics Covered. Of the 159 instructors responding, 49.7% (79) reported participating in professional development activities on how to use course CMS tools along with strategies to enhance teaching and learning using tools provided through these systems. Another 27.0% (43) of instructors responding participated only in professional development activities relating to CMS tool use. Nine instructors (5.7%) reported participating in activities that provided strategies to enhance teaching and learning using tools provided in CMSs. The remaining 17.6% (28) reported not participating in technology-related professional development activities.

With the exception of Vector 6, High Expectations ($p = .027$), all items met the equality of variance assumption (Item 19, Educational Experience Enhanced, $p = .581$; Vector 1, Student-Instructor Interaction, $p = .313$; Vector 2, Cooperation among Students, $p = .819$; Vector 3, Active Learning, $p = .495$; Vector 4, Rich and Rapid Feedback, $p = .647$; Vector 5, Time on Task, $p = .805$; Vector 7, Respect for Diversity, $p = .196$). A Games-Howell test was run for Vector 6, High Expectations, to determine if mean differences existed between the topics covered in technology-related professional development activities. The test revealed that the

mean differences were not statistically significant based on professional development topics covered.

The remaining items were tested using a one-way, between-groups ANOVA. The findings indicate that there was no significant difference between the means for topics covered during professional development activities (i.e., Item 19, Educational Experience Enhanced, p = .312; Vector 1, Student-Instructor Interaction, p = .068; Vector 2, Cooperation among Students, p = .196; Vector 3, Active Learning, p = .106; Vector 4, Rich and Rapid Feedback, p = .095; Vector 5, Time on Task, p = .313; and Vector 7, Respect for Diversity, p = .176). Results of the ANOVA for Professional Development Topics Covered may be found in Table 60.

Student Interaction

Of the 169 instructors responding, 4.7% (8), 17.2% (29), and 32.5% (55) reported spending no, less than one, or one to two hours, respectively, interacting with students outside the classroom in the Web-enhanced course for which they were being surveyed. An additional 26.6% (45) reported that 3-6 hours per week were spent with students when not in class. Sixteen (9.5%) instructors spent between 6 and 10 hours per week with students outside class. That same percentage reported spending more than 10 hours per week with students when not in class.

Because the homogeneity of variances assumption had not been met for Vector 2, Cooperation among Students (p = .001), and Vector 5, Time on Task (p = .044), the items were tested using Games-Howell to determine if there were mean differences between the groups in terms of the number of hours interacting with students. The results of the test indicate that the mean differences for the vectors were not statistically significant.

To test the remaining items, a one-way, between-groups ANOVA was used. Results from the ANOVA revealed a statistically significant mean difference in the number of hours

Table 60

Results of ANOVA for Professional Development Topics Covered (Instructors)

				CMS Use & Teaching Strategies		CMS Use		Teaching Strategies		No PD Activity	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced											
	1.199	3,152	.312	2.02	.636	1.75	.707	1.82	.575	1.89	.577
Vector 1 Student-Instructor Interaction											
	2.422	3,152	.068	2.35	.556	2.28	.775	2.12	.569	2.42	.638
Vector 2 Cooperation among Students											
	1.586	3,131	.196	2.43	.566	2.33	.707	2.23	.662	2.55	.643
Vector 3 Active Learning											
	2.074	3,154	1.06	2.41	.547	2.43	.813	2.22	.594	2.52	.604
Vector 4 Rich and Rapid Feedback											
	2.157	3,154	.095	1.90	.540	1.63	.564	1.67	.469	1.77	.505
Vector 5 Time on Task											
	1.197	3,155	.313	2.82	.477	2.60	.539	2.70	.436	2.80	.378
Vector 7 Respect for Diversity											
	1.678	3,116	.176	2.50	.745	2.83	.408	2.27	.718	2.45	.739

**p < .05.*

instructors interacted with their students outside class time for Item 19, Educational Experience Enhanced, $p = .049$; Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, $p = < .000$; and Vector 6, High Expectations, $p = .020$. Further analysis using the Scheffe post hoc

comparisons test indicated that the mean differences in instructor opinions based on the number of hours of student interaction were statistically significant for Vector 3, Active Learning, suggesting that instructors who spent between 1-2 hours per week interacting with students (M = 2.33) had more favorable opinions toward Vector 3 than those who spent 6-10 hours per week with students outside of scheduled class time (M = 2.91). The test also indicated that mean differences in instructor opinions for those interacting with students between 3-5 hours per week (M = 2.16) and 6-10 hours per week (M = 2.91) were statistically significant (p = .003), suggesting that instructors who spent 6-10 hours per week interacting with students outside class time had less favorable opinions of Vector 3, Active Learning, than those spending 3-5 hours per week interacting with students. For Vector 4, Rich and Rapid Feedback, the mean differences were significant for instructors who spent no time interacting with student (M = 2.38) and those who spent more than 10 hours per week (M = 1.53) with students outside the classroom, suggesting that instructors who spend more than 10 hours interacting with students had more favorable opinions toward Vector 4 than those who did not allow for student interaction outside scheduled class time. For Vector 6, High Expectations, the difference in the means was statistically significant for instructors who spent no time interacting with students (M = 1.75) and those who spent 6-10 hours (M = 2.31) on student interaction outside the classroom. These findings suggest that instructors who spent 6-10 hours per week interacting with students outside class had less favorable opinions than those who made no time for student interaction. Scheffe comparisons for Item 19, Educational Experience Enhanced revealed that the between groups mean differences were not significant. Tables 61 and 62 provide summaries of the ANOVA for Student Interaction and the follow-up Scheffe post hoc test for those items that were statistically significant.

Table 61

ANOVA for Student Interaction (Instructors)

				No Hours		<1 Hour		1-2 Hours		3-6 Hours		6-10 Hours		>10 Hours	
Item	*F*	*df*	*p**	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced															
	2.276	5,160	.049	2.00	.577	1.86	.581	1.87	.516	1.84	.645	2.38	.719	1.75	.775
Vector 1 Student-Instructor Interaction															
	1.808	5,159	.114	2.53	.761	2.24	.621	2.33	.534	2.09	.594	2.52	.770	2.17	.522
Vector 3 Active Learning															
	4.732	5,162	.000	2.81	.790	2.33	.526	2.33	.534	2.16	.622	2.91	.740	2.27	.523
Vector 4 Rich and Rapid Feedback															
	3.013	5,162	.013	2.38	.891	1.81	.440	1.74	.409	1.73	.520	1.93	.786	1.53	.499
Vector 6 High Expectations															
	2,776	6,160	.020	1.75	.707	2.21	.686	2.30	.723	2.24	.883	2.88	.719	2.31	.704
Vector 7 Respect for Diversity															
	2.197	5,121	.059	2.67	.816	2.38	.740	2.42	.758	2.21	.622	2.93	.730	2.50	.850

*$p < .05$.

Table 62

Scheffe Comparisons for Student Interaction (Instructors)

Student Interaction	*p**	Item	*M*	Item	*M*
Vector 3 Active Learning	.040	3 (1-2 Hours)	2.33	5 (6-10 Hours)	2.91
	.003	4 (3-6 Hours)	2.16	5 (6-10 Hours)	2.91
Vector 4 Rich and Rapid Feedback	.028	1 (None)	2.38	6 (>10 Hours)	1.53
Vector 6 High Expectations	.045	1 (None)	1.75	5 (6-10 Hours)	2.88

**p < .05.*

Computer Usage Patterns

At Work. Of the 170 instructors responding, 41.2% (70) reported spending more than 20 hours per week using a computer; another 27.1% (46) reported spending 11-20 hours per week using a computer. Seventeen percent (28), 10.6% (18), 2.9% (5) reported using a computer 6-10 hours, 3-5 hours, and 1-2 hours at work per week, respectively. Only 1.2% (2) of the instructor sample reported spending less than one hour on the computer at work, and 0.6% (1) reported that they had no computer available to them at work.

Because all items met the homogeneity of variance assumption (Item 19, Educational Experience Enhanced, $p = .795$; Vector 1, Student-Instructor Interaction, $p = .862$; Vector 2, Cooperation among Students, $p = .336$; Vector 3, Active Learning, $p = .122$; Vector 4, Rich and Rapid Feedback, $p = .291$; Vector 5, Time on Task, $p = .860$; Vector 6, High Expectations, $p = .938$; Vector 7, Respect for Diversity, $p = .673$), an ANOVA was used to test Item 19 and Vectors 1-7 to determine if differences existed in the means for hours of computer use at work. The test revealed no significant mean differences (Item 19, $p = .418$; Vector 1, $p = .807$; Vector

2, p = .141; Vector 3, p = .145; Vector 4, p = .936; Vector 5, p = .229; Vector 6, p = .525; Vector 7, p = .101).

At Home. The computer usage patterns of the instructor sample at home were strikingly similar to their computer usage patterns at work. Of the 170 responding, 20.0% (34) reported spending more than 20 hours a week using a computer. Twenty percent (34) reported spending 11-20 hours per week using a computer, and 31.2% (53) reported using a computer 6-10 hours per week. Of the remaining sample, 18.2% (31), 8.2% (14), and 1.8% (3) used the computer 3-5, 1-2, and less than 1 hour per week, respectively. One instructor (0.6%) reported having no computer available at home.

With the exception of Vector 6, High Expectations (p = .005), all items met the assumption of equal variances based on the Levene Test (Item 19, Educational Experience Enhanced, p = .225; Vector 1, Student-Instructor Interaction, p = .663; Vector 2, Cooperation among Students, p = .417; Vector 3, Active Learning, p = .137; Vector 4, Rich and Rapid Feedback, p = .677; Vector 5, Time on Task, p = .916; Vector 7, Respect for Diversity, p = .495). Because at least one group had fewer than two cases, post hoc analysis was not computed.

An ANOVA was used to test the remaining items. The results reveal that with the exception of Vector 5, Time on Task, p = .042, there was no significance in mean differences for hours spent using a computer at home. Post hoc Scheffe comparisons were not computed because at least one group within the vector had fewer than two cases. Table 63 provides a summary of the ANOVA for computer usage patterns at work. Table 64 provides summary of the home computer usage patterns.

Table 63

ANOVA for Hours of Computer Use at Work (Instructors)

				No Computer		<1 Hour		1-2 Hours		3-5 Hours		6-10 Hours		11-20 Hours		>20 Hours	
Item	*F*	*df*	*p**	*M*	*SD*[1]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced																	
	1.014	6,160	.418	1.00	--	1.50	707	1.67	.577	2.11	.583	1.89	.629	1.96	.562	1.86	.666
Vector 1 Student-Instructor Interaction																	
	.501	6,159	.807	2.00	--	2.50	.354	2.45	.542	2.41	.673	2.16	.554	2.28	.621	2.23	.620
Vector 2 Cooperation among Students																	
	1.756	4,139	.141	--	--	--	--	2.45	.542	2.41	.673	2.16	.554	2.28	.621	2.23	.620
Vector 3 Active Learning																	
	1.620	6,162	.145	2.00	--	2.25	1.061	2.00	.236	2.66	.647	2.22	.509	2.46	.594	2.29	.659
Vector 4 Rich and Rapid Feedback																	
	.299	6,162	.936	1.65	--	2.00	.000	1.92	.419	1.89	.750	1.79	.509	1.75	.455	1.75	.557
Vector 5 Time on Task																	
	1.371	6,163	.229	2.60	--	2.98	.318	2.27	.499	2.82	.503	2.79	.407	2.82	.389	2.73	.476
Vector 6 High Expectations																	
	.861	6,160	.525	2.00	--	2.50	.707	1.60	.548	2.24	.752	2.32	.819	2.40	.751	2.29	.806
Vector 7 Respect for Diversity																	
	1.982	4,122	.101	--	--	--	--	1.50	.577	2.62	.768	2.50	.590	2.48	.738	2.39	.774

[1]SD not computed for groups with fewer than two cases.
*$p < .05$.

Table 64

ANOVA for Hours of Computer Use at Home (Instructors)

				No Computer		<1 Hour		1-2 Hours		3-5 Hours		6-10 Hours		11-20 Hours		>20 Hours	
Item	*F*	*df*	*p**	*M*	*SD*[1]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Item 19 Educational Experience Enhanced																	
	1.552	6,160	.164	1.00	--	2.33	.577	1.86	.535	1.72	.528	1.96	.625	1.82	.717	2.06	.600
Vector 1 Student-Instructor Interaction																	
	1.236	6,159	.291	2.00	--	2.42	.382	2.48	.567	2.04	.585	2.31	.650	2.33	.675	2.21	.476
Vector 2 Cooperation among Students																	
	.226	6,137	.968	2.00	--	2.50	.500	2.46	.782	2.35	.617	2.35	.625	2.25	.631	2.36	.778
Vector 3 Active Learning																	
	.694	6,162	.655	2.00	--	2.56	.509	2.44	.626	2.20	.539	2.38	.727	2.28	.528	2.46	.610
Vector 4 Rich and Rapid Feedback																	
	.882	6,162	.509	1.00	--	2.00	.333	1.87	.420	1.74	.475	1.85	.641	1.69	.496	1.74	.498
Vector 5 Time on Task																	
	2.243	6,163	.042	1.80	--	2.93	.416	2.66	.557	2.64	.439	2.74	.430	2.93	.394	2.80	.443
Vector 7 Respect for Diversity																	
	.124	5,121	.987	--	--	2.50	.707	2.45	.522	2.44	.651	2.35	.770	2.46	.859	2.48	.790

[1]SD not computed for groups with fewer than 2 cases.
*$p < .05$.

Multiple Linear Regression Results

As indicated previously, multiple regression procedures using the enter method were used to determine whether or not instructors' personal and professional characteristics predicted their opinions toward the impact of Web-enhanced instruction on the educational experience. Item 19 from the student survey and Vectors 1-7, the effect variables, were each tested using the procedure. The results are presented below.

Item 19. The results of the multiple regression test for Item 19 indicate that the linear combination of the identified predictor variables was not significantly related to Item 19 (R^2 = .074, R^2_{adj} = -.063, $F_{19,129}$ = .541, p = .939). Table 65 provides a summary of the results of the regression analysis for Item 19.

Table 65

Results of Multiple Regression Analysis for Item 19, Educational Experience Enhanced

Characteristic	Constant	β	Beta	*t*	*p**
Gender	1.871	-.067	-.052	-.538	.591
Race (African American)		-.166	-.095	-.916	.362
Race (White)		.003	.004	.035	.972
Institutional Classification (Suburban)		.105	.059	.632	.529
Institutional Classification (Urban)		-.035	-.017	-.165	.870
Employment Status (PT)		.056	.041	.384	.701
Employment Status (PT & FT)		.272	.106	1.033	.304
Internet Access		-.234	-.073	-.793	-.429
Highest Degree (Baccalaureate)		-.024	-.032	-.314	.754
Highest Degree (Master's)		.009	.008	.071	.944
Highest Degree (Doctorate)		-.018	-.011	-.101	.920
Professional Development (Tools)		-.039	-.072	-.665	.507
Professional Development (Strategies)		.003	.001	.012	.991
Professional Development (Both)		-.080	-.069	-.538	.592
Professional Development (Hours)		-.050	-.090	-.773	.441
Interaction with Students		-.007	-.015	-.153	.879
Computer Use (Work)		-.024	-.051	-.509	.612
Computer Use (Home)		.064	.142	1.455	.148
Age (Generational)		.048	.044	.490	.625

Note. Five variables were excluded due to collinearity: Race (Other), Institutional Classification (Rural), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Vector 1, Student-Instructor Interaction. The results of the multiple regression analysis for Vector 1 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 1 (R^2 = .149, R^2_{adj} = .024, $F_{19,129}$ = 1.188, p = .277). Table 66 provides a summary of the results of the regression analysis for Vector 1.

Vector 2, Cooperation among Students. The results of the multiple regression analysis for Vector 2 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 2 (R^2 = .139, R^2_{adj} = -.010, $F_{19,110}$ = .935, p = .542). Table 67 provides a summary of the results of the regression analysis for Vector 2.

Vector 3, Active Learning. The results of the multiple regression test for Vector 3 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 3 (R^2 = .122, R^2_{adj} = -.005, $F_{19,131}$ = 958, p = .514). Table 68 provides a summary of the results of the regression analysis for Vector 3.

Vector 4, Rich and Rapid Feedback. The results of the multiple regression test for Vector 4 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 4 (R^2 = .155, R^2_{adj} = .032, $F_{19,131}$ = 1.262, p = .220). Table 69 provides a summary of the results of the regression analysis for Vector 4.

Table 66

Results of Multiple Regression Analysis for Vector 1, Student-Instructor Interaction (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.287	-.030	-.023	-.247	.806
Race (African American)		-.189	-.106	-1.052	.295
Race (Other)		-.115	-.058	-.640	.524
Institutional Classification (Suburban)		.149	.086	.942	.348
Institutional Classification (Urban)		.148	.074	.743	.459
Employment Status (PT)		-.231	-.173	-1.636	.104
Employment Status (PT & FT)		.332	.129	1.314	.191
Internet Access		-.241	-.082	-.911	.364
Highest Degree (Master's)		-.147	-.120	-.940	.349
Highest Degree (Doctorate)		-.048	-.030	-.245	.807
Highest Degree (Other)		-.318	-.143	-1.339	.183
Professional Development (Tools)		-.024	-.044	-.428	.669
Professional Development (Strategies)		.034	.014	.151	.880
Professional Development (Both)		-.085	-.073	-.600	.550
Professional Development (Hours)		-.082	-.147	-1.305	.194
Interaction with Students		.017	.037	.378	.706
Computer Use (Work)		.032	.070	.694	.489
Computer Use (Home)		.003	.007	.071	.943
Age (Generational)		.100	.092	1.047	.297

Note. Five variables were excluded due to collinearity, i.e., Race (White), Institutional Classification (Rural), Employment (Full-time), Highest Degree Earned (Baccalaureate), and Professional Development Topics (None).

Table 67

Results of Multiple Regression Analysis for Vector 2, Cooperation among Students (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.126	-.297	-.216	-2.004	.048
Race (African American)		-.030	-.016	-.128	.098
Race (White)		-.093	-.092	-.867	.388
Institutional Classification (Suburban)		-.053	-.027	-.275	.784
Institutional Classification (Urban)		-.115	-.056	-.487	.627
Employment Status (PT)		-.190	-.122	-1.012	.314
Employment Status (PT & FT)		.177	.063	.574	.567
Internet Access		-.536	-.146	-1.384	.169
Highest Degree (Baccalaureate)		.019	.022	.205	.838
Highest Degree (Master's)		.049	.037	.329	.742
Highest Degree (Doctorate)		.152	.087	.703	.483
Professional Development (Tools)		.020	.032	.273	.786
Professional Development (Strategies)		-.132	-.053	-.498	.620
Professional Development (Both)		-.148	-.116	-.799	.426
Professional Development (Hours)		-.093	-.146	-1.179	.241
Interaction with Students		.002	.004	.040	.968
Computer Use (Work)		.073	.125	1.153	.251
Computer Use (Home)		-.003	-.005	-.050	.960
Age (Generational)		.118	.098	1.005	.317

Note. Five variables were excluded due to collinearity: Race (Other), Institutional Classification (Rural), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Table 68

Results of Multiple Regression Analysis for Vector 3, Active Learning (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	1.983	-.060	-.046	-.487	.627
Race (African American)		.195	.109	1.015	.312
Race (White)		-.104	-.111	-1.126	.262
Institutional Classification (Suburban)		-.230	-.125	-1.385	.169
Institutional Classification (Urban)		-.168	-.082	-.824	.412
Employment Status (PT)		.058	.042	.404	.687
Employment Status (PT & FT)		.279	.105	1.062	.290
Internet Access		-.012	-.004	-.043	.966
Highest Degree (Baccalaureate)		.016	.020	.205	.838
Highest Degree (Master's)		-.006	-.005	-.049	.961
Highest Degree (Doctorate)		.154	.093	.838	.404
Professional Development (Tools)		.051	.092	.873	.384
Professional Development (Strategies)		.129	.051	.548	.585
Professional Development (Both)		-.229	-.193	-1.566	.120
Professional Development (Hours)		-.086	-.150	-1.323	.188
Interaction with Students		.006	.012	.118	.906
Computer Use (Work)		.007	.015	.146	.884
Computer Use (Home)		.065	.140	1.491	.138
Age (Generational)		.054	.048	.547	.585

Note. Five variables were excluded due to collinearity: Race (Other), Institutional Classification (Rural), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Table 69

Results of Multiple Regression Analysis for Vector 4, Rich and Rapid Feedback (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.779	.029	.028	.297	.767
Race (African American)		-.439	-.306	-3.109	.002
Race (Other)		-.037	-.023	-.256	.799
Institutional Classification (Rural)		-.090	-.078	-.696	.488
Institutional Classification (Urban)		.185	.113	.928	.355
Employment Status (PT)		.012	.011	.105	.917
Employment Status (PT & FT)		.141	.066	.679	.499
Internet Access		-.080	-.033	-.373	.710
Highest Degree (Baccalaureate)		-.063	-.102	-1.069	.287
Highest Degree (Master's)		-.066	-.066	-.638	.525
Highest Degree (Doctorate)		-.085	-.064	-.597	.551
Professional Development (Tools)		-.083	-.186	-1.791	.076
Professional Development (Strategies)		-.082	-.041	-.447	.656
Professional Development (Both)		.005	.005	.040	.969
Professional Development (Hours)		-.046	-.100	-.899	.370
Interaction with Students		-.047	-.120	-1.266	.208
Computer Use (Work)		-.007	-.018	-.190	.850
Computer Use (Home)		-.021	-.056	-.608	.544
Age (Generational)		-.053	-.059	-.684	.495

Note. Five variables were excluded due to collinearity: Race (White), Institutional Classification (Suburban), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Vector 5, Time on Task. The results of the multiple regression test for Vector 5, Time on Task, indicate that the linear combination of the identified predictor variables was not significantly related to Vector 5 (R^2 = .190, R^2_{adj} = .073, $F_{19,132}$ = 1.626, p = .059). Table 70 provides a summary of the results of the regression analysis for Vector 5.

Vector 6, High Expectations. The results of the multiple regression test for Vector 6 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 6 (R^2 = .138, R^2_{adj} = .011, $F_{19,129}$ = 1.091, p = .368). Table 71 provides a summary of the results of the regression analysis for Vector 6.

Vector 7, Respect for Diversity. The results of the multiple regression test for Vector 7 indicate that the linear combination of the identified predictor variables was not significantly related to Vector 7 (R^2 = .149, R^2_{adj} = -.017, $F_{19,97}$ = .896, p = .589). Table 72 provides a summary of the results of the regression analysis for Vector 7.

Table 70

Results of Multiple Regression Analysis for Vector 5, Time on Task (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.363	.037	.039	.426	.671
Race (African American)		-.215	-.161	-1.681	.095
Race (Other)		-.363	-.238	-2.757	.007
Institutional Classification (Rural)		-.123	-.115	-1.059	.291
Institutional Classification (Urban)		-.060	-.039	-.333	.739
Employment Status (PT)		.282	.277	2.742	.007
Employment Status (PT & FT)		.190	.096	1.017	.311
Internet Access		-.292	-.129	-1.494	-.138
Highest Degree (Baccalaureate)		-.010	-.017	-.186	.852
Highest Degree (Master's)		.115	.125	1.236	.219
Highest Degree (Doctorate)		.072	.059	.561	.576
Professional Development (Tools)		.006	.014	.135	.893
Professional Development (Strategies)		-.021	-.011	-.127	.899
Professional Development (Both)		-.133	-.151	-1.283	.202
Professional Development (Hours)		-.063	-.147	-1.357	.177
Interaction with Students		-.012	-.035	-.372	.710
Computer Use (Work)		.005	.015	.158	.875
Computer Use (Home)		.054	.157	1.733	.085
Age (Generational)		.077	.093	1.100	.273

Note. Five variables were excluded due to collinearity: Race (White), Institutional Classification (Suburban), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Table 71

Results of Multiple Regression Analysis for Vector 6, High Expectations (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	1.852	.149	.088	.925	.356
Race (African American)		-.009	-.004	-.033	.973
Race (White)		-.087	-.071	-.726	.469
Institutional Classification (Rural)		.017	.007	.079	.937
Institutional Classification (Urban)		-.275	-.104	-1.029	.305
Employment Status (PT)		.251	.141	1.332	.185
Employment Status (PT & FT)		.646	.188	1.904	.059
Internet Access		-.458	-.106	-1.147	-.254
Highest Degree (Baccalaureate)		.026	.026	.264	.792
Highest Degree (Master's)		-.045	-.028	-.261	.794
Highest Degree (Doctorate)		-.033	-.015	-.139	.890
Professional Dev (Tools)		-.054	-.073	-.699	.486
Professional Dev (Strategies)		.294	.091	.968	.335
Professional Dev (Both)		-.143	-.092	-.751	.454
Professional Dev (Hours)		-.136	-.184	-1.622	.107
Interaction with Students		.079	.127	1.282	.202
Computer Use (Work)		-.045	-.073	-.704	.483
Computer Use (Home)		.098	.164	1.712	.089
Age (Generational)		.118	.081	.923	.358

Note. Five variables were excluded due to collinearity: Race (Other), Institution Classification (Suburban), Employment (Full-time), Highest Degree Earned (Other), and Professional Development Topics (None).

Table 72

Results of Multiple Regression Analysis for Vector 7, Respect for Diversity (Instructors)

Characteristic	Constant	β	Beta	*t*	*p**
Gender	2.344	-.241	-.155	-1.409	.162
Race (African American)		.028	.013	.118	.907
Race (Other)		-.466	-.183	-1.786	.077
Institutional Classification (Rural)		.299	.169	1.281	.203
Institutional Classification (Urban)		.141	.058	.406	.686
Employment Status (PT)		.258	.144	1.107	.271
Employment Status (PT/FT)		.136	.045	.366	.715
Internet Access		-.148	-.038	-.369	.713
Highest Degree (Master's)		.242	.158	1.051	.296
Highest Degree (Doctorate)		.209	.108	.741	.460
Highest Degree (Other)		.167	.047	.420	.675
Professional Development (Tools)		.023	.033	.290	.772
Professional Development (Strategies)		.389	.120	1.143	.256
Professional Development (Both)		-.221	-.155	-1.123	.264
Professional Development (Hours)		-.018	-.028	-.211	.834
Interaction with Students		.022	.037	.332	.741
Computer Use (Work)		-.055	-.088	-.770	.443
Computer Use (Home)		.015	.026	.238	.812
Age (Generational)		-.112	-.080	-.771	.442

Note. Five variables were excluded due to collinearity: Race (White), Institutional Classification (Suburban), Employment (Full-time), Highest Degree Earned (Baccalaureate), and Professional Development Topics (None).

Summary of Results for Research Question 3

This section explored the question, "How did the opinions of instructors teaching in Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience differ in terms of personal and professional characteristics?" The findings indicate that instructor opinions were not impacted by generational membership, gender, highest degree earned, institutional classification, full-time teaching experience, professional development topics, or computer usage patterns (i.e., Internet access at home/work). Further, analysis using multiple regression revealed that the linear combination of the identified predictor variables was not significantly related to Item 19 or Vectors 1-7. However, two characteristics (i.e., hours spent participating in professional development, student interaction) influenced instructors' opinions more broadly than the remaining characteristics. The effect of the remaining characteristics (i.e., race/ethnicity/employment status/part-time teaching experience/Internet access point) was minimal in terms of their impact on instructor opinions.

The number of hours instructors spent participating in professional development activities was the characteristic that most impacted instructor opinions. This characteristic influenced instructor opinions toward Item 19, Enhanced Educational Experience, Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, and Vector 4, Rich and Rapid Feedback. Results indicate that for Vectors 1 and 2, instructors who spent between 5 and 8 hours in technology-related professional development activities had more favorable opinions than those who spent no time participating in those activities. For Vector 3, Active Learning, instructors who spent between 1 and 4 hours participating in these professional development activities had more favorable opinions than those who spent between 5 and 8 hours

in those type activities. However, instructors who spent between 5 and 8 hours in these activities had more favorable opinions than those who spent no time at all.

Student interaction was the second characteristic that broadly impacted instructor opinions. There was a statistical difference in the number of hours instructors spent interacting with students and their opinions for Item 19, Educational Experience Enhanced, Vector 1, Student-Instructor Interaction, Vector 3, Active Learning, Vector 5, Time on Task, and Vector 6, High Expectations. However, the differences between mean groups were only significant for Vector 3, Active Learning. The data showed that instructors who spent 6 to 10 hours per week interacting with students outside class time had a less favorable opinion than those who spent 1 to 5 hours per week interacting with students.

The remaining characteristics (i.e., race/ethnicity, employment status, part-time teaching experience, and Internet access point) were much more limited in their range of influence on instructor opinions. For race/ethnicity, African American instructors had more favorable opinions toward Vector 4, Rich and Rapid Feedback, than instructors of other races/ethnicities. Like race/ethnicity, employment status and part-time teaching experience impacted only one vector, Vector 1, Student-Instructor Interaction. However, there was no statistical significance between the mean groups for the characteristic. The final characteristic, Internet Access Point, significantly influenced instructor opinions toward Vector 1, Student-Instructor Interaction, and Vector 2, Cooperation among Students. Instructors who had Internet access on campus and at home had more favorable opinions than those who only had access on campus.

Chapter Summary

Chapter 4 presented an in-depth analysis of the data available for each of the three research questions. In addition, demographic data as they related to Research Question 2 and

Research Question 3 were presented. Findings revealed that, overall, students and instructors perceived Web-enhanced instruction to add to the educational experience, with students reporting that they would take other Web-enhanced courses and instructors reporting that they heard similar comments from their students. However, tools used primarily by both groups were, for the most part, those typically associated with course management rather than teaching and learning. Moreover, instructional techniques favored by instructors participating in the study were those considered instructor-centered such as lecture and instructor-led discussion rather than those that were more student-centered.

The impact of targeted personal and professional characteristics on opinions was much more significant for students than it was for instructors. For students, race/ethnicity and hours spent using the computer had a greater impact on their opinions than other student characteristics. Although not rising to the level of impact as those noted previously, the remaining characteristics were shown to influence their opinions toward more of the vectors than instructor characteristics influenced their opinions. For students, household income was not shown to influence their opinions.

As mentioned, the characteristics that influenced instructor opinions were much more limited as compared to students. There was a significant number that had no impact on their opinions (i.e., generational membership, gender, highest degree earned, institutional classification, full-time teaching experience, professional development topics, or computer usage patterns); several others had minimal impact (i.e., race/ethnicity, employment status, part-time teaching experience, Internet access point). However, two characteristics—hours spent participating in technology-related professional development activities and hours spent

interacting with students—appeared to have a broader effect on their opinions in terms of Item 19 and the seven vectors than the remaining characteristics examined.

Chapter 5 presents a summary of the study and discusses the findings for each research question as presented in this chapter. In addition, study limitations and delimitations are outlined. The chapter concludes with implications for policy, practice, and future research.

CHAPTER 5

SUMMARY, DISCUSSION, AND CONCLUSIONS

Introduction

In the previous chapter, the data collected were presented and analyzed. Chapter 5 presents a summary of the study, a review of the efficacy of the conceptual framework, and a discussion of the findings. Study limitations and delimitations also are described. The chapter concludes with implications for policy, practice, and recommendations for future research.

Study Summary

The purpose of this study was to explore student and instructor perceptions toward Web-enhanced instruction and its impact on the educational experience of community college students. Secondary to the broader question, the study also sought to investigate if student and instructor opinions differed based on specific personal and professional characteristics. Finally, the study sought to determine the extent to which students' and instructors' personal and professional characteristics predicted their opinions toward the value of Web-enhanced instruction on the educational experience. A review of the literature revealed that little research existed on this topic, particularly as it related to community college students and instructors. When trying to examine the topic in terms of student and instructor characteristics, the research base was even smaller.

Chickering and Gamson's (1987) *Seven Principles for Good Practice in Undergraduate Education*, an empirically based model, guided the study. Although students were asked to respond directly to the statement, "As a result of Web-enhanced instruction, my educational

experience has been enhanced," the term *educational experience* might have had different connotations for different students. For the purposes of this study, a definition that clearly described the educational experience in terms of teaching and learning was needed. Consequently, educational experience was defined by the seven principles. Singularly, the principles have the potential to impact a student's educational experience; however, collectively, the impact is much stronger (Chickering & Gamson, 1987).

As noted in previous chapters, to measure student opinions toward the educational experience, constructs were developed that aligned with the seven principles (i.e., Student-Instructor Interaction, Cooperation among Students, Active Learning, Rich and Rapid Feedback, Time on Task, High Expectations, and Respect for Diversity). Items from the surveys were grouped within the constructs, aggregated, and averaged to arrive at a score for each construct or vector.

The study was quantitative, employing a descriptive, cross-sectional research design. Instructors from eight community colleges in the state of Alabama completed an online survey; students from the same institutions completed a face-to-face, paper-and-pencil survey. The surveys were similarly constructed and divided into two sections. The first section included Likert-type items that were framed around the seven principles. The second section asked questions relating to specific personal and professional characteristics.

Randomly selected student and instructor samples were proportionally stratified based on institutional classification (i.e., rural, suburban, and urban). The instructor sample consisted of 170 instructors. The student sample consisted of 343 students. The response rate for the instructor online surveys was 45%; the response rate for the student face-to-face surveys was 73%.

Descriptive statistics were used to examine Research Question 1. The remaining research questions were investigated using *t* tests, ANOVAs, and multiple regression analyses. When the test of homogeneity was not met for an ANOVA, the Games-Howell test was used.

The Conceptual Framework

As noted previously, the conceptual framework that informed this study was Chickering and Gamson's (1987) *Seven Principles for Good Practice in Undergraduate Education*. The seven principles were originally developed in an effort to improve teaching and learning in undergraduate education and were based on years of research relating to effective practice. The review of the literature suggested that these principles would provide an effective lens through which to determine indicators associated with high quality and effective educational practices (Kuh, 2001b; Reynolds, 1995). The seven principles model was not without its limitations, however. Before selecting it as the framework for this study, two factors were of concern to the researcher: when the principles were developed and for whom they were developed.

The first reason for concern related to the relevance of the model in light of when it was developed. The seven principles were published in 1987 and were based on research that preceded the use of CMSs as a tool for teaching and learning. At that time, the use of computers was just beginning to take root in college classrooms. Moreover, adequate access to the Internet was not available until the mid 1990s (Reiser, 2001). However, Chickering and Ehrmann (1996) re-examined the seven principles from a technology perspective and successfully applied them to the effective use of technology in the classroom. Since that time, a number of studies has used them as a framework to explore the effectiveness of Internet integration into the classroom (Newlin & Wang, 2002; Ritter & Lemke, 2000; Stoudt, 2006).

A second reason for concern was that the model was informed by research that excluded community colleges, which was the focus of this study. Because the seven principles were based originally on research relating to undergraduate education, they were developed for application in that arena. However, Chickering and Gamson (1987) argued that they could be applied to a number of educational settings and a variety of students without regard to their socioeconomic status, educational background, or race/ethnicity, which suggested that the principles could be applied to community colleges and the students they represent. In at least one study, they were shown to have relevance for community college students (Guidera, 2003-2004).

As a conceptual framework, the seven principles provided an adequate lens through which to examine the effectiveness of Web-enhanced instruction. It provided a clear, empirically based description of the elements that have been proven to lead to a successful, high quality educational experience. It allowed the researcher to gain valuable insight into the educational practices of both students and instructors, particularly as they related to CMSs and Web-enhanced instruction. Further, it allowed the researcher to determine whether or not identified practices were among those considered to enhance the educational experiences of the study participants. Consequently, a clearer, more comprehensive picture of the effect of this instructional delivery method on the educational experience emerged beyond the opinions of the study samples.

Although the model was an appropriate framework for this study in that it clearly defined the educational experience and the factors that impacted its quality, it could be strengthened if it were to be updated to reflect more recent research, particularly as it relates to technology and adult learners. More specifically, what role, if any, technology plays in improving the educational experience of college students. As noted earlier, the model was informed by research

prior to 1987 when the landscape of the college classroom looked much different in terms of technology and the student population. Student access to the Internet was not yet available on college campuses (Jones & Madden, 2002). Therefore, the Web-enhanced course was not even an instructional delivery option available to students when the seven principles were first introduced. Moreover, students' reliance on computers did not have the significance that it has today, particularly as more and more Millennial students enter college (Howe & Strauss, 2000). Additionally, the model is based on research primarily involving traditional-aged college students (Chickering & Gamson, 1987), a population that has steadily declined when compared to the number of nontraditional students now enrolled in college (NCES, 2002). Revisiting the framework may lead to the addition of an eighth principle—one that deals with instructional technology exclusively—or, at a minimum, provides constructs that are more representative of college classrooms in the 21st century. In addition to re-examining the model based on more current and relevant research, the model's application should be broadened to include the community college, a growing force in higher education.

Research Question 1

Research Question 1 asked, "What were the opinions of instructors and students in Alabama's 2-year colleges as they relate to Web-enhanced instruction and its impact on the educational experience as defined by Chickering and Gamson's seven principles?" The findings for this question are discussed from a broad perspective and then more narrowly as they relate to each of the seven vectors.

From a broad perspective, the overwhelming majority of students and instructors alike perceived Web-enhanced instruction to have a positive impact on the educational experience. These findings are consistent with previous research studies (Aziz, 2006; Glasgow & Keim,

2005; Keim & von Destinon, 2008; Tung, 2007; Witt, 2003; Yang, 2001) in which Web-enhanced instruction was found to influence teaching and learning positively. Moreover, the majority of students (77.1%) reported that they would take another Web-enhanced course. Instructors (82.0%) also indicated that their students reported that they would take other Web-enhanced courses. Although more of an indicator of satisfaction than a contributor to the educational experience, the willingness of students to take additional courses of this type is still relevant to the discussion. In addition to being satisfied with this delivery method, one could conclude that for the majority of students participating in this study, there were no significant barriers in terms of access to and the use of technology that would prevent them from taking other Web-enhanced courses, a topic which has been much debated in the literature (Flowers et al., 2000; Katsinas & Moeck, 2002; Oblinger, 2003; Spooner, 2003). Geography (Spooner, 2003), institutional classification (Katsinas & Moeck, 2002), age (Flowers et al., 2000), generational membership (Oblinger, 2003), and socioeconomic background (Watson, 2004) were all cited in the literature as potential barriers to Web-enhanced technology. These barriers might have presented themselves if students who were not currently taking Web-enhanced courses had been included in the sample.

Vector 1: Student-Faculty Interaction

> Frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans. (Chickering & Gamson, 1987, p. 4)

Student-instructor interaction (regardless of whether the course is Web-enhanced or not) contributes significantly to the educational experience in terms of enhanced learning, increased intellectual development (Pascarella & Terenzini, 1991), increased student involvement (Astin,

1984; Chickering & Ehrmann, 1996), advanced development (Astin, 1984; Chickering, 1969; Chickering & Ehrmann, 1996; Kuh, 1993), and increased persistence (Astin, 1977; Astin, 1993; Pascarella & Terenzini, 1991). In their article, *Implementing the Seven Principles: Technology as Lever*, Chickering and Ehrmann (1996) argued that email and asynchronous discussions, among other tools, allowed students and instructors to "converse and exchange work much more speedily than before, and more thoughtfully and 'safely' than when confronting each other in a classroom or faculty office" (p. 4). The majority of students (88.1%) agreed or strongly agreed that Web-enhanced instruction increased student-instructor interaction. These findings support the research on this topic as it relates to community college students (Aziz, 2006; Keim & von Destinon, 2008). In these studies, students reported that because the course they were taking was Web enhanced, they were more likely to ask their instructor for clarification, to communicate with their instructor outside the classroom, and to tell their instructor if they had a comment or complaint about the course, all indicators of interaction between the two groups. Like students, most instructors (70.0%) perceived that Web-enhanced instruction increased the level of student-instructor interaction, which was also supported in the literature (Glasgow & Keim, 2005).

The majority of instructors reported interacting with their students outside scheduled class time. However, the degree to which that interaction occurred varied considerably, from less than 1 hour per week to more than 10 hours per week. Full-time instructors spent considerably more time interacting with their students outside the classroom than part-time instructors. Because compensation models for adjunct instructors typically do not build in time for additional activities outside of scheduled class time, these findings were not unexpected (Lombardi, 1975; Peterson, 1982; J. Walker, 2007). Still, 3.2% of full-time instructors reported not interacting with students outside class. This was significantly lower than the 33% reported at the national level

from the *Community College Faculty Survey of Student Engagement* (McClenney & Peterson, 2006). Although part-time instructors (11.1%) were less likely than full-time instructors to interact with students outside scheduled class time, this difference was not as significant as one might have expected.

It appears that much of the interaction taking place between instructors and students was a direct result of email. Email tied for second among the CMS tools instructors reported using in their Web-enhanced course, and it ranked fourth among the tools used by students. Although both groups reported using this form of electronic communication often or always, instructors used it to communicate with students more frequently than students used it to communicate with instructors. It is not clear why fewer students used email than instructors. However, two possible factors for this disparity could be related to institutional characteristics (i.e., 4-year institutions vs. 2-year institutions) and age. Flowers et al. (2000) found that 4-year college students were more likely to use email than 2-year college students. Moreover, the researcher and others (C. Lu & Miller, 2002; Manner, 2003) found that the younger the student, the more positively computer usage was influenced. Given the fact that the mean age of the student sample was 27, age could have influenced student usage. Access, another possible factor cited in the literature (Watson, 2004), did not appear to be an issue because the majority of students (78.1%) indicated that access to a computer was not a deterrent, and 84.8% of students had access to computers at home.

Vector 2: Collaborative Learning

> Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding. (Chickering & Gamson, 1987, p. 4)

Chickering and Ehrmann (1996) contended that the same tools designed to increase student and instructor interaction provided additional opportunities for interaction and communication with other students. Moreover, the researchers asserted that communication tools provided through CMSs such as asynchronous discussions, synchronous chats, and email could increase the value of discussions, collaborative projects, and problem-solving activities.

The majority of students (75.8%) believed Web-enhanced instruction increased the likelihood that they would discuss ideas and concepts they were learning with other students and that they would be more likely to work on assignments with other students. The majority of instructors (63.3%) agreed, although to a lesser degree.

Student and instructor opinions regarding collaboration with their peers were supported in the literature (Aziz, 2006; Glasgow & Keim, 2005; Keim & von Destinon, 2008). The lower opinion on the part of instructors as to the probability of Web-enhanced instruction's increasing the likelihood of student collaboration could be due to the fact that only 26% of those responding routinely used group activities as an instructional strategy. Although email was a popular tool for both samples, when asked to identify which CMS tools they used, those designed to facilitate collaboration such as discussion boards and chat rooms (Astin, 1993; Landry, 2003; McCracken, 2002; Newlin & Wang, 2002) were among the least used by both groups. This also could have contributed to the instructors' lower opinions of these CMS tools.

Vector 3: Active Learning

> Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves. (Chickering & Gamson, 1987, p. 5)

Citing again the value of discussion boards and chat rooms in terms of active learning, Chickering and Ehrmann (1996) also noted that Internet research was another activity that promoted active learning. Most students (74.6%) perceived Web-enhanced instruction to increase the probability that they would actively participate in the course. Aziz (2006) found that students perceived tools such as email to actively engage them in the learning process. Students also believed that they were more likely to participate in online discussions than in face-to-face discussions and were better able to understand the ideas and concepts taught in the course because their course was Web enhanced.

Generally, instructors' perceptions toward Vector 3, Active Learning, were positive, although they were less favorable (59.5%) than student opinions. It was interesting that several of the tools proven to promote active learning (i.e., discussion boards, chat rooms) according to the literature (Astin, 1993; Landry, 2003; McCracken, 2002; Newlin & Wang, 2002) were among the least used by both samples. Discussion boards ranked 13th among the course management system tools used by students and 12th among the course management system tools used by instructors. Chats were used even less. Internet searches for content related websites were used by less than half (47.1%) of the students responding; however, the majority of instructors (67.1%) reported using them in their courses. Because these tools were not used with any regularity, this could have influenced their opinions.

The findings regarding CMS tool use were supported in the literature (Kandies & Stern, 1999; Maddux & Cummings, 2000; Malikowski et al., 2007; Woods, Baker, & Hopper, 2004). Instructors often overlook the tools (e.g., discussions boards, chat rooms, Internet searches, etc.) provided through these systems, although they have been proven to promote active learning, and

favor the tools designed to facilitate course administration (e.g., posting a syllabus and course content).

There are several possible reasons why instructors resist using the CMS tools that promote active learning. It could be that because Web-enhanced courses have the face-to-face component not found in online courses, instructors feel that they employ instructional strategies that engage learners in the classroom and have no need for these additional online instructional tools. However, given the fact that the lecture, a strategy that has been shown to disengage the student from the learning process (Laurillard, 2002; Skiba & Barton, 2006), was the dominant teaching method used by instructors participating in this study, it would appear that within the traditional walls of the classroom, instructional strategies that promote active learning are not employed as frequently as those that are considered more instructor centered.

Another reason that faculty may elect not to utilize these tools is time. The tools designed to enhance teaching and learning take time if they are to be used effectively. Because the CMS is an enhancement to the traditional face-to-face course, which has its own demands in terms of preparation and management, it could be that instructors feel they do not have the time to devote to these additional online instructional tools.

A third reason that instructors neglect the use of these tools could relate to their experience with Web-enhanced instruction and the CMS. Kandies and Stern (1999) described an evolutionary process when studying instructors' use of CMSs in the classroom, one that began with a passive learning environment but progressed to an interactive experience based on constructivist principles. Similarly, Wingard (2004) found that instructors' goals toward Web-enhanced instruction evolved with time, from initial pragmatic motivations to appreciation for the pedagogical benefits. It could be that the instructors responding to the survey were new to

this instructional delivery method and had not yet realized the value of these tools to the teaching and learning process.

Vector 4: Rich and Rapid Feedback

> Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. (Chickering & Gamson, 1987, p. 5)

Once again, email emerged as a valuable tool for teaching and learning. This is particularly true when it comes to providing quick and meaningful feedback (Chickering & Ehrmann, 1996). The opinions of most students (93.0%) and instructors (93.5%) toward Vector 4, Rich and Rapid Feedback, were positive. Students reported that they were more likely to receive detailed comments from their instructors within 48 hours because their course was Web-enhanced. Similarly, instructors reported that they were more likely to give students detailed comments within 48 hours. It is clear that the availability and use of email allowed instructors to provide enhanced feedback to students and to provide it more quickly, a fact that is supported in the literature (Aziz, 2006; Glasgow & Keim, 2005; Witt, 2003). Without it, the timeliness of feedback would be dictated by the class schedule.

The grade book is another tool that provides immediate feedback to students when it is kept current by the instructor because it gives students a snapshot of their overall performance in the course. Because their course was Web enhanced, students reported that they were more likely to monitor their progress through the grade book. Instructors agreed. The value of the grade book to students is documented in the literature (Figueroa & Huie, 2001). In an informal study conducted at one community college, students reported that having access to their course grades

throughout the term was an advantage because it provided them with a picture of their progress in the course.

Wingard (2004) found that the use of online quizzes and feedback enabled students to practice and master basic skills independently and to "prepare for the heightened challenges in the classroom" (p. 33). In hindsight, a statement relating to assessment should have been included in Vector 4, Rich and Rapid Feedback, because the ability for students to monitor their understanding of key concepts through quizzes and check for mastery of key concepts through online examinations clearly falls within the purview of Vector 4, Rich and Rapid Feedback. Although students and instructors were not asked to give their opinions on this topic, students were asked if they took self-check quizzes or online quizzes and the frequency in which they took them. Likewise, instructors were asked if they integrated self-check quizzes or online quizzes and to what degree they used them. For both groups, assessment tools were ranked among the lowest in terms of use and frequency of use. In fact, out of 14 different tools, quizzes and online examinations ranked 9th and 11th, respectively, among tools used by students. For instructors, quizzes and online examinations ranked 11th and 13th, respectively.

Because it appears that instructors are not utilizing assessment tools with any regularity, it stands to reason that students would not be using them with any regularity. Why instructors elect not to use these tools is not clear. It may be that the time constraints or their level of experience using CMSs prevents them from developing quizzes and exams. Another possibility is that instructors continue to grapple with ethical issues and academic security surrounding online assessments, a topic often discussed in the literature (Goldberg, 2005; Joinson & Buchanan, 2001; Wingard, 2004). As Joinson and Buchanan succinctly stated, "On the internet nobody knows if your dog is doing your homework for you" (pp. 234-235).

Vector 5: Time on Task

> Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. (Chickering & Gamson, 1987, p. 4)

Chickering and Ehrmann (1996) asserted that the effective use of technology could significantly increase time on task for students by making the time they spent studying more efficient. Nicoll and Laudato (1999) found that the time students spent on "learning tasks" increased with Web-enhanced instruction. Newlin and Wang (2002) identified two factors affecting students' time-on-task—content-based problems and technological issues. For Vector 5, Time on Task, both groups were asked to respond to statements regarding completing tasks on time, juggling coursework with home and work responsibilities, as well as statements relating to time spent trying to gain access to a computer, time wasted surfing on the Internet, and time lost due to lack of computer skills. Student opinions (68.7%) toward Vector 5, Time on Task, were generally positive, although they were somewhat lower than their opinions toward Vectors 1-4. Conversely, most instructors (81.2%) did not agree that Web-enhanced instruction resulted in improved time on task for their students.

It is not readily apparent as to why the two groups' opinions toward Vector 5, Time on Task, were so dramatically different. It could be that the level of expectation in terms of time on task was different between the two groups. Additionally, student opinions were self-reported and based on a singular perspective and, therefore, more subjective than instructor opinions, whose perspectives were shaped by their experiences working with a large number of students. It would appear that those experiences were much less positive than those of the students responding to the survey. Because CMSs offer tools to track student activity within the system, it could be that

the instructors had evidence to suggest that students' time on task was not increased by this instructional delivery method.

Vector 6: High Expectations

> Expect more and you will get more. High expectations are important for everyone—for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts. (Chickering & Gamson, 1987, pp. 5-6)

The majority of students (90.8%) agreed that they were more likely to take responsibility for their learning as a result of Web-enhanced instruction. Faculty in at least one multi-institutional study conducted by Wingard (2004) equated this newfound responsibility for their learning with high expectations. According to the author, "Faculty reported heightened expectations for their students. They began to believe that students could take responsibility independently for their learning of basic course information provided on the Web" (p. 9). Instructors' opinions were less favorable (65.9%) toward Vector 6, High Expectations, than were students' but generally positive. As with Vector 5, Time on Task, it is unclear as to why this difference in opinion existed between the two samples. However, it is assumed that students were reporting their opinions based on a singular perspective—their own. Instructors, on the other hand, were reporting their opinions based on their experience with all of the students in the class for which they were being surveyed, which could be more objective than self-reported data provided by students.

Vector 7: Respect for Diversity

> There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily. (Chickering & Gamson, 1987, p. 6)

Chickering and Ehrmann (1996) touted the usefulness of technology in meeting the diverse needs of learners including self-reflection, self-evaluation, collaboration, and problem solving. They also touted the ability of technology to set the pace for and structure of learning based on the needs of the learner. However, as already noted, many of the instructional strategies and CMS tools that would facilitate these strategies were not being integrated into Web-enhanced courses with any regularity by the majority of instructors.

The statement used to measure Vector 7, Respect for Diversity, focused on diversity from a cultural or racial perspective rather than from a learning perspective. Overall, students (71.6%) and instructors (55.2%), although to a lesser degree, agreed that Web-enhanced instruction encouraged students to work with students of different races and/or cultural backgrounds. The less favorable opinions by instructors could be attributed, in part, to the fact that group activities that might encourage interaction and collaboration among students of different races and/or cultures was an instructional strategy that was rarely or never used by 43.8% of instructors and only used sometimes by another 30.2%.

From a learning perspective, the level at which instructional strategies and CMS tools that have been proven to meet the needs of diverse learners are used was also explored although neither students nor instructors were asked for their opinions on the topic. Unfortunately, the teacher-centered classroom appears to be thriving in Web-enhanced courses. Lecture continues to be the dominant instructional technique used by instructors (64.9%), a fact that is significantly

higher than the national average of 43% as reported by Schuetz (2002) and consistently supported in the literature (Cohen & Brawer, 2003; Schuetz, 2002). Ranking the frequency with which instructional strategies were used revealed that strategies that were more student-centered (i.e., student-led discussions, case studies, group activities, student presentations, in-class writing assignments, and experiential activities) were used much less often than those that were more instructor-centered (i.e., lecture, teacher-led discussion). Additionally, CMS tools that typically promoted self-reflection, self-evaluation, collaboration, and problem solving were among the least used by instructors and students.

Research Question 2

Research Question 2 asked, "Did the opinions of Alabama's 2-year college students differ regarding Web-enhanced instruction and its impact on the educational experience based upon their personal and professional characteristics?" Specifically, the researcher wanted to determine how the opinions of students differed based on generational membership, gender, race/ethnicity, institutional classification, educational goal, major/division, enrollment status, employment status, household income, and computer usage patterns. As with Research Question 1, personal and professional characteristics and their effect on student opinions were examined in terms of Item 17, Would take other Web-enhanced courses, Item 19, Educational Experience Enhanced, and each of the seven vectors.

The findings revealed that employment status, household income, major, and type of Internet connection had no statistically significant impact on student opinions toward Web-enhanced instruction and its effect on the educational experience. It was interesting that employment status did not influence student opinions given the fact that Web-enhanced instruction increases communication between students and instructors and provides access to

course content 24 hours a day, 7 days a week (C. Hamilton et al., 2000). For community college students who typically juggle academics with families, work, and community, it would appear that these types of courses would offer students a level of convenience not available through traditional face-to-face courses (CCSSE, 2006). It was also interesting that income did not influence opinions, given the fact that household income was routinely cited as a potential barrier to technology access in the literature (U.S. Department of Commerce, 2004). However, it could be that because the student sample included only those students who were already enrolled in a Web-enhanced course, students for whom technology access might have been a challenge were excluded from the survey.

Student opinions were influenced by the remaining characteristics, albeit to varying degrees. However, race/ethnicity, enrollment status, and hours spent using a computer were three characteristics that more broadly influenced student opinions when compared to other student characteristics. A discussion of the findings in terms of how generational membership, gender, race, institutional classification, educational goal, enrollment status, employment status, and computer usage patterns impacted student and instructor opinions follows.

Generational Membership

Generational membership influenced student opinions to varying degrees for Item 17, Would take other Web-enhanced courses, and Vector 4, Rich and Rapid Feedback, where the mean group differences were significant. It was not surprising that differences did exist between groups in terms of generational membership because each generational cohort has its own distinct characteristics in terms of technology (Coomes, 2004). However, what is noteworthy is where the differences were. Generation X students were more likely to take another Web-enhanced course than Millennial students or students who were considered Boomers. The fact

that Millennial students were less likely to take future Web-enhanced courses is notable because this group was routinely cited in the literature as the torch bearers for technology, with different expectations in terms of learning and technology, expectations that included technology-enriched instruction (Coomes, 2004; Oblinger, 2003; Skiba & Barton, 2006). However, socioeconomic factors typically associated with 2-year college students, regardless of their generational membership, might have influenced their opinions. According to an article published by the *Journal of College Admission* (Elam, Stratton, & Gibson, 2007), not all members of the Millennial cohort were provided the same degree of support growing up. Further, first-generation Millennial college students may not be as familiar with technology as their more advantaged peers. For Vector 4, Rich and Rapid Feedback, Generation X students had more favorable opinions than Boomers. These findings were confirmed in the literature. Hicks and Hicks (1999) asserted that the knowledge and skill level of many GenXers in terms of technology exceeds that of Boomers, which is supported by the fact that the personal computer was not introduced until 1982, and the Internet did not gain widespread use until the late1990s. Consequently, Boomers have had less exposure to technology than students from the Generation X cohort, and that exposure started much later than it did for the earlier generational group. What was surprising was the fact that the opinions of Millennial students were not more favorable toward Vector 4, Rich and Rapid Feedback, because according to the literature, they are accustomed to receiving feedback that is focused (Coomes & DeBard, 2004; Howe & Strauss, 2000). Perhaps their expectations in terms of the speed and richness of the feedback they received in their courses were not met.

Further analysis using multiple regression indicated that generational membership was a predictor of student opinions for Vector 2, Cooperation among Students. Results from that

analysis indicated that the younger the generational cohort, the more positive their opinions toward this vector. Although studies focusing on Web-enhanced instruction from a generational perspective were not available for comparison purposes, particularly as it relates to community college students, there were a number of studies available that related to patterns of technology use that support these findings (Costello et al., 2004; Hartman et al., 2005). In addition to technology usage patterns, the collaborative nature of younger students, specifically Millennial students, was also supported in the literature because studies have shown them to be more collaborative and team oriented than other cohorts (Elam, Stratton, & Gibson, 2007; Howe & Strauss, 2000).

In light of the contradictions that surfaced regarding Millennials and their attitudes toward Web-enhanced instruction as compared to other cohorts, it appears that instructional strategies and socioeconomic factors common among community college students might have had at least some impact on their opinions. Unfortunately, there was not a significant research base through which to support or refute these assumptions. Given the fact that Millennial students represented 51% of students attending public 2-year colleges in 2003 (NCES, 2006a), a number that will continue to grow each year as more Millennials reach college age, future research into generational cohorts and their expectations in terms of teaching and learning as it relates to Web-enhanced instruction should focus on community college students.

Gender

With the exception of Vector 6, High Expectations, there was no significant difference among student opinions based on gender. For Vector 6, High Expectations, female students had more favorable opinions toward the vector than male students. This contradicts the one study available that examined the relationship between gender and the effectiveness of Web-enhanced

courses as it related to community college students (Tung, 2007). In that study, the researcher found no significant correlation between gender and student perceptions. However, it should be noted that the Tung study was an extremely small study with a convenience sample of 35 students.

The difference in opinions based on gender could be due to the fact that the sample was heavily skewed toward health sciences (i.e., 67.3% of the student sample). Nursing courses, which are known for their rigor and high standards, made up a significant portion of the health sciences division (Colalillo, 2007). Among the colleges that participated in the study, there was at least one institution whose health sciences division was the only department offering Web-enhanced courses, and the student sample representing that institution was taken solely from that department. Because females traditionally enroll in nursing programs at a much higher rate than male students (87.1% of the student sample in the health sciences division were females) and because at least one institution was only offering Web-enhanced courses to students in their health sciences programs, it could be that the female students participating in this study had more opportunities to take Web-enhanced courses than their male counterparts. Although these findings revealed, for the most part, no difference between the student opinions based on gender, from a broader perspective, studies have shown that differences do exist between males and females and their expectations toward technology (Brunner & Bennett, 1998; Camp, 2001). In fact, Brunner and Bennett referred to these differences as "a feminine and masculine 'voice' in the technological universe" (p. 56). It is possible that these differences influenced student opinions.

Race/Ethnicity

The influence of race/ethnicity on student opinions was statistically significant for Item 19 and all of the vectors. As noted earlier, of the student characteristics examined, this characteristic was one of the few that appeared to have a broad influence on student opinions as they related to Web-enhanced instruction and its impact on the educational experience. Significant differences in the distribution of student opinions across groups existed for Item 19, Educational Experience Enhanced, and all of the vectors. Depending on the vector, African American students had more favorable opinions than White students and/or students of other races/ethnicities. Given the socioeconomic barriers often cited in the literature for minorities as they relate to technology (U.S. Department of Commerce, 2004; Watson, 2004), one would have expected that African American students would have less favorable opinions than their White peers. These results suggest several possibilities. It could be that the challenges associated with technology historically faced by African Americans are lessening. Findings suggest that for other minorities, however, those challenges may not be lessening, which was supported in the literature. In a study conducted by Keim and von Destinon (2008) in which Hispanics represented 48% of the sample, findings revealed that computer access was among the technical issues that influenced student attitudes. In an earlier study by Flowers et al. (2000), the researchers found that Latino students, when compared to other students of different races/ ethnicities, were clearly disadvantaged relative to computer use. Access may not have been an issue at all for the students participating in this study, however, because 84.8% of those responding reported having access to the Internet at home. Consequently, it is possible that the experiences of the African American students participating in this study happened to be better than those who represented other races/ethnicities.

Institutional Classification

With the exception of Vector 2, Cooperation among Students, and Vector 6, High Expectations, institutional classification and student opinions were not statistically significant. For both vectors, students attending the urban institution had more favorable opinions than students attending rural institutions. It is not clear why there were differences in opinion. However, it could be tied to funding, because historically funding for technology advancement has occurred at a faster pace for urban institutions than it has for rural institutions (Sink, Jackson, Boham, & Schockley, 2004). Consequently, one might conclude that students in urban institutions have had improved access to technology on campus when compared to their rural counterparts. One might also conclude that the difference in opinions could be attributed to socioeconomics and geography because service areas of many rural colleges are often distressed economically with consistently low levels of Internet penetration and insufficient access to broadband technologies (Katsinas & Moeck, 2002, Sink et al., 2004). In fact, Butzen and Liston (2003) described "a new Digital Divide, characterized by disparity in speed, quality, and capacity of Internet access" (p. 52). However, because 84.8% of students responding reported their home as being their primary Internet access point, and 78.7% of students reported having high-speed Internet connections via DSL or cable, it would appear that location, at least, was not a factor. Again, the positive picture painted by these findings might have looked much different if students who had never taken a Web-enhanced course had been included in the sample.

Educational Goal

Students' educational goals, like race/ethnicity, appeared to have a broad impact on their opinions in terms of vectors. These differences were significant for Item 19, Educational Experience Enhanced, Vector 2, Cooperation among Students, and Vector 6, High Expectations.

Although the results were dependent on the type of award sought, further analysis indicated that students seeking a formal award typically had a more favorable opinion toward Item 19, Educational Experience Enhanced, Vector 2, Cooperation among Students, and Vector 6, High Expectations, than students who were undecided. Based on these findings and the lack of relevant research in terms of Web-enhanced instruction from which to draw conclusions, it is unclear as to why these differences existed. However, in an attempt to explain them, a review of the literature revealed that discussions on the topic were related primarily to career choice, the findings of which were inconsistent and at times contradictory (Slaney, 1988). In two separate, sizable studies that examined these two groups using a number of different variables, Baird (1967) found no significant difference between the two groups. However, in at least one study, undecided students were found to be less satisfied with college than their decided counterparts (Hecklinger, 1972), which could explain the less favorable opinions reported in this study by students who had not yet made a decision as to their education goal. Gordon (1981) applied Perry's Scheme of Intellectual and Ethical Development to undecided students and provided suggestions for applying the principles of this and other development theories to teaching and student services. Arguing that undecided students were "normal, growing, predictable individuals in various stages of vocational and cognitive development," the author suggested that undecided students typically have not progressed beyond the dualistic and multiplistic positions and, consequently, have different needs in terms of instruction (p. 433). It could be that for the undecided students participating in this study, those needs were not being met. For example, the use of experiential learning activities was cited by Gordon as an appropriate instructional strategy for students at the dualistic stage of development. However, 40.2% of instructors responding rarely or never used this strategy. Another 24.4% reported using it occasionally.

Enrollment Status

There was a significant difference in opinions between full- and part-time students toward Vector 1, Student-Instructor Interaction, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, and Vector 7, Respect for Diversity. Part-time students had more favorable opinions toward these vectors. Although there were no studies available that specifically examined the attitudes of community college students toward Web-enhanced instruction based on enrollment status, the fact that part-time students' attitudes were more positive could be attributed to the fact that Web-enhanced courses have been shown to increase student-instructor interaction, student collaboration, and feedback (Aziz, 2006; McCracken, 2002; Witt, 2003). Because these students typically do not spend time on campus other than to attend scheduled classes (CCSSE, 2006), there is little time, if any, outside of scheduled classes for interaction with fellow students or with the instructor. Moreover, feedback, it would appear, would be much more critical for part-time students because they would not have the same level of access to the instructor outside of class as their full-time peers. When used effectively, the increased level of interaction and feedback afforded through Web-enhanced instruction would help students enrolled on a part-time basis extend the boundaries of the traditional face-to-face classroom, increasing their access to the courses, their peers, and their instructors.

Further analysis using multiple regression indicated that enrollment status was a predictor of student opinions for Vector 4, Rich and Rapid Feedback. The relationship between enrollment status and student opinions toward the vector was positive; student opinions improved when they were enrolled full-time, which appears contradictory to the results of the *t* test for Vector 4, Rich and Rapid Feedback. It is not clear why these results were inconsistent. However, additional

research into the perceptions of full- and part-time students as they relate to Web-enhanced instruction could help explain this phenomenon.

Computer Usage Patterns

Computer usage patterns (i.e., main access point, type connection, hours using computer) influenced Item 17, Would take other courses that were Web-enhanced, Item 19, Educational Experience Enhanced, and the seven vectors to varying degrees. However, like race/ethnicity and enrollment status, it was the hours spent using the computer each week that had the broadest impact on student opinions. In fact, multiple regression analysis revealed that hours spent using the computer each week was a predictor of student opinions for Vector 2, Cooperation among Students.

Internet Access Point. Students' Internet access point and the type of Internet connection to which they had access are much debated topics in terms of access and the digital divide (Katsinas & Moeck, 2002; Sink et al., 2004; U.S. Department of Commerce, 2004; Watson, 2004). Yet, where and how students accessed the Internet did not influence their opinions to the degree one would expect given the attention the topic is given in the literature. Still, student attitudes were influenced by where they accessed the Internet when they responded to Item 17, Would take other courses that are Web-enhanced and Vector 5, Time on Task. In both cases, students who were able to participate in their course from home were more likely to take another Web-enhanced course than those who only had access on campus and had more favorable opinions toward Vector 5, Time on Task. Multiple regression analysis revealed that for Vector 2, Cooperation among Students, where students were able to access the Internet was a predictor of student opinions. Student opinions improved when they could access the Internet from home. Given the personal characteristics typically associated with community college students in terms

of employment and enrollment patterns, income levels, dependent status, and the fact that most commute, the convenience of being able to work from home and at their convenience could have easily influenced their opinions toward taking additional Web-enhanced courses, working collaboratively with other students, and staying on task (CCSSE, 2006). This would be particularly true in courses that utilized synchronous chats or discussions, which could present hardships for commuting students who did not have access at home.

Hours Spent Using a Computer. Like race/ethnicity and enrollment status, the number of hours students spent using a computer broadly influenced their opinions. With the exception of Vector 7, Respect for Diversity, this characteristic impacted student opinions across all vectors. Students who reported never or rarely using the computer in their course were less likely to take another Web-enhanced course than those who did use the computer, regardless of the number of hours invested. Similarly, in each statistically significant group, the opinions of students rarely or never using the computer for the course were lower than those who used it more frequently. Given the nature of Web-enhanced instruction and its reliance on technology, these findings were not unexpected. Further analysis using multiple regression indicated, however, that the number of hours of computer use was a predictor of student opinions for Vector 2, Cooperation among Students, and Vector 4, Rich and Rapid Feedback. Student opinions improved as the number of hours decreased, which contradicts the findings produced from other statistical analyses. It is unclear why the contradiction occurred. However, one could conclude that the reason student opinions declined as hours of usage increased could be attributed to several causes. First, it could be that students believed that the amount of work and/or number of hours required to complete assignments outside of scheduled class time was excessive. Second, the experiences of those who did participate in the group activities could have been less than

positive. Third, the number of hours students invested could have been inflated due to slow Internet speed or other technology issues leading to frustration on the part of the students, which has been shown to negatively impact student opinions (Yang, 2001). Any of these scenarios could explain these findings.

Research Question 3

Research Question 3 asked, "How did the opinions of instructors teaching in Alabama's 2-year colleges regarding Web-enhanced instruction and its impact on the educational experience differ based on personal and professional characteristics?" Specifically, the researcher wanted to determine how the opinions of instructors differed based on their generational membership, gender, race/ethnicity, highest degree earned, institutional classification, employment status, years teaching, Internet access point, technology-related professional development, computer usage patterns, and student interaction outside the classroom. Personal and professional characteristics and their impact on instructor opinions were examined as they related to Item 19, Educational Experience Enhanced, and the seven vectors. There were several studies that explored instructor attitudes toward Web-enhanced instruction (Glasgow & Keim, 2005; Hyllegard & Burke, 2002; Tung, 2007); others explored perceptions from a technology adoption perspective (Adams, 2002; Dusick & Yildirim, 2000; Jackowski, 2005; G. Walker, 2005). However, studies examining the impact of personal and professional characteristics on the perceptions of community college instructors as they related to the effect of Web-enhanced instruction on the educational experience were anemic at best.

The results of this study revealed that instructors' personal and professional characteristics had less of an impact on instructor opinions than student characteristics had on student opinions. In fact, generational membership, gender, highest degree earned, institutional

classification, employment status, full-time teaching experience, professional development topics, or computer usage patterns (i.e., Internet access at home/work) did not result in differences in opinion that were statistically significant. Further, analysis using multiple regression revealed that the linear combination of the identified predictor variables was not significantly related to Item 19 or Vectors 1-7. The remaining instructor characteristics (i.e., race/ethnicity, highest degree earned, part-time teaching experience, Internet access, hours of participation in professional development activities, and student interaction) influenced their opinions to varying degrees. Of these, hours instructors spent participating in professional development activities and interacting with students were the two characteristics that most broadly impacted instructor opinions.

Race/Ethnicity

Race/ethnicity did not have the broad range of influence on instructor opinions that it had on student opinions. However, it was found to influence attitudes toward Vector 4, Rich and Rapid Feedback. For the purposes of this study, feedback was primarily related to the level in which instructors communicated with students and the frequency in which that communication occurred. Study findings revealed that the perceptions of African American instructors toward this vector were more positive than those of instructors of other races/ethnicities. It is unclear as to why these differences occurred. However, one might conclude that cultural differences could have led to differences among them. According to Collis (1999), "Culture affects the individual's response to computer-related systems" (p. 202). In terms of electronic communication, Hall (1998) equated it with culture. According to the researcher, the "essence of any culture is primarily a system for creating, sending, storing, and processing information. Communication underlies everything" (p. 53). Although the research base relating to the cultural implications of

online education is limited (Gunawardena, Wilson, & Nolla, 2003), this line of inquiry is growing. Unfortunately, many of these studies look at cultural differences from a broad perspective rather than focusing on specific groups. While the research did not provide much insight into cultural differences as it relates to electronic communication and teaching and learning, it is possible that these differences resulted in the variation in opinions between African American instructors and those of other races/ethnicities. Access did not appear to be an issue because they had access to the same level of technology, and 95.7% of instructors reported having access on campus and at home.

Part-Time Teaching Experience

There was a statistical difference in instructor opinions of Item 19, Educational Experience Enhanced, and the number of years of part-time teaching experience. However, the differences between groups could not be determined. Research relating to instructor perceptions based on part-time teaching experience was unavailable. However, from a generational perspective, one could speculate that instructors with fewer years of part-time teaching experience were younger and, therefore, had more positive attitudes toward technology and its value to the teaching and learning process (Coomes, 2004; Oblinger, 2003). Experience teaching Web-enhanced courses could also have influenced the opinions of part-time instructors. Woods et al. (2004) found that instructors who utilized a hybrid model of instruction for more than three terms were more inclined to use the CMS tools designed to enhance teaching and learning. It could be that the part-time instructors responding to the survey had less experience with this instructional delivery method than their full-time colleagues.

Employment Status

The differences in opinions of full- and part-time instructors regarding Vector 1, Student-Instructor Interaction, were significant; however, it is impossible to identify where the differences existed. However, several conclusions could be drawn from these findings. As noted earlier, student-instructor interaction inside and outside the classroom is a critical piece of the educational experience. According to Chickering and Gamson (1987), it has been shown to be "the most important factor in student motivation and involvement" (p. 2). Web-enhanced instruction has been proven to increase interaction with students (Glasgow & Keim, 2005; Witt, 2003). Yet, compensation models often applied to part-time instructors are typically based on (a) the number of clock/credit hours, (b) the course or the semester, or (c) a proportionate amount of the salaries for full-time instructors (Peterson, 1982), the first of which is used most frequently (Lombardi, 1975). Consequently, one could assume that adjunct instructors had no time or a minimal amount of time built into their schedules to interact with students outside regularly scheduled class periods. Study findings support this assumption. In fact, 47% of part-time instructors who participated in this study reported spending less than one hour or no time at all interacting with students in a given week. Web-enhanced instruction could alleviate this problem by allowing part-time instructors the ability to interact with students outside scheduled class time, in real time or asynchronously, and at times that fit within their schedules. One could conclude that the opinions of adjunct instructors could be influenced by the opportunities for increased student interaction provided through Web-enhanced instruction.

Internet Access Point

Although the review of the literature did not reveal any studies that specifically addressed Internet access points, there were studies that examined instructors' perceptions regarding the effectiveness of Web-enhanced instruction. Accordingly, community college instructors

perceived that Web-enhanced instruction improved teaching and learning and increased and enhanced communication and interaction with their students (Glasgow & Keim, 2005; Witt 2003). Access to the Internet away from work increased the opportunity for that communication and interaction to take place. There was a statistically significant difference between Internet access point and instructor opinions toward Vector 1, Student-Instructor Interaction, and Vector 2, Cooperation among Students. Instructors who had access to the Internet both at home and on campus had more favorable opinions than instructors who had access only on campus. Given the increasing reliance on technology as a means through which to engage students outside the classroom (Kuh & Laird, 2005) and to supplement face-to-face classes (Bates & Pool, 2003; Pack et al., 2003), it was not surprising that instructors who had 24/7 access to the online portion of their course at work and at home had more positive opinions than those who did not.

Hours Spent Participating in Professional Development Activities

The number of hours instructors spent participating in professional development activities was the characteristic that most broadly impacted instructor opinions toward Item 19 and the majority of the vectors including Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, and Vector 4, Rich and Rapid Feedback. For Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, and Vector 3, Active Learning, instructors who spent 5-8 hours in technology-related professional development activities had more favorable opinions that those who did not participate in any technology-related professional development activities. For Vector 3, Active Learning, instructors who spent 5-8 hours in technology-related professional development activities had more favorable opinions than those who had participated in 1-4 hours of professional development. The significance of technology-related professional development as it relates to instructor perceptions was supported

in the literature, where training was found to be one of two key predictors of technology adoption/integration (Adams, 2002; Dusick & Yildirim, 2000).

Student Interaction

There was a statistically significant difference in the number of hours instructors spent interacting with students and their opinions for Item 19, Educational Experience Enhanced, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, and Vector 6, High Expectations. Interestingly, instructors who spent 6-10 hours per week interacting with students outside class time had a less favorable opinion than those spending 1-5 per week.

The criticality of student-instructor interaction outside the classroom was discussed earlier in this chapter. Instructors participating in this study, regardless of their employment status, spent more time interacting with students than national survey results indicated (McClenney & Peterson, 2006; Schuetz, 2002). The fact that the more time instructors spent interacting with students, the less favorable their opinions were is noteworthy. It could be that the more time students required outside of scheduled classes, the less likely the instructor believed students were taking responsibility for their own learning, staying on task, and meeting his or her expectations, which could affect his or her opinion as to whether or not students' educational experience had been enhanced. Moreover, given the time that 2-year college instructors typically spend in the class and/or lab, it could be that the additional time outside the regular class schedule was burdensome for instructors trying to meet the needs of students along with administrative demands in what little time was left in the week.

Discussion Synopsis

The primary purpose of this study was to examine community college student and instructor opinions as they related to the value of Web-enhanced instruction on the educational

experience as defined by Chickering and Gamson's (1987) seven principles. A review of the literature revealed limited research on the topic as it related to community college students, along with calls for additional research (Glasgow & Keim, 2005; Pascarella & Terenzini, 2005). The need for more research becomes even more critical when one considers the increasingly important role computers will continue to play in the academic and social lives of students, particularly as more and more Millennials enroll in college (Oblinger, 2003). Consequently, an understanding of the learners with whom instructors engage as it relates to technology, along with a knowledge of the instructional strategies designed to promote learning in a technology-enhanced environment are needed in order to maximize learning. Unfortunately, Jones and Madden (2002) described an "Internet generation gap" in their discussion of the disconnect that exists between instructors and their students in terms of technology usage. Compounding this problem is the teacher-centered instructional practices that instructors continue to embrace, along with the failure to capitalize on the tools within the CMSs that are designed to promote active learning (CCSSE, 2006; Skiba & Barton, 2006). Additionally, community college students face their own unique challenges in terms socioeconomic background, age, generational membership, institutional classification, and so on. Barriers relating to the digital divide, a problem compounded by geography, present additional challenges for these students.

Most of the findings generated as a result of this study did not produce any startling revelations. Although there were several noteworthy findings, most corroborated what was already known and served to contribute to the existing research base. A synopsis of the preceding discussion of the study results framed around the rationale for the study follows.

Research Question 1

For Research Question 1, with the exception of instructor opinions toward Vector 5, Time on Task, the majority of students and instructors agreed or strongly agreed with items supporting each of the seven vectors (i.e., Vector 1, Student-Instructor Interaction, Vector 2, Cooperation among Students, Vector 3, Active Learning, Vector 4, Rich and Rapid Feedback, Vector 6, High Expectations, and Vector 7, Respect for Diversity). In each instance (where research was available), the findings confirmed what the review of the literature revealed.

In terms of the conceptual framework for this study, the fact that student and instructor opinions supported the overwhelming majority of the vectors is significant because according to Chickering and Gamson (1987), each of the seven principles can impact a student's educational experience independent of the other principles; however, the impact on the educational experience strengthens as the number of principles employed grows. Based on the seven principles, it would appear that students and instructors perceived that Web-enhanced instruction contributed to an enhanced educational experience. In addition to and in support of these findings, the majority of students and instructors alike felt that, from a broader perspective, Web-enhanced instruction had a positive impact on the educational experience. These findings clearly support the existing research base (Aziz, 2006; Glasgow & Keim, 2005; Keim & von Destinon, 2008; Tung, 2007; Witt, 2003; Yang, 2001).

Although it appears that there was consensus among students and instructors as to the value of this instructional delivery method, contradictions emerged between the groups' opinions and reported practices. Study findings revealed that many instructors continue to utilize teacher-centered instructional strategies in these courses rather than student-centered ones, although student-centered strategies have been shown to have a greater impact on teaching and learning and to be more effective in technology-enhanced environments (Casanova, 2004; Ehrmann,

1995; Jonassen & Reeves, 1996; McCombs, 2000). This finding is consistent with the literature and other studies that have been conducted (Lowerison et al., 2006; Resnick, 1987, Svinicki, 1999; Warren, 2003). This study also revealed that the tools used least between the two groups were chats, discussion boards, content-related websites, quizzes, and online assessments, suggesting that the CMS tools designed to engage the student in the learning process and to promote active learning are largely ignored, further supporting the notion that the active learning environment is taking a backseat to the more passive one. This, despite the fact that research suggests that learning is an active process and that in order for students to gain a deeper understanding of the subject matter, they must actively use the tools available to them (Brown, Collins, & Duguid, 1989). Without this link between the learning tools housed within CMSs and appropriate pedagogy, some researchers question the true impact on learning (Laurillard, 2002; Lowerison et al., 2006).

Research Question 2

In exploring the implications of student opinions on Web-enhanced instruction and its value to the educational experience, this study produced several notable findings along with several contradictions. For students, race/ethnicity, enrollment status, and hours spent using the computer had the broadest impact on student opinions. Given the nature of Web-enhanced instruction and its reliance on the computer, one would expect that student opinions would be influenced by the number of hours spent using it and that students who rarely used the computer would have a less favorable opinion toward Web-enhanced instruction than those who used it more frequently. Similarly, the fact that part-time students had more favorable opinions than full-time students could be explained by the convenience of 24-7 access along with increased student-instructor interaction, student collaboration, and feedback. However, the influence of

race/ethnicity on student opinions presented some interesting findings. African American students had a more favorable outlook on Web-enhanced instruction than students who were White or of other races/ethnicities. This finding was interesting in light of the socioeconomic factors that often present barriers for this group in terms of technology and access (U.S. Department of Commerce, 2004). However, as discussed previously, because only African American students already enrolled in Web-enhanced courses participated in the study, the technology barriers typically associated with this group may not have been an issue, which could have reduced the frustrations caused from lack of access that might have negatively impacted their opinions.

Although generational membership did not rise to the level of influence that race/ ethnicity, enrollment status, and hours using a computer did, the data revealed several noteworthy contradictions in light of the importance technology reportedly plays in the lives of Millennial students (Coomes, 2004; Oblinger, 2003), the collaborative and team-oriented spirit of this group (Elam et al., 2007), and the importance of focused feedback (Coomes & DeBard, 2004; Howe & Strauss, 2000). These findings clearly contradict the literature relating to the Millennial cohort, which indicates the need for technology-enhanced classes, feedback, and collaboration.

Research Question 3

Personal and professional characteristics had less of an impact on instructor opinions than student characteristics had on their opinions. Still, there were several characteristics that did broadly influence their opinions. Hours spent participating in professional development activities was the characteristic that most widely impacted instructor opinions. Although the number of hours that instructors spent involved in these activities influenced their opinions, in most cases, it

was the instructors who had spent no time participating in professional development activities who had less favorable opinions of Web-enhanced instruction. Interaction with students also broadly influenced instructor opinions. The “less is more” principle applied to this characteristic. Although the opinions of instructors who spent time interacting with students outside the classroom were positive, the more time they spent with them, the less positive their opinions became. The impact of race/ethnicity, employment status, part-time teaching experience, and Internet access point was minimal in terms of the breadth of their influence. The remaining characteristics had no impact on their opinions at all.

Several issues were identified that provided the rationale for this study. First and foremost, because of the relatively short time that Web-enhanced courses have been available to students and their explosive growth during this period, the research base was very limited, particularly as it related to the community college. For the most part, the results of this study did not produce any new findings. Instructors continue to use teacher-centered instructional strategies rather than those that are more student-centered. Instructors continue to favor course management system tools designed to facilitate the management of the course while continuing to ignore those tools designed to enhance learning. Several findings emerged that appeared to contradict the literature. Perhaps the most noteworthy finding related to Millennial students and the fact that older cohort groups had more positive opinions toward this instructional delivery method than the younger, more technology-savvy group, as well as the fact that Millennials reported being less likely to take another Web-enhanced course. Another finding worth noting that appeared to contradict the literature is the positive opinions that African American students had toward courses that were Web enhanced, suggesting that some of the barriers that are often

cited in the literature may be lowering for African American students when it comes to technology.

Limitations

There were several limitations associated with this study. Some were identified prior to the study; others emerged during the course of the study. Following is a list of limitations:

1. The sample itself was a limitation. Because there is only one institution in the Alabama Community College System that is designated suburban according to the Carnegie 2005 Basic Classification, it was difficult to determine if the data generated were representative of the institution or the institutional type. Similarly, only one urban institution participated in the study because the other institution was not yet offering Web-enhanced courses, leading to additional concerns regarding the generalizabilty of the study.

2. The response rate for online surveys is typically low. However, the researcher anticipated that because instructors in the sample had taught a Web-enhanced course in the past or were currently teaching one of these courses, they would possess the technological skills needed to complete the online surveys and access to the surveys would be readily available to them, thereby minimizing the limitation. Although the response rate (45%) exceeded that which generally is associated with online surveys, it was still low in terms of the generalizabilty of the results (Ladico et al., 2006).

3. Only students present the day the onsite student survey was administered responded to the survey. Consequently, the data collected were limited to those participants.

4. The data collected were self-reported. Differences in perceptions could have led to misreported data.

5. Although the courses were randomly selected, there was an inordinate number of students in the sample whose majors were related to the health sciences, primarily licensed practical nursing and registered nursing. This can be attributed to the fact that the science courses (i.e., Anatomy and Physiology) are among those required of health-related fields.

Delimitations

A delimitation of this study was that the instructor sample only included those who were teaching or had taught a Web-enhanced course. This had the potential to introduce bias into the study because instructors not teaching these type courses may have had strong opinions for not utilizing this instructional methodology. However, because many of the items in the survey instruments were very specific to CMSs, it was the researcher's opinion that those participating in the survey needed to be familiar with these systems and the tools they offered to be able to make informed responses to the survey items.

Implications for Policy

The results of this study revealed that instructors and students perceive Web-enhanced instruction to positively impact the educational experience. Yet, the instructional practices reported by instructors and students suggest that the full potential of CMSs, from a teaching and learning perspective, is not being maximized. Consequently, the results indicate several implications for policy as it relates to institutional vision and organizational support.

Bates (2000), who studied technology deployment at several colleges and universities, contended that a decisive factor in programs where technology was being used effectively for teaching and learning was leadership. According to the author, "without leadership and a strong sense of support for change in an organization, the barriers of inertia will be too great" (p. 43). The author asserted that leadership is not the responsibility of one individual. Rather, it is shared

among senior management within the institution and includes sharing a vision as it relates to teaching and learning and providing support for and facilitating the effective use of technology to work toward that vision.

Given the motivations that originally led many institutions to embrace Web-enhanced instruction such as competition (Bates, 2000) and fear (Broskoske and Harvey, 2000), senior management at each institution should consider conducting an internal review of the commitment to and planning for technology in terms of teaching and learning and Web-enhanced instruction. Bates recommended eight strategies that, if implemented, would facilitate the "effective planning and management of technology-based teaching and learning" (p. 42). In the author's view, developing a vision in terms of the use of technology for teaching and learning was the most significant of them all. Keengwe, Kidd, and Kyei-Blankson (2009) also stressed the importance of a sound vision in their discussion of effective leadership and faculty development as it related to technology. However, a cursory review of the websites and catalogs of the institutions participating in this study revealed that the majority of them did not have published vision statements. Of the three who did, technology as an integrated part of the academic program was not among them.

One could easily conclude that the institutions participating in this study have some degree of commitment to Web-enhanced instruction and technology-infused teaching and learning because technology resources and training opportunities have been made available to instructors and students. However, a recommendation for policy would be that college leaders, faculty, and students at each community college revisit the institutional commitment to this instructional delivery method and to technology in the classroom. If the determination is made that a strong commitment exists, it is recommended that each institution revisit its vision

statement to make sure that technology in terms of teaching and learning is represented and that it be broadly, clearly, and repeatedly communicated to all constituents (Bates, 2000). For those institutions committed to technology-enhanced instruction that do not currently have a vision statement or that have a vision statement that does not address this area, it is recommended that the senior leadership develop one with broad-based input from instructors and students. Bates argued that without the buy-in of these two groups, the institutional vision will fail. Once the vision has been confirmed, revised, or created, it is recommended that goals and objectives be reviewed and revised as needed through the strategic planning process at the institutional and departmental levels to ensure that the vision as it relates to technology-based teaching and learning is supported. The results of these activities will drive the development of policy in terms of technology-based teaching and learning.

Organizational support is another critical area that affects the effectiveness of teaching and learning from a technological perspective (Keengwe et al., 2009). In fact, several of Bates' (2000) strategies for successful implementation of teaching and learning practices in terms of technology would fall under this umbrella. Consequently, once the review of the institutional vision is complete and the goals and objectives of the institution and academic programs are in place, the organizational support currently provided to instructors along with related, established policies and procedures should be examined to ensure that they reflect and support the institution's vision and goals and objectives.

Within the broad context of organizational support, there are several policies relating to instructor development, staffing support, and assessment, that, if not already in place, should be considered for adoption. Research has shown that these areas are factors that influence instructors' level of technology integration (Adams, 2002; Bates, 2000; Dusick & Yildirim,

2000; Jackowski, 2005; G. Walker & Johnson, 2008). Implementation of appropriate policies relating to training and development, staffing support, and assessment will not only strengthen the effectiveness of Web-enhanced instruction from a teaching and learning perspective, but it will also help to communicate the institution's commitment to this mode of delivery (Bates, 2000). A discussion of these areas in terms of policy follows.

Instructor Development

As noted earlier in this chapter, findings suggest that institutions have been providing professional development activities that focus on how to use the tools provided through their CMSs along with strategies to enhance teaching and learning using those tools; however, it appears that many instructors continue to use these applications as static places in which to store syllabi and other course materials rather than taking advantage of the dynamic systems into which they have evolved. Moreover, many instructors continue to use teacher-centered instructional strategies rather than those that are student-centered in these courses. As the popularity of Web-enhanced instruction grows, it is clear that administrators should continue to make professional development as it relates to Web-enhanced instruction a priority. G. Walker and Johnson (2008) found that providing training on courseware tools to instructors new to the technology can increase the effectiveness of delivery. In an earlier study, the authors found that the performance of instructors who believed in the effectiveness of this delivery method often was enhanced along with their intent to use it (G. Walker, 2005). In this study, instructors who reported no professional development training in courseware or teaching techniques had less favorable opinions than those who did. This lack of training could have resulted in ineffective course delivery, which could have led to lower opinions. Consequently, it is recommended that institutional policy require instructors teaching Web-enhanced courses to complete a minimum

number of hours in the effective use of CMSs and the use of instructional strategies that promote active learning prior to teaching a course of this type.

Professional development should not stop with the delivery of the first Web-enhanced course. Boyle, Lamprianou, and Boyle (2005) found that it was the sustained participation in training that led teachers to change one or more of their instructional techniques. Moreover, G. Walker and Johnson (2008) found that providing update training can increase the effectiveness of Web-enhanced instruction in achieving identified learning outcomes. Consequently, instructors who continue to teach Web-enhanced courses should be required to take periodic refresher courses to reinforce the effective use of course management tools and active learning instructional strategies and to expose them to new technologies and best practices.

As a cautionary note, administrators should be mindful of the number of hours mandated for these activities. This study revealed that the number of hours spent participating in professional development activities influenced instructor opinions. This finding was supported in the literature (Parsad, Lewis & Farris, 2001). Consequently, it is recommended that administrators make a conscious effort to ensure that training programs are efficiently delivered so that instructors see the value in required training. Relevance of training programs is just as important as efficiency. Including seasoned instructors of Web-enhanced courses who embrace this methodology and the instructional strategies that maximize its effectiveness in the development of training programs will help to ensure the relevancy of training and may help to promote buy-in from other instructors and make them more receptive to training mandates.

Staffing Support

Dusick and Yildirim (2000) found that nonusers of educational technologies were influenced by the level of organizational support available to them. Jackowski (2005), and G.

Walker (2005) found that organizational support was among the factors that not only influenced instructors' decision to teach Web-enhanced courses but also the level at which this delivery method was used. It should be the policy of every institution committed to Web-enhanced instruction to provide adequate support to instructors in terms of training, curriculum development, and instructional design. Admittedly, this policy does not come without a price. Although Bates (2000) argued for the need for technology support, he acknowledged that "technology and instructional design support is the straw that may break the back of institutions that really want to use technology for teaching in a major way" (p. 106). Given the current state of the economy and in light of budget shortfalls facing Alabama's 2-year colleges, this could very well be true for the state's community colleges. Still, the ramifications of not providing appropriate support could outweigh the costs. Failing to make the support services available to instructors could impact their willingness to teach these courses as well as the effectiveness of the courses delivered (G. Walker & Johnson, 2008).

Assessment

Heines (2000) contended that "one must recognize that the fact that students react favorably to a course Web site is not evidence that they actually learn better because of it" (p. 57). According to Bates (2000), effective assessment strategies give college leaders and faculty valuable insight into the role that technology plays in teaching and learning and its impact on student populations that are increasingly more diverse. Again, because many institutions moved into the realm of Web-enhanced instruction without the benefit of much empirical data, for those institutions that do not yet have a formal assessment program in place, it is recommended that institutional leaders formalize the assessment of Web-enhanced courses and develop policies and procedures to support the ongoing evaluation and continuous improvement

of these courses. This requires a policy that includes strategies for the effective dissemination and use of assessment results.

Implications for Practice

Several implications for practice emerged as a result of this study. Although this study focused on opinions as they related to Web-enhanced instruction, once could argue that the effectiveness of the courses for which students and instructors were surveyed influenced those opinions. Ultimately, it is the instructor who controls whether the course management system will be used as a teaching tool or a course administration tool. In light of this fact, a sustained focus on instructor training in terms of the effective use of the tools provided through these systems is clearly needed. Equally important is the need for training on the use of student-centered instructional techniques, because research has shown that students learn more effectively in active learning environments than in passive ones (Laurillard, 2002; von Glasersfeld, 1991). A well-designed training program can address both of these needs. In addition to an effective instructor development program, college leaders should provide instructors access to additional internal and external resources so that they can continue to develop and improve their courses. Finally, the value of student-instructor interaction should be clearly communicated and embraced by both instructors and college administrators.

Instructor Development Program

This study clearly showed that the majority of instructors are not utilizing the tools within the course management system that are designed to engage learners in the teaching and learning process even though most instructors reported having participated in professional development activities on the topic. Although it is not clear why instructors are hesitant to use these tools, a review of existing training programs may be warranted. G. Walker (2005) asserted that

instructors need to be trained on the use of course management system tools in order to effectively deliver Web-enhanced courses. However, the results of a study by the American Productivity & Quality Center (APQC, 1999) focusing on the practices of seven best-practice organizations, a community college among them, should challenge institutional leaders to rethink how technology training for instructors is developed and delivered. In the APQC study, researchers suggested that programming should (a) focus less on technology and more on teaching and learning, (b) use a team approach to course development and design, and (c) incorporate problem-based learning (PBL) into the design.

Utilizing the PBL approach in faculty development initiatives would address at least two of the recommendations in the APQC study. Mayer (1998) contended that

> problem-solving skills should be learned within the context of realistic problem-solving situations. Instead of using drill and practice on component skills in isolation—as suggested by the skill-based approach—a meta-skill based approach suggests modeling of how and when to use strategies in realistic academic tasks. (p. 53)

Although Mayer's (1998) contention predates Web-enhanced instruction and the CMS, the same principles would apply. Moreover, this approach would allow instructors to focus on the CMS from a teaching and learning perspective rather than a technology perspective. This is a critical piece of the puzzle because the majority of instructors continue to embrace the instructor-centered teaching approach, which is due, in part, to the way they were taught (Brookfield, 2002). Moreover, because instructors are often hired from industry, many of them lack knowledge of educational theory and online pedagogy. This is particularly true for part-time instructors (Wallin, 2004), which will require a separate discussion regarding compensation. From a teaching and learning perspective, this approach would provide a modeling opportunity for student-centered, active learning, because this approach has been shown to actively engage students in the learning process while immersing them in activities intended to address real-

world problems (Evensen & Hmelo, 2000). For example, instructors could be asked to develop a lesson for a Web-enhanced course based on constructivist principles and utilizing the tools within the CMS. Again, technology would not be the focus; however, issues relating to the application of the technology could be addressed by the trainer facilitator as they emerged.

In addition to the PBL approach for instruction, institutional leaders should also examine the current delivery format to ensure that it models a Web-enhanced course. In other words, professional development activities should be delivered in a blended format utilizing the CMS and the tools that promote active learning. Dziuban, Hartman, Juge, Moskal, and Sorg (2006) advocated the blended learning approach in the delivery of professional development training. This would be yet another opportunity to model expectations for Web-enhanced delivery of instruction and reinforce the institutional commitment to this type of instruction.

For those institutions that do not have formal faculty development programs or that have limited financial resources and wish to supplement their existing training initiatives, the League for Innovation in the Community College, an international, member-based organization committed to the advancement of community colleges, offers a free, faculty development program called *Getting Results*. The program includes six modules—Creating a Community of Learners, Planning for Outcomes, Active Teaching and Learning, Moving Beyond the Classroom, Teaching with Technology, and Assessing Teaching and Learning—all of which provide educators with the theoretical principles behind effective teaching and strategies to enhance the teaching and learning process. This program could be adapted to include face-to-face interaction. To further enhance the training initiative, there are several additional tools that could be integrated into the faculty development program. For example, allowing for peer observations, providing access to relevant research, and sharing best practice examples are all

useful tools that should be utilized to help instructors step out of their comfort zone in terms of how they integrate the course management system into their courses and the way they teach.

Organizational Support

In terms of organizational support, there are a number of internal and external resources and/or strategies available to community colleges that would provide additional support to instructors teaching Web-enhanced courses. These include membership in recognized organizations that advance Internet-based instruction, the establishment of a community of practice (COP), and the implementation of a mentoring program for new instructors of Web-enhanced courses. Several member-based organizations such as EDUCAUSE, Sloan-C, and the League for Innovation in the Community College provide excellent resources relating to the effective delivery of Web-enhanced instruction, along with networking opportunities for instructors. Additionally, an institutional community of practice (COP) for instructors teaching Web-enhanced courses would provide a forum for them to share ideas, frustrations, and best practices regarding this instructional delivery model. According to Wenger (1998), a COP is simply a group that shares a common interest in something and uses the interaction with the COP to improve it. Moreover, allowing seasoned, effective Web-enhanced faculty to mentor instructors who are new to this instructional delivery method would help make the transition from face-to-face to Web-enhanced instruction easier and the delivery of these courses more effective. Finally, the adoption of a continuous improvement program such as Quality Matters (QM), a nationally recognized "faculty-centered, peer review process designed to certify the quality of online courses and online components" would help to define the expectations for this delivery method and reinforce the institutional commitment to quality in its Web-enhanced courses (*Welcome to Quality Matters,* ¶1). This will become increasingly important as the

popularity of these courses grows and student expectations for technology integration continue to shift as more Millennials enter college.

Student-Instructor Interaction

The criticality of student-instructor interaction to the education experience is supported in the literature. As noted earlier, it has been proven to enhance learning; to promote intellectual development (Pascarella & Terenzini,1991), student development (Astin, 1984; Chickering, 1969; Chickering & Ehrmann, 1996; Kuh, 1993), and student involvement (Astin, 1984); and to increase persistence (Astin, 1977, 1993; Pascarella & Terenzini, 1991). Given the impact of this activity on the educational experience, administrators should promote awareness of the value of student-interaction among the faculty. Although the study findings revealed that most full-time instructors are taking the time to interact with their students outside the classroom, fewer part-time instructors are spending time with students when not in class. According to Hartleb and Vilter (1986), institutions typically do not pay adjunct instructors for course-related activities that occur outside the classroom. Therefore, this finding confirmed what was expected. However, because of the importance of instructor interaction with students, institutions should consider compensation models that allow time for part-time instructors to interact with students outside of scheduled classes.

Recommendations for Future Research

Although this study focused on community college student and instructor attitudes toward Web-enhanced instruction and its value to the teaching and learning process, the exercise clearly identified the need for additional, more directed research into this increasingly popular instructional delivery method. Five years ago, 31% of public 2-year colleges utilized course management software in their classes (EDUCAUSE, 2005). In addition to this increased growth,

the continued influx of technology-savvy students, a population that represented 51% of students attending public 2-year colleges in 2003 (National Center of Education Statistics [NCES], 2006a), will bring with them different expectations when it comes to technology, teaching, and learning than those of previous generations (Skiba & Barton, 2006). Moreover, little research has focused specifically on community colleges as it relates to Web-enhanced instruction. These factors alone justify the need for more research. However, several additional factors that emerged during the course of this study further justify this need. First, the study did not examine the impact of this instructional delivery method on learning outcomes and other indicators of student success. Yet, positive opinions relating to Web-enhanced instruction are not necessarily indicators that better learning is taking place (Heines, 2000). Given the institutional resources allocated for technology-based instruction, there is a continued need for research into the true impact of Web-enhanced instruction on learning. A review of the literature produced several calls for this type research (Aziz, 2006; Hyllegard & Burke, 2002; Witt, 2003). Although a number of studies have explored the effectiveness of specific CMS tools such as discussion boards and online assessments, much of this research focused on traditional, 4-year college students. Consequently, the effect of these tools on learning as it relates to community college students would provide instructors insight as to how best to utilize these tools to maximize learning. Additionally, comparison studies focusing on the impact of the CMS on learning based on the level of integration of these tools would further inform practice. Sutton and Nora (2009) called for similar research on tool use and level of use. This is particularly important because many instructors continue to embrace more traditional, instructor-centered approaches to learning, which suggest that they are not using tools within the CMS that have been shown to impact learning.

Second, although unintended, the study sample was skewed too heavily toward the health sciences (67.3%). Although there have been calls for more directed studies in terms of academic disciplines and specific degree programs (G. Walker & Johnson, 2008), Sanders and Morrison-Shetlar (2001) called for broadening the research scope so that findings are generalizable to the larger audience rather than individual programs. Again, given the lack of existing research relating to community colleges and Web-enhanced instruction and the institutional resources dedicated to this instructional strategy, more research on its effect from a broad perspective would better serve institutional leaders and instructors than those focusing on a small number of courses.

Third, the study purposely did not examine the perception of instructors who taught and students who were enrolled in the same courses. G. Walker (2005) called for comparison studies involving student and instructor opinions to better understand how Web-enhanced instruction impacts learning. Because this study's sample groups were purposely selected from different courses, it stands to reason that there were differences in the quality and effectiveness of the targeted courses on which their opinions were based. In retrospect, exploring the opinions of instructors and students who are teaching and learning in the same courses would have allowed the investigator to collect data and to make comparisons based on the same point of reference. This would have provided additional insight into the value of Web-enhanced instruction on the educational experience.

In light of the paucity of research that exists on the topic from a broad perspective, it follows that additional research into the influence of student and instructor characteristics is needed. According to Sankaran, Sankaran, and Bui (2000), this type of research would help to explain the use of CMSs in college environments. This is particularly important for community

college students who face unique challenges as compared to typical traditional 4-year college students (Cohen & Brawer, 2003). Moreover, in light of the contradictions this study produced regarding Millennials and their opinions toward Web-enhanced instruction, the fact that this population will continue to grow only fuels this need. Although not targeting community college students specifically, Pan (2003) and others (Aziz, 2006) noted the need for more research into the relationships between student characteristics and opinions related to Web-enhanced instruction.

For the most part, instructor opinions were not heavily influenced by personal and professional characteristics. However, study findings suggested that instructors are not maximizing the use of the CMS as a learning tool. Moreover, it appears that instructors continue to embrace more traditional methods of teaching, practices that typically are associated with more passive learning environments. In an effort to inform practice, additional research into CMS usage patterns and teaching techniques and how these factors influence learning is needed.

Conclusion

In the early 1800s, the chalkboard transformed education in the United States. Two hundred years later, the same could be said for the computer. The use of Web-enhanced instruction has experienced unprecedented growth in the last decade; and as the Millennials flood college campuses, the popularity of this instructional delivery method is likely to continue. This form of instructional technology brings with it a number of challenges—for students, for instructors, and for community college leaders. As a younger generation of learners, along with an increasing number of nontraditional students, takes up more seats in community college classrooms and an older generation of instructors attempts to help them navigate through the teaching and learning process, issues relating to access and effective teaching practices will

continue to surface. Similarly, as institutional administrators try to meet the needs and expectations of incoming students as well as instructors, they will continue to face issues relating to value, resource management, and support.

Will Rogers once said, “Even if you're on the right track, you'll get run over if you just sit there.” The same is true for Web-enhanced instruction. Institutions moved into this realm of instruction with little empirical research. Although a number of studies focusing on Web-enhanced instruction have been conducted, few concentrate specifically on the community college and the unique circumstances of many of its students. Fewer still examine the impact of this instructional strategy on the educational experience. Consequently, additional research is needed to inform practice and educational policy.

The primary purpose of this study was to explore student and instructor perceptions toward the impact of Web-enhanced instruction on the educational experience of community college students. Additionally, the study sought to determine if student and instructor opinions differed based on identified personal and professional characteristics. Findings indicate that the overwhelming majority of both students and instructors perceive Web-enhanced instruction to have a positive impact on the educational experience, despite many instructors failing to capitalize on the course management tools designed to promote active learning and continuing to employ teacher-centered instructional practices in the classroom. Although the influence of identified student and instructor characteristics was less definitive and harder to explain within the context of the seven vectors, findings suggest that for students, race/ethnicity, enrollment status, and hours of computer use more broadly influenced their opinions in terms of the seven vectors and, in some cases, were predictors of their opinions. Likewise, hours spent participating

in professional development activities and interacting with students broadly influenced instructor opinions.

In light of the findings of this study, primarily those that relate to student and instructor opinion and instructional practice, one has to ask, although Web-enhanced instruction is perceived to enhance the educational experience by students and instructors alike, does it really? Student and instructor opinions should not be discounted; they do provide valuable insight into this topic. However, more research that takes a holistic approach to the inquiry clearly is needed before this question can be answered.

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APPENDIX A

DEFINITIONS

DEFINITIONS

1. Asynchronous Communication. "Non-synchronous, two-way communication in which there is a delay between when a message is sent and when it is actually received. In distance learning, asynchronous communications most often take the form of email …, voicemail …, and discussion boards" (Distance Learning Glossary, e-Learners.com).
2. Broadband. "As opposed to the connection speeds and capacity that one can obtain over a phone line with a modem, a broadband connection can accommodate the rapid transfer of large amounts or packets of information. Generally, Internet connections provided by cable or DSL are broadband" (Distance Learning Glossary, e-Learners.com).
3. Chat. "When two or more users communicate in real-time by typing messages which are sent instantly within the chat room or instant messaging program. In distance learning, a chat may be used for a class discussion, or so that students may ask the instructor questions or receive feedback from an instructor as a group" (Distance Learning Glossary, e-Learners.com).
4. Course Management System (CMS). "The software, usually web-based, … that facilitates distance learning by centralizing the development, management, and distribution of instructional-related information and materials. A CMS provides faculty with a set of tools that allows the easy creation of course content —syllabi, course modules, lecture notes, assignments, tests and quizzes, etc.—and is the framework in which they teach and manage the class (Distance Learning Glossary, e-Learners.com)." In addition to giving students access to course information and materials, a gradebook, and other static resources, a CMS also provides the instructor and students a forum through which they can interact through the use of discussion boards, chat features, and the submission of assignments, among other things.

5. Educational experience. The purposeful activities of students occurring on or off campus that lead to increased learning and development (Kuh, 2001). For the purposes of this study educational experience is defined by the *Seven Principles for Good Practice in Undergraduate Education* (Chickering & Gamson, 1987) which asserted that "good practice in undergraduate education:"
    - Encourages contacts between students and faculty.
    - Develops reciprocity and cooperation among students.
    - Uses active learning techniques.
    - Gives prompt feedback.
    - Emphasizes time on task.
    - Communicates high expectations.
    - Respects diverse talents and ways of learning. (p.1)

1. e-Learning. "Any learning the utilizes a network (LAN, WAN, or Internet) for delivery, interaction, or facilitation. This would include distributed learning, distance learning (other than pure correspondence), CBT delivered over a network, and WBT. Can be synchronous, asynchronous, instructor-led or computer-based or a combination" (Distance Learning Glossary, eLearners.com).
2. Face-to-Face. "A term used to describe a 'traditional' classroom environment where the instructor and students are not separated by geographic distance or time" (Distance Learning Glossary, eLearners.com).
3. Synchronous Communication. "Live, real-time communication" (Distance Learning Glossary, eLearners.com).

4. Threaded Discussion. “A common feature of distance learning that allows students to interact with their classmates and instructor. A threaded discussion is a series of messages on a particular topic posted in a discussion forum. A threaded discussion is asynchronous, not fixed in time or space, so students can log on at any time from an Internet-enabled computer to seek clarification for issues they encounter in their coursework, to discuss topics raised in class, or to initiate new discussions on related topics” (Distance Learning Glossary, eLearners.com).
5. Web-enhanced course. A traditional face-to-face course that utilizes a course management system (e.g., Blackboard®, eCollege®, etc.) as a supplemental tool to enhance teaching and learning without sacrificing face-to-face instruction (Burge et al., 2000; Frey et al., 2003; Landry et al., 2006; Sanders & Morrison-Shetlar, 2001).

APPENDIX B

ALABAMA COMMUNITY COLLEGES AND THEIR CARNEGIE CLASSIFICATIONS

ALABAMA COMMUNITY COLLEGES AND
THEIR CARNEGIE 2005 BASIC CLASSIFICATIONS

Rural-Serving Institutions

Alabama Southern Community College Monroeville	Associate's Public Rural-serving Small
Bevill State Community College Sumiton	Associate's Public Rural-serving Medium
Central Alabama Community College Childersburg	Associate's Public Rural-serving Medium
Chattahoochee Valley Community College Phenix City	Associate's Public Rural-serving Medium
Enterprise-Ozark Community College Enterprise	Associate's Public Rural-serving Medium
Gadsden State Community College[1] Gadsden	Associate's Public Rural-serving Large
Jefferson Davis Community College Brewton	Associate's Public Rural-serving Small
John C. Calhoun State Community College Huntsville	Associate's Public Rural-serving Large
Marion Military Institute Marion	Associate's Public Rural-service Small
Northwest Shoals Community College[1] Muscle Shoals	Associate's Public Rural-serving Medium
Northeast Alabama Community College Rainsville	Associate's Public Rural-serving Medium
Shelton State Community College[1] Tuscaloosa	Associate's Public Rural-serving Large
Snead State Community College Boaz	Associate's Public Rural-serving Small
Southern Union State Community College[1] Wadley	Associate's Public Rural-serving Medium

George C. Wallace Community College[1] Dothan	Associate's Public Rural-serving Large
George C. Wallace Community College Hanceville	Associate's Public Rural-serving Large
George C. Wallace Community College Selma	Associate's Public Rural-serving Large
Lurleen B. Wallace Community College[1] Andalusia	Associate's Public Rural-serving Small

Suburban-Serving Institution

Faulkner State Community College[1] Bay Minette	Associate's Public Suburban-serving Multicampus

Urban-Serving Institutions

Bishop State Community College [1] Mobile	Associate's Public Urban-serving Multicampus
Jefferson State Community College[1, 2] Birmingham	Associate's Public Urban-serving Multicampus
Lawson State Community College[1] Birmingham	Associate's Public Urban-serving Multicampus

[1]Institutions targeted for the study.
[2]Jefferson State Community College is classified as an Urban institution under the Carnegie 2005 Basic Classification System. However, the institution was purposefully selected as a suburban institution for this study.

APPENDIX C

INSTRUCTOR SURVEY INSTRUMENT:
INSTRUCTOR OPINIONS TOWARD THE IMPACT OF WEB-ENHANCED INSTRUCTION ON THE EDUCATIONAL EXPERIENCE

Zoomerang

PRINT CLOSE

Instructor Opinions toward the Impact of Web-Enhanced Instruction on the Educational Experience

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts students' educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time. This survey is anonymous.

Section I: Web Enhanced Instruction

Because this class uses Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental learning tool, my students are more likely to:

1 ask for clarification when they do not understand something.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

2 communicate with me outside the classroom.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

3 receive my comments quickly within 48 hours.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

4 receive detailed comments from me.

Strong Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

5 actively participate in the course.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

6 actively participate in online discussions more than they do in face-to-face discussions.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

7 discuss ideas and concepts taught in this course with me.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

8 discuss ideas and concepts taught in this course with other students.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

9 work on assignments with other students.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

14 refer to the course syllabus posted online before asking me about course requirements throughout the term.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

15 monitor their progress in the course using the online gradebook.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

SUBMIT

Instructor Opinions toward the Impact of Web-Enhanced Instruction on the Educational Experience

Because of the way this course uses Blackboard®, WebCT®, e-Learning®, or e-College®

16 my students are better able to understand the ideas and concepts taught in this course.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

17 my students say that they would take other courses that are web-enhanced.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

18 my students are more likely to tell me when they have a comment or complaint about the course.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

19 my students' educational experience has been enhanced.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

20 My students complain that they spend too much time trying to gain access to a computer.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

21 My students complain that they spend too much time trying to log on to Blackboard®, WebCT®, e-Learning®, or e-College® on the Internet.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

22 I spend too much time having to teach students how to use the technology.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

23 My students are at a disadvantage because they do not possess adequate computer skills.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1	2	3	4	5

24 How do you integrate the tools provided through Blackboard®, WebCT®, e-Learning®, or e-College® into this class (select all that apply)?

- I post my course syllabus.
- I post course announcements.
- I post my contact information so that students know how to reach me.
- I post lecture notes for students to review.
- I post other course materials for students to review.
- I post links to other sites to support and/or enhance the ideas/concepts taught in the course.
- I use discussion boards to engage students in asynchronous discussions.

- I use the chat room to engage students in synchronous discussions.
- I use self-assessments to allow students to monitor their level of understanding of key concepts.
- I use online examinations to check for mastery of key concepts.
- I use e-mail to communicate with students individually.
- I use e-mail to communicate with the class as a whole.
- I allow students to use the electronic submission tools to send me assignments/ assessments.
- I post student grades in the grade book so students can monitor their progress in the course throughout the term.

25

Please rate the frequency in which you use the following Blackboard®, WebCT®, e-Learning®, or e-College® tools in this course with 1 being ***I never use this tool*** and 5 being ***I always use this tool***:

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always	I'm not familiar with this tool.
Announcements	1	2	3	4	5	
Faculty Information	1	2	3	4	5	
Discussion Boards	1	2	3	4	5	
Chat Rooms	1	2	3	4	5	
Assessments	1	2	3	4	5	
Syllabus	1	2	3	4	5	
Course Documents (uploading materials to site)	1	2	3	4	5	

e-mail

1 2 3 4 5

Electronic Submission Tools

1 2 3 4 5

On-line Grade Book

1 2 3 4 5

SUBMIT

Instructor Opinions toward the Impact of Web-Enhanced Instruction on the Educational Experience

Section II: Personal Characteristics

26 What is your age?

27 What is your gender?

Male	Female
1	2

28 What is your race/ethnicity?

American Indian/ Alaskan Native	African American/ Black	Asian/Pacific Islander	Hispanic/Latino	White	Other
1	2	3	4	5	6

29 What is the highest degree you have earned from any college or university?

Certificate	AA or AAS	BA or BS	MA or MS	PhD or EdD	JD	MD	Other	I do not have an earned degree
1	2	3	4	5	6	7	8	9

30 During the 2007-08 academic year, what was your employment status at the college?

Part-time	Full-time	I was employed both part-time and full-time during the 2007-08 academic year
1	2	3

31 How many years of **full-time** teaching experience do you have?

None	Less than 1	1-5	6-10	11-15	16-20	More than 20
1	2	3	4	5	6	7

32 How many years of **part-time** teaching experience do you have?

None	Less than 1	1-5	6-10	11-15	16-20	More than 20
1	2	3	4	5	6	7

33 In what discipline do you teach primarily?

34 I am able to access the Internet

at home	at the college	at home and at the college
1	2	3

35 During the past year, **in a typical week** how many **hours** did you spend **using a computer for any reason at home**?

No computer available	Less than 1	1-2	3-5	6-10	11-20	More than 20
1	2	3	4	5	6	7

36 During the past year, **in a typical week** how many **hours** did you spend **using a computer for any reason at work**?

No computer available	Less than 1	1-2	3-5	6-10	11-20	More than 20
1	2	3	4	5	6	7

37 How many hours of professional development activities relating to Blackboard, WebCT, E-Learning, or e-College and/or web-enhanced instruction did you complete in the 2007-8 academic year?

None	1-4	5-8	9-12	13-16	17-20	More than 20
1	2	3	4	5	6	7

38 If you participated in professional development activities relating to Blackboard®, WebCT®, e-Learning®, or e-College® and/or web-enhanced instruction in the 2007-08 academic year, what topics were addressed?

- How to use the tools provided in Blackboard®, WebCT®, e-Learning®, or e-College®
- Strategies to enhance teaching and learning using tools provided in Blackboard®, WebCT®, e-Learning®, or e-College®.
- Both of the above.
- I did not participate in professional development activities that related to Blackboard®, WebCT®, e-Learning®, or e-College® or web-enhanced instruction.

39 On average, how many hours outside class time each week do you spend interacting with students enrolled in this web-enhanced course?

None	Less than 1	1-2	3-5	6-10	More than 10
1	2	3	4	5	6

40 How does this compare with the number of hours outside class time each week you spend interacting with students enrolled in your courses that are not web-enhanced?

- I spend more time interacting with students enrolled in my web-enhanced courses.
- I spend less time interacting with students enrolled in my web-enhanced courses.
- There is no different in the amount of time I spend interacting with students.
- I do not teach courses that are not web-enhanced.
- I do not interact with my students outside scheduled class time.

41

Rate the frequency in which you use the following classroom activities in your web-enhanced courses with 1 **being Never** and 5 **being Always**.

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
Lectures	1	2	3	4	5
Teacher-led discussions	1	2	3	4	5
Student-led discussions	1	2	3	4	5
Case studies	1	2	3	4	5
Group activities	1	2	3	4	5
Student presentations	1	2	3	4	5
In-class writing assignments	1	2	3	4	5
Experiential assignments/activities					

1 2 3 4 5

Hands-on activities

1 2 3 4 5

SUBMIT

APPENDIX D

STUDENT SURVEY INSTRUMENT:
STUDENT OPINIONS TOWARD THE IMPACT OF WEB-ENHANCED INSTRUCTION ON THE EDUCATIONAL EXPERIENCE

FINAL SURVEY

Student Opinions on the Impact of Web-Enhanced Instruction on the Educational Experience

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts your educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time.

This survey is anonymous. Please do not write your name or any other identifying information on it.

Section I: Web-Enhanced Instruction

Because this class uses Blackboard®, WebCT®, e-Learning®, or e-College®, I am more likely to:
(Select one response per item.)

	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1. Ask for clarification when I do not understand something.	❍	❍	❍	❍	❍
2. Communicate with my instructor outside the classroom.	❍	❍	❍	❍	❍
3. Receive instructor comments within 48 hours.	❍	❍	❍	❍	❍
4. Receive detailed comments from my instructor.	❍	❍	❍	❍	❍
5. Actively participate in the course.	❍	❍	❍	❍	❍
6. Actively participate in online discussion more than I would face-to-face discussions.	❍	❍	❍	❍	❍
7. Discuss ideas and concepts taught in this course with my instructor.	❍	❍	❍	❍	❍
8. Discuss ideas and concepts taught in this course with other students.	❍	❍	❍	❍	❍
9. Work on assignments with other students.	❍	❍	❍	❍	❍
10. Complete assignments on time.	❍	❍	❍	❍	❍
11. Take more responsibility for my learning.	❍	❍	❍	❍	❍
12. Work with someone from a racial or cultural background different from my own.	❍	❍	❍	❍	❍
13. I am better able to juggle my course work with my work and/or home responsibilities.	❍	❍	❍	❍	❍
14. Refer to the course syllabus posted online first when I have a question about course requirements before asking my instructor.	❍	❍	❍	❍	❍
15. Monitor my progress in the course by checking the grade book.	❍	❍	❍	❍	❍

Survey continues on following page.

Because of the way <u>this course</u> uses Blackboard®, WebCT®, e-Learning®, or e-College®: (Select one response per item.)

		Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
16.	I am better able to understand the ideas and concepts taught in this course.	❍	❍	❍	❍	❍
17.	I would take other courses that are web-enhanced.	❍	❍	❍	❍	❍
18.	I am more likely to tell my instructor when I have a comment or complaint about the course.	❍	❍	❍	❍	❍
19.	My educational experience has been enhanced.	❍	❍	❍	❍	❍
20.	I spend too much time trying to gain access to a computer or computer terminal.	❍	❍	❍	❍	❍
21.	I spend too much time trying to log on to the course management system (i.e., Blackboard®, WebCT®, e-Learning®, or e-College®) on the Internet.	❍	❍	❍	❍	❍
22.	I spend too much time "surfing" the Internet instead of studying.	❍	❍	❍	❍	❍
23.	I am at a disadvantage, because I do not possess adequate <u>computer</u> skills.	❍	❍	❍	❍	❍

24. How do you use the tools on Blackboard®, WebCT®, e-Learning®, or e-College® in this web-enhanced class? (Select all that apply.)

❍ I refer to the course syllabus that is posted.
❍ I check for course announcements from my instructor.
❍ I get contact information when I need to contact my instructor.
❍ I download and/or review posted lecture notes.
❍ I download and/or review other course materials.
❍ I visit other websites that support and/or enhance the ideas/concepts I am trying to learn by clicking on links provided by my instructor.
❍ I actively participate in online discussions using the discussion board.
❍ I actively participate in online discussions using the chat feature.
❍ I take quizzes so that I can monitor my level of understanding of key concepts in the course.
❍ I take online examinations to check for mastery of key concepts.
❍ I use e-mail to communicate with students in my class.
❍ I use e-mail to communicate with my instructor.
❍ I submit assignments and/or assessments to my instructor electronically.
❍ I monitor my progress throughout the course by visiting the grade book to see my grades.

Survey continues on following page.

25. Please rate how often you use the following Blackboard®, WebCT®, e-Learning®, or e-College® tools in this course:

	Never	Rarely	Sometimes	Often	Always
Announcements	❍	❍	❍	❍	❍
Faculty Information	❍	❍	❍	❍	❍
Discussion Boards	❍	❍	❍	❍	❍
Chat Rooms	❍	❍	❍	❍	❍
Assessments	❍	❍	❍	❍	❍
Syllabus	❍	❍	❍	❍	❍
Course Documents	❍	❍	❍	❍	❍
E-mail	❍	❍	❍	❍	❍
Electronic Submission Tools (e.g., Assignments)	❍	❍	❍	❍	❍
On-line Grade book	❍	❍	❍	❍	❍

Section II: Personal Characteristics

To gather data relative to the participants in this study, please respond to the following items. Remember, this survey is anonymous. There will be no way to determine your identify from the information you provide.

26. What is your age? _____

27. What is your gender? ❍ Male ❍ Female

28. What is your race/ethnicity? (Select only one.)
❍ American Indian/Alaskan native
❍ African American/Black
❍ Asian/Pacific Islander
❍ Hispanic/Latino
❍ White
❍ Other

29. What is your attendance status?

❍ I am taking **12 or more hours of coursework** and am considered **full time**.
❍ I am taking **11 or fewer hours of coursework** and am considered **part time**.

30. What is your employment status?
❍ I work **full time** (35 hours or more per week).
❍ I work **part time** (**less than 35 hours** per week).
❍ I am **not employed** at this time.

31. What is your educational goal?

❍ My goal is to learn the skills needed to get a job; I am not interested in earning an award at this time.
❍ My goal is to earn a certificate.
❍ My goal is to earn a diploma.
❍ My goal is to earn an associate's degree.
❍ My goal is to transfer to a four-year institution to earn a BS degree.
❍ I am undecided about my educational goals at this time.

Survey continues on following page.

32. What is your **current household income**?
❍ Less than $20,000
❍ $20,000-$40,000
❍ More than $40,000

33. I was **raised in a household where the income level** was:
❍ Less than $20,000
❍ $20,000-$40,000
❍ More than $40,000

34. Have you selected your major area of study?

❍ Yes, my major area of study is _____
❍ No, I am undecided about my major area of study at this time.

35. What is the main location from where you access the Internet?

❍ On campus ❍ Home ❍ Work ❍ Other

36. If accessing the Internet from a site other than campus, what type connection do you have?

❍ Dial up modem ❍ Cable modem ❍ DSL ❍ Work LAN ❍ Do not know

37. If accessing the Internet from a site other than campus, how satisfied are you with the speed in which you are able to connect to the Internet?

❍ Very satisfied
❍ Somewhat satisfied
❍ Satisfied
❍ Dissatisfied
❍ Somewhat dissatisfied
❍ Very dissatisfied

38. About how many hours a week do you use a computer (including e-mail) for this course?

❍ Rarely or never ❍ 1-2 ❍ 3-5 ❍ 6-10 ❍ more than 10

Thank you for completing this survey!

APPENDIX E

SAMPLE EMAIL TO INSTRUCTORS TEACHING CLASSES TARGETED FOR SURVEY ADMINISTRATION

Audrey Smallwood

To: Instructor
Subject: ALABAMA COMMUNITY COLLEGE SYSTEM RESEARCH STUDY– REQUEST FOR PARTICIPATION

I am a doctoral candidate at The University of Alabama and a current employee and former student of the Alabama Community College System. I am currently conducting a study that explores student and faculty opinions on the impact of Web-enhanced courses on the educational experience at Alabama's two-year community colleges.

Your institution has been purposefully selected to participate in the study because it offers web-enhanced courses which, for the purposes of this study, are defined as traditional face-to-face courses that utilize a course management system (e.g., Blackboard, e-College, etc.) as a supplemental tool to enhance teaching and learning without sacrificing face-to-face instruction. Your president has granted me permission to conduct the study on your campus.

I have two requests:

1. I would like your permission to survey your students in [insert class name and time].
2. Because this is a statewide survey involving ten different community colleges and I am the sole investigator residing in the central part of the state, I would like to respectfully ask if you would be willing to administer the survey to your students in the event that I cannot be present at the time your class meets. If you are willing to assist me, I would provide you with instructions, a script to follow, copies of a *Statement of Informed Consent* and the survey instrument for distribution, an envelope in which to collect completed surveys, and a self-addressed, stamped envelope in which to return the surveys.

I realize your class time is very valuable and you are under no obligation to assist me with this study. However, my review of the literature on web-enhanced instruction revealed that the research into two-year colleges as it relates to web-enhanced instruction is scarce. Many of the studies that have been conducted to date focus on four-year college and university students. As you know, the diverse student populations typically found on two-year college campuses represent different socioeconomic backgrounds and different experiences and expectations in terms of technology. These differences present difficult challenges for administrators trying to meet the technological needs of instructors and students and instructors trying to meet the needs of all learners. Consequently, the results of this research will contribute to the limited body of knowledge on the subject as it relates to two-year colleges. It will also serve to inform administrators and instructors in two-year colleges within the state of Alabama as they attempt to meet the needs of students.

Thank you for considering this request. If you have additional questions, you may reach me at [redacted] or [redacted].

APPENDIX F

PILOT PROTOCOL AND INTERACTIVE PILOT FEEDBACK FORM FOR INSTRUCTOR PILOT

INSTRUCTOR OPINIONS ON THE IMPACT OF WEB-ENHANCED INSTRUCTION ON THE EDUCATION EXPERIENCE

Pilot Protocol

I appreciate your willingness to help me pilot this survey and to provide me with feedback on your understanding and perception of the survey items. Individual responses will not be reported to anyone. They will be used by me strictly for the purpose of improving the survey instrument.

Purpose of the Survey

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts a student's educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time. This survey is anonymous.

Estimated Time Required: 1 hour to complete the survey and the survey feedback form.

Process

1. Go to http://www.zoomerang.com/Survey/?p=WEB228RG3NA5AD and thoughtfully complete the survey. Be sure and monitor how long it takes you to complete the survey!

2. After you complete the survey, please open the attached file entitled, Interactive Pilot Survey Feedback Form, and indicate whether or not each survey item (unless instructed to do otherwise) was clear, provided an adequate scale (if applicable), and allowed for one response (if applicable). Definitions for these three measures follow:

   - **Clear**: Was the item "understandable?" That is, did you have to read the item more than once to understand what it was asking? Was the meaning of the question clear and straightforward?

   - **Adequate Scale (if applicable)**: Was the scale (strongly agree…..strongly disagree; never … always) reasonable? That is, did it provide you with an appropriate way to respond?

   - **One Response (if applicable)**: Was the item written in such a way that you could have answered it more than one way? (e.g., Could you have said BOTH "strongly agree" and "strongly disagree" or "never" and "always"?)

     (These definitions can be reviewed, by clicking on the yellow callout box on the form that corresponds with each heading (i.e., Clear, Adequate Scale, One Response).

   If you respond "No" to an item, please provide comments as to why you chose "No."

3. You will also be asked to respond to the following questions:

   - Were the survey instructions clear?

   - How long did it take you to complete the survey?

   - Was the survey length too short, just right, or too long?

- Did you find any of the items to be "emotionally laden." For example, were any items insulting or offensive?

4. When you have completed the *Pilot Survey Feedback Form*, click the e-mail button on the top right side of the form to return it to me via e-mail.

Pilot Protocol adapted from:

Rogers, Gloria. (n.d.). *Sample protocol for pilot testing survey items*. Retrieved January 12, 2009, from http://www.abet.org/Linked%20Documents-UPDATE/ Assessment/Protocol_item%20testing.pdf

Submit by Email | Print Form

Instructor Opinions on the Impact of Web-Enhanced Instruction on the Educational Experience

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts students' educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time. This survey is anonymous.

Section I: Web Enhanced Instruction

Because this class uses Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental learning tool, my students are more likely to:

Rating Scale:	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
1. Ask for clarification when they do not understand something.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
2. Communicate with me outside the classroom.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
3. Receive my comments within 48 hours.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
4. Receive detailed comments from me.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
5. Actively participate in the course.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
6. Actively participate in online discussions more than they do in face-to-face discussions.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
7. Discuss ideas and concepts taught in this course with me.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
8. Discuss ideas and concepts taught in this course with other students.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
9. Work on assignments with other students.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
10. Complete assignments on time.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
11. Take more responsibility for their learning.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
12. Work with someone from a racial or cultural background different from their own.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
13. Say that they are better able to juggle their course work with their work and/or home responsibilities.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
14. Refer to the course syllabus posted online before asking me about course requirements throughout the term.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
15. Monitor their progress in the course using the online grade book.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Because of the way this course uses Blackboard®, WebCT®, e-Learning®, or e-College® (select only one response per question):

Rating Scale:	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
16. My students are better able to understand the ideas and concepts taught in this course.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
17. My students say that they would take other courses that are web-enhanced.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
18. My students are more likely to tell me when they have a comment or complaint about the course.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
19. My students' educational experience has been enhanced.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
20. I spend too much time having to teach students how to use the technology.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
21. My students are at a disadvantage, because they do not possess adequate computer skills.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
22. My students complain that they spend too much time trying to gain access to a computer.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
23. My students complain that they spend too much time trying to log on to the course management system (i.e., Blackboard®, WebCT®, e-Learning®, or e-College®) on the Internet.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
24. How do you integrate the tools provided through your Blackboard®, WebCT®, e-Learning®, or e-College® into this class (select all that apply)?	☐ Yes ☐ No	☐ Yes ☐ No	
I post my course syllabus.	☐ Yes ☐ No	☐ Yes ☐ No	
I post course announcements.	☐ Yes ☐ No	☐ Yes ☐ No	
I post my contact information so that students know how to reach me.	☐ Yes ☐ No	☐ Yes ☐ No	
I post lecture notes and other course materials for students to review.	☐ Yes ☐ No	☐ Yes ☐ No	
I post links to other sites to support and/or enhance the ideas/concepts taught in the course.	☐ Yes ☐ No	☐ Yes ☐ No	
I use discussion boards to engage students in asynchronous discussions.	☐ Yes ☐ No	☐ Yes ☐ No	
I use the chat room to engage students in synchronous discussions.	☐ Yes ☐ No	☐ Yes ☐ No	
I use self-assessments to allow students to monitor their level of understanding of key concepts.	☐ Yes ☐ No	☐ Yes ☐ No	
I use online examinations to check for mastery of key concepts.	☐ Yes ☐ No	☐ Yes ☐ No	
I use e-mail to communicate with students individually.	☐ Yes ☐ No	☐ Yes ☐ No	
I use e-mail to communicate with the class as a whole.	☐ Yes ☐ No	☐ Yes ☐ No	
I allow students to use the electronic submission tools to send me assignments/ assessments.	☐ Yes ☐ No	☐ Yes ☐ No	
I post student grades in the grade book so students can monitor their progress in the course throughout the term.	☐ Yes ☐ No	☐ Yes ☐ No	

Rating Scale:	Never	Rarely	Sometimes	Often	Always

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
25. Please rate the frequency in which you use the following course management system tools in this course:				
Announcements	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Faculty Information	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Discussion Boards	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Chat Rooms	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Assessments	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Syllabus	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Course Documents (uploading materials to site)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
E-mail	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Electronic Submission Tools (e.g., Assignments)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
On-line Grade Book	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Section II: Personal Characteristics

To gather data relative to the participants in this study, please respond to the following items. Remember, this survey is anonymous. There will be no way to determine your identity from the information you provide.

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
26. What is your age?	☐ Yes ☐ No	☐ Yes ☐ No	
27. What is your gender? ○ Male ○ Female	☐ Yes ☐ No	☐ Yes ☐ No	
28. What is your race/ethnicity? (Select only one.) ○ American Indian/Alaskan native ○ African American/Black ○ Asian/Pacific Islander ○ Hispanic/Latino ○ White ○ Other	☐ Yes ☐ No	☐ Yes ☐ No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
29. What is the highest degree you have earned from any college or university? (Select only one.) ❍ Certificate ❍ MA or MS ❍ MD ❍ AA or AAS ❍ PhD or EdD ❍ Other ❍ BA or BS ❍ JD ❍ I do not have an earned degree	☐ Yes ☐ No	☐ Yes ☐ No	
30. During the 2007-08 academic year, what was your employment status at the college? ❍ part-time ❍ full-time	☐ Yes ☐ No	☐ Yes ☐ No	
31. How many years of full-time teaching experience do you have? ❍ None ❍ Less than 1 ❍ 2-5 ❍ 6-10 ❍ 11-15 ❍ 6-❍ 16-20 ❍ More than 20	☐ Yes ☐ No	☐ Yes ☐ No	
32. How many years of part-time teaching experience do you have? ❍ None ❍ Less than 1 ❍ 2-5 ❍ 6-10 ❍ 11-15 ❍ 16-20 ❍ More than 20	☐ Yes ☐ No	☐ Yes ☐ No	
33. What discipline do you teach?	☐ Yes ☐ No	☐ Yes ☐ No	
34. I am able to access the Internet: ❍ at home ❍ at the college ❍ at home and at the college	☐ Yes ☐ No	☐ Yes ☐ No	
35. During the past year, in a typical week how many hours did you spend using a computer for any reason?	☐ Yes ☐ No	☐ Yes ☐ No	
At home? ❍ No computer available ❍ Less than 1 ❍ 1-2 ❍ 3-5 ❍ 6-10 ❍ 11-20 ❍ More than 20	☐ Yes ☐ No	☐ Yes ☐ No	
At work? ❍ No computer available ❍ Less than 1 ❍ 1-2 ❍ 3-5 ❍ 6-10 ❍ 11-20 ❍ More than 20	☐ Yes ☐ No	☐ Yes ☐ No	
36. How many hours of professional development activities relating to course management systems and web-enhanced instruction did you complete in the 2007-08 academic year ? ❍ None ❍ 1-4 ❍ 5-8 ❍ 9-12 ❍ 13-16 ❍ 17-20 ❍ More than 20	☐ Yes ☐ No	☐ Yes ☐ No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
37. If you participated in professional development activities relating to Blackboard®, WebCT®, e-Learning®, or e-College® and web-enhanced instruction in the 2007-08 academic year, what topics were addressed? ○ How to use the tools provided in Blackboard®, WebCT®, e-Learning®, or e-College® ○ Strategies to enhance teaching and learning using tools provided in Blackboard®, WebCT®, e-Learning®, or e-College® ○ I did not participate in professional development activities that related to Blackboard®, WebCT®, e-Learning®, or e-College® and web-enhanced instruction.	☐ Yes ☐ No	☐ Yes ☐ No	
38. On average, how many hours outside class time each week do you s interacting with students enrolled in this web-enhanced course? ○None ○Less than 1 ○1-2 ○ 3-5 ○6-10 ○More than 10	☐ Yes ☐ No	☐ Yes ☐ No	
39. How does this compare with the number of hours outside class time each week you spend interacting with students enrolled in your courses that are not web-enhanced? ○ I spend more time interacting with students enrolled in my web-enhanced courses. ○ I spend less time interacting with students enrolled In my web-enhanced courses. ○ There is no difference in the amount of time I spend interacting with students. ○ I do not teach courses that are not web-enhanced. ○ I do not interact with my students outside scheduled class time.	☐ Yes ☐ No	☐ Yes ☐ No	

Rating Scale:	Never	Rarely	Sometimes	Often	Always

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
40. On average, rate the frequency in which you use the following classroom activities in this web-enhanced course:				
Lectures	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Teacher-led Discussions	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Student-led Discussions	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Case Studies	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Group Activities	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Student Presentations	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
In-class Writing Assignments	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Experiential Assignments/activities	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
Hands-on Activities	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Additional Questions:

1. Were the survey instructions clear?

2. How long did it take you to complete the survey?

3. Was the survey length too short, just right, or too long?

4. Did you find any of the items to be "emotionally laden?" For example, were any items insulting or offensive?

APPENDIX G

PILOT PROTOCOL AND PILOT FEEDBACK FORM FOR STUDENT PILOT

STUDENT OPINIONS TOWARD THE IMPACT OF WEB-ENHANCED INSTRUCTION ON THE EDUCATION EXPERIENCE

Pilot Protocol

I appreciate your willingness to help me pilot this survey and to provide me with feedback on your understanding and perception of the survey items. Individual responses will not be reported to anyone. They will be used by me strictly for the purpose of improving the survey instrument.

Purpose of the Survey

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts your educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time. This survey is anonymous.

Estimated Time Required: 1 hour to complete the survey and the survey feedback form.

Process

1. Thoughtfully complete the survey. ***Be sure and monitor how long it takes you to complete the survey!***

4. After you complete the survey, use the *Pilot Survey Feedback* form to tell me whether or not each survey item was clear, provided an adequate scale (if applicable), and allowed for one response (if applicable). Definitions for these three measures follow:

   - **Clear**: Was the item "understandable?" That is, did you have to read the item more than once to understand what it was asking? Was the meaning of the question clear and straightforward?

   - **Adequate Scale (if applicable)**: Was the scale (strongly agree…..strongly disagree; never … always) reasonable? That is, did it provide you with an appropriate way to respond?

   - **One Response (if applicable)**: Was the item written in such a way that you could have answered it more than one way? (e.g., Could you have said BOTH "strongly agree" and "strongly disagree" or "never" and "always"?)

   If you respond "No" to an item, please provide comments as to why you chose "No."

5. On the *Pilot Survey Feedback* form, you will also be asked to respond to the following questions. You will also have the opportunity to provide additional comments regarding the survey.

   - Were the survey instructions clear?

   - How long did it take you to complete the survey?

- Was the survey length too short, just right, or too long?
- Did you find any of the items to be insulting or offensive?

Pilot Protocol adapted from:

Rogers, Gloria. (n.d.). *Sample protocol for pilot testing survey items*. Retrieved January 12, 2009, from http://www.abet.org/Linked%20Documents-UPDATE/Assessment/ Protocol_item%20testing.pdf

Student Opinions on the Impact of Web-Enhanced Instruction on the Educational Experience

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts your educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time.

This survey is anonymous. Please do not write your name or any other identifying information on it.

Section I: Web Enhanced Instruction

Because this class uses Blackboard®, WebCT®, e-Learning®, or e-College®, I am more likely to: (Select one response per item.)

Rating Scale:	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
1. Ask for clarification when I do not understand something.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
2. Communicate with my instructor outside the classroom.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
3. Receive instructor comments within 48 hours.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
4. Receive detailed comments from my instructor.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
5. Actively participate in the course.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
6. Actively participate in online discussions more than I would face-to-face discussions.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
7. Discuss ideas and concepts taught in this course with my instructor.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
8. Discuss ideas and concepts taught in this course with other students.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
9. Work on assignments with other students.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
10. Complete assignments on time.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
11. Take more responsibility for my learning.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
12. Work with someone from a racial or cultural background different from my own.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
13. I am better able to juggle my course work with my work and/or home responsibilities.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
14. Refer to the course syllabus posted online first when I have a Questions about course requirements before asking my instructor.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
15. Monitor their progress in the course by checking the grade book.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	

Because of the way <u>this course</u> uses Blackboard®, WebCT®, e-Learning®, or e-College®. (Select only one response per item.):

Rating Scale:	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
16. I am better able to understand the ideas and concepts taught in this course.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
17. I would take other courses that are web-enhanced.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
18. I am more likely to tell my instructor when I have a comment or complaint about the course.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
19. My educational experience has been enhanced.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
20. I spend too much time having to gain access to a computer or computer terminal.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
21. I spend too much time trying to log on to the course management system (i.e., Blackboard®, WebCT®, e-Learning®, or e-College®) on the Internet.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
22. I spend too much time "surfing" the Internet instead of studying.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
23. I am at a disadvantage, because I do not possess adequate <u>computer</u> skills.	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
24. How do you use the toolsonBlackboard®, WebCT®, e-Learning®, or e-College® into this class? (Select all that apply.)	❒Yes ❒No	❒Yes ❒No	
I refer to the course syllabus that is posted.	❒Yes ❒No	❒Yes ❒No	
I check for course announcements from my instructor.	❒Yes ❒No	❒Yes ❒No	
I get contact information when I need to contact my instructor.	❒Yes ❒No	❒Yes ❒No	
I download and/or review posted post lecture notes and other course materials.	❒Yes ❒No	❒Yes ❒No	
I visit other websites that support and/or enhance the ideas/concepts I am trying to learn by clicking on links provided by my instructor.	❒Yes ❒No	❒Yes ❒No	
I actively participate in online discussions using the discussion board.	❒Yes ❒No	❒Yes ❒No	
I actively participate in online discussions using the chat feature.	❒Yes ❒No	❒Yes ❒No	
I take quizzes so that I can monitor my level of understanding of key concepts in the course.	❒Yes ❒No	❒Yes ❒No	
I take online examinations to check for mastery of key concepts.	❒Yes ❒No	❒Yes ❒No	
I use e-mail to communicate with students in my class.	❒Yes ❒No	❒Yes ❒No	
I use e-mail to communicate with my instructor.	❒Yes ❒No	❒Yes ❒No	
I submit assignments and/or assessments to my instructor electronically.	❒Yes ❒No	❒Yes ❒No	
I monitor my progress throughout the course by visiting the grade book to see my grades.	❒Yes ❒No	❒Yes ❒No	

Rating Scale:	Never	Rarely	Sometimes	Often	Always

Survey Item	Clear?	Adequate Rating Scale	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
25. Please rate the frequency in which you use the following course management system tools in this course:				
Announcements	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Faculty Information	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Discussion Boards	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Chat Rooms	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Assessments	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Syllabus	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Course Documents (uploading materials to site)	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
E-mail	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
Electronic Submission Tools (e.g., Assignments)	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	
On-line Grade Book	❒Yes ❒No	❒Yes ❒No	❒Yes ❒No	

Section II: Personal Characteristics

To gather data relative to the participants in this study, please respond to the following items. Remember, this survey is anonymous. There will be no way to determine your identity from the information you provide.

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
26. What is your age?	❒Yes ❒No	❒Yes ❒No	
27. What is your gender? ❍Male ❍Female	❒Yes ❒No	❒Yes ❒No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
28. What is your race/ethnicity? (Select only one.) ❍ American Indian/Alaskan native ❍ African American/Black ❍ Asian/Pacific Islander ❍ Hispanic/Latino ❍ White ❍ Other	❒Yes ❒No	❒Yes ❒No	
29. What is your attendance status? ❍ I am taking 12 or more hours of coursework and am considered full time. ❍ I am taking 11 or fewer hours of coursework and am considered part time.	❒Yes ❒No	❒Yes ❒No	
30. What is your employment status? ❍ I work full time (35 hours or more per week). ❍ I work part time (less than 35 hours per week). ❍ I am not employed at this time.	❒Yes ❒No	❒Yes ❒No	
31. What is your educational goal? ❍ My goal is to learn the skills needed to get a job; I am not interested in earning an award at this time. ❍ My goal is to earn a certificate. ❍ My goal is to earn a diploma. ❍ My goal is to earn an associates degree. ❍ My goal is to transfer to a four-year institution to earn a BS degree. ❍ I am undecided about my educational goals at this time.	❒Yes ❒No	❒Yes ❒No	
32. What is your current household income? ❍ Less than $20,000 ❍ $20,000-$40,000 ❍ More than $40,000	❒Yes ❒No	❒Yes ❒No	
33. I was raised in a household where the income level was: ❍ Less than $20,000 ❍ $20,000-$40,000 ❍ More than $40,000	❒Yes ❒No	❒Yes ❒No	

Survey Item	Clear?	Only One Response?	Comments *If you respond "No" to an item, please provide comments as to why you chose "No."*
34. What is your race/ethnicity? (Select only one.) ❍ American Indian/Alaskan native ❍ African American/Black ❍ Asian/Pacific Islander ❍ Hispanic/Latino ❍ White ❍ Other	❒Yes ❒No	❒Yes ❒No	
35. What is the main location from where you access the Internet? ❍ On campus ❍ Home ❍ Work ❍ Other	❒Yes ❒No	❒Yes ❒No	
36. If accessing the Internet from a site other than campus, what type connection do you have? ❍ Dial up modem ❍ Cable modem ❍ DSL ❍ Work LAN ❍ Do not know	❒Yes ❒No	❒Yes ❒No	
37. If accessing the Internet from a site other than campus, how satisfied are you with the speed in which you are able to connect to the Internet? ❍ Very satisfied ❍ Somewhat satisfied ❍ Satisfied ❍ Dissatisfied ❍ Somewhat dissatisfied ❍ Very dissatisfied	❒Yes ❒No	❒Yes ❒No	
38. About how many hours a week do you use a computer (including e-mail) for this course? ❍ Rarely or never ❍ 1-2 ❍ 3-5 ❍ 6-10 ❍ more than 10	❒Yes ❒No	❒Yes ❒No	

Additional Questions:

1. Were the survey instructions clear? _____

_____

2. How long did it take you to complete the survey? _____

_____

3. Was the survey length too short, just right, or too long? _____

_____

4. Did you find any of the items to be insulting or offensive? _____

_____

Additional Comments:

_____

_____

_____

_____

APPENDIX H

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL

Office for Research

Office of the Chair,
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
RESEARCH

October 17, 2008

Audrey Smallwood
ELPTS
College of Education

Re: IRB # 08-OR-228 "Student and Faculty Opinions of Web-Enhanced Courses on the Educational Experience at Alabama Two-Year Colleges"

Dear Ms. Smallwood:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your protocol has been given expedited approval according to 45 CFR part 46. You have also been granted a waiver of the requirement to obtain signed informed consent. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number. Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

Good luck with your research.

Sincerely,

Carpaniato T. Myles, MSM, CIM
Director of Research Compliance & Research Compliance Officer
Office of Research Compliance
The University of Alabama

152 Rose Administration Building
Box 870104
Tuscaloosa, Alabama 35487-0104
(205) 348-5152
FAX (205) 348-8882

08-OR-228

UNIVERSITY OF ALABAMA INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS
REQUEST FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS

I. Identifying information

	Principal Investigator	Second Investigator	Third Investigator
Name:	Audrey Smallwood		
Department:	Higher Education Administration		
College:	Department of Educational Leadership, Policy and Technology Studies		
University:	The University of Alabama		
Address:	381 Indian Hill Drive		
Telephone:	Woodstock, AL 35188		
FAX:	205-943-4813		
E-mail:	Asmallwood1225@aol.com		

Title of Research Project: Student and Faculty Opinions on the Impact of Web-Enhanced Courses on the Educational Experience at Alabama Two-Year Colleges

Date Printed: 5/23/08 Funding Source: N/A

Type of Proposal: _X_New | __Revision __Renewal __Completed | __Exempt

Attach a renewal application

Attach a continuing review of studies form

Please enter the original IRB # at the top of the page

UA faculty or staff member signature _____

II. NOTIFICATION OF IRB ACTION (to be completed by IRB):

Type of Review: _____ Full board _____ Expedited

IRB Action:

__Rejected Date:_____

__Tabled Pending Revisions Date:_____

__Approved Pending Revisions Date:_____

__Approved—this proposal complies with University and federal regulations for the protection of human subjects

Approval is effective until the following date:

Items approved:

__ Research protocol: dated
__ Informed consent: dated
__ Recruitment materials: dated
__ Other: dated

Approval signature _____ Date 10/17/08

APPENDIX I

SAMPLE EMAIL TO PRESIDENTS AT TARGETED INSTITUTIONS

Audrey Smallwood

To: President
Subject: Doctoral Study of Audrey Smallwood

I am a doctoral candidate at The University of Alabama and am conducting a research study. The primary purpose of this study is to determine the opinions of students and instructors in terms of the impact of web-enhanced courses on the educational experience. This study will also investigate how the opinions of students and instructors relate to specific personal characteristics (e.g., age, gender, race/ethnicity, computer usage patterns, institutional classification, etc.).

Your institution has been selected to participate in the study because it offers web-enhanced courses which, for the purposes of this study, are defined as traditional face-to-face courses that utilize a course management system (e.g., Blackboard, e-College, etc.) as a supplemental tool to enhance teaching and learning without sacrificing face-to-face instruction.

For this research, approximately [number] randomly selected full- and part-time instructors who are teaching or have taught a web-enhanced course at your institution will be asked to complete an online survey, which will take approximately 20 minutes to complete. To gather survey data from students, instructors from approximately [number] randomly selected web-enhanced classes will be asked to administer the survey or to allow the researcher to administer the survey in their classes. The student survey will take approximately 30 minutes to complete. All survey responses will be anonymous and kept confidential.

As a 27-year employee of the Alabama Community College System who managed the distance education programs at Bessemer State Technical College and Lawson State Community College after the two institutions merged, I recognize the value of research from both an administrative and teaching and learning perspective, particularly as it relates to technology. Yet, a review of the literature revealed that the research into two-year colleges as it relates to web-enhanced instruction is extremely limited. Unfortunately, many of the studies that have been conducted to date focus on four-year college and university students. As you know, the diverse student populations typically found on two-year college campuses represent different socioeconomic backgrounds and different experiences and expectations in terms of technology. These differences present difficult challenges for administrators trying to meet the technological needs of instructors and students and instructors trying to meet the needs of all learners.

This is to respectfully request your approval to conduct this research on your campus during February and March of 2009. The results of this research will contribute to the limited body of knowledge on the subject as it relates to two-year colleges. It will also serve to inform administrators and instructors in two-year colleges within the state of Alabama as they attempt to meet the needs of students.

If you allow this research project to be conducted on your campus, I would need to work with your IT staff to identify full- and part-time faculty who are teaching or have taught a web-enhanced class. I would also like to contact your dean of Instruction to solicit his support in encouraging faculty participation.

Thank you for your consideration of this request.

APPENDIX J

SAMPLE EMAIL TO CHIEF INSTRUCTIONAL OFFICERS AT TARGETED INSTITUTIONS

Audrey Smallwood

To: Chief Instructional Officer
Subject: Doctoral Study of Audrey Smallwood

I am a doctoral candidate at The University of Alabama and am conducting a research study on the impact of web-enhanced instruction on the educational experience of students attending Alabama's two-year colleges. Recently, your president, [president's name], granted me permission to conduct this study on the campus of [institution's name]. The study will take place during February and March 2009.

For this research, [number] randomly selected full- and part-time instructors who are teaching or have taught a web-enhanced course at your institution will be asked to complete an online survey, which will take approximately 20 minutes to complete. To gather survey data from students, instructors from approximately [number] randomly selected web-enhanced classes will be asked to administer the survey or to allow me to administer the survey in their classes. The student survey will take approximately 30 minutes to complete. All survey responses will be anonymous and kept confidential.

Instructors targeted for both surveys will receive an email from me inviting them to participate in the research study. The purpose of this email is to respectfully request that you encourage identified instructors to participate. Your support of this effort is greatly appreciated and will contribute to the extremely limited body of knowledge relating to web-enhanced instruction and its impact on the educational experiences of two-year college students.

The list of targeted instructors and classes is attached along with copies of the recruitment emails that will be sent to both groups.

As a 27-year employee of the Alabama Community College System who managed the distance education programs at Bessemer State Technical College and Lawson State Community College after the two institutions merged, I recognize the value of research from both an administrative and a teaching and learning perspective, particularly as it relates to technology. Unfortunately, many of the studies that have been conducted to date focus on four-year college and university students. As you know, the diverse student populations typically found on two-year college campuses represent different socioeconomic backgrounds and different experiences and expectations in terms of technology. These differences present difficult challenges for administrators trying to meet the technological needs of instructors and students and instructors trying to meet the needs of all learners. In addition to contributing to the limited body of knowledge on the subject as it relates to two-year colleges, the results of this study will also serve to inform administrators and instructors in two-year colleges within the state of Alabama as they attempt to meet the technological and pedagogical needs of students.

Thank you for your assistance in this research study. If you have any questions, please contact me at [redacted] or [redacted].

APPENDIX K

STATEMENT OF INFORMED CONSENT (STUDENTS)

THE UNIVERSITY OF ALABAMA
Informed Consent for a Research Study

You are being asked to take part in a research study. This study is called *Student and Faculty Opinions toward the Impact of Web-enhanced Courses on the Educational Experience at Alabama Two-year Colleges.* The study is being done by Audrey Smallwood, who is a doctoral student at The University of Alabama.

Ms. Smallwood is being supervised by Dr. Nathaniel Bray who is an assistant professor in the Higher Education Administration program in the College of Education's Department of Education Leadership, Policy and Technology Studies.

What is this study about?

This study is being done to explore student and faculty opinions regarding the impact of web-enhanced courses on the educational experiences of students attending community colleges in Alabama. This study also seeks to determine if certain personal characteristics (e.g., age, gender, etc.) affect student and faculty opinions.

Why is this study important--What good will the results do?

This study is important/useful because little research currently exists on web-enhanced instruction as it relates to two-year college students. This study will help educators and administrators in two-year colleges learn how to better meet the needs of students when it comes to technology and learning.

Why have I been asked to take part in this study?

You have been asked to be in this study because you are at least 19 years of age and you are a student who is taking a web-enhanced course at an Alabama community college.

How many people besides me will be in this study?

About 500 other students will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, you will be asked to complete a 38-item survey in which you will be asked to rate the degree to which web-enhanced instruction has affected your educational experience. You will also be asked to provide certain personal characteristics such as age, gender, race/ethnicity, enrollment status, educational goals, computer usage patterns, etc.

How much time will I spend being in this study?

Being in this study will take about 30 minutes.

Will I be paid for being in this study?

You will not be paid for being in this study.

Will being in this study cost me anything?

There will be no cost to you in completing the survey except for your time.

Can the researcher take me out of this study?

The researcher or her designee may take you out of this study if he or she feels that you no longer meet the study requirements.

What are the benefits (good things) that may happen to me if I am in this study?

There are no direct benefits to you from being in this study.

What are the benefits to scientists or society?

This study will add to the limited research about the impact of web-enhanced instruction on the educational experience. It will also help educators and administrators in two-year colleges learn how to better meet the needs of students when it comes to technology and learning.

What are the risks (dangers or harm) to me if I am in this study?

There are no known risks associated with this study.

How will my confidentiality (privacy) be protected? What will happen to the information the study keeps on me?

All data collected during this study will be kept private. You will be asked not to provide your name or any student ID on your survey. All surveys collected will be stored in a locked file cabinet, to which only the researcher will have access. Once the data collected during this study have been analyzed, all surveys will be destroyed.

What are the alternatives to being in this study? Do I have other choices?

The alternative/other choice to being in this study is not to participate.

What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study right now, please ask them. If you have questions about the study later on, please call the researcher, Audrey Smallwood at [redacted]. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at [redacted].

APPENDIX L

RESEARCH PACKETS MAILED TO INSTRUCTORS AGREEING TO SERVE AS DESIGNEE

March 4, 2009

Dear Mr. Campbell:

Thank you for agreeing to administer the survey, *Student Opinions toward the Impact of Web-Enhanced Instruction on the Educational Experience*, to your class.

In the enclosed packet, you will find instructions for administering and collecting the surveys, a script to read to your class, the *Statement of Informed Consent*, the survey instrument, and a self-addressed, stamped envelope.

If you have any questions, please contact me at [redacted] or [redacted]

Sincerely,

Audrey Smallwood

INTRUCTIONS FOR ADMINISTERING THE SURVEY

Please follow the instructions below when administering the survey to your students:

1. Read the *Recruitment Script* provided.

2. Distribute the *Statement of Informed Consent* and the survey instrument to students as indicated in the *Recruitment Script*.

3. Read the *Statement of Informed Consent* aloud as indicated in the *Recruitment Script*.

4. Remind students participating in the study not to put their names or any other means of identification on the survey and to place the completed surveys in the self-addressed, stamped envelope at the front of the room as indicated in the *Recruitment Script*. As students complete the surveys, please do not interpret items contained in *Section I: Web Enhanced Instruction* for study participants. However, you may respond to questions regarding items in *Section II: Personal Characteristics*.

5. Remind the last person completing the survey to seal the envelope.

6. Drop the envelope in the mail!

RECRUITMENT SCRIPT

Audrey Smallwood, a doctoral candidate at The University of Alabama and a current two-year college employee and former two-year college student, is conducting a study exploring the opinions of faculty and students regarding the impact of web-enhanced courses on the educational experiences of students attending community colleges in Alabama. For this study, web-enhanced courses are those that use Blackboard®, e-College®, or some other course management system to supplement face-to-face classes without giving up time in class. This study also seeks to determine if certain personal characteristics (e.g., age, gender, race/ethnicity, computer usage patterns, etc.) influence student opinions on this topic.

You are being asked to participate in this study because you currently are at least 19 years of age and are taking a web-enhanced course. If you decide to be in this study, you will be asked to complete a 38-item survey that will take approximately 20 minutes. The survey includes items that will ask you to rate the degree to which web-enhanced instruction has affected your educational experience. As noted earlier, the survey also contains items relating to certain personal characteristics.

Your participation in this study is completely voluntary and your responses will remain anonymous. If you agree to participate in the survey after you have read the *Statement of Informed Consent* that I will give you along with the survey, please do not write your name or any other means of identification on the survey. Once you have finished, please place your completed survey in the envelope that I have placed at the front of the room and keep the *Statement of Informed Consent* for your records. The last person completing the survey will be asked to seal the envelope.

Other than Ms. Smallwood, no one will see the completed surveys and all surveys will be destroyed at the end of the study.

[*Designee distributes Statement of Informed Consent along with the survey to students. Designee reads the Statement of Informed Consent aloud.*]

Again, for those of you who have agreed to participate in this study, please remember not to put your name or any other means of identification on the survey. When you have completed the survey, please place it in the envelope at the front of the room. The last person completing the survey should seal the envelope.

THE UNIVERSITY OF ALABAMA
Informed Consent for a Research Study

You are being asked to take part in a research study. This study is called *Student and Faculty Opinions toward the Impact of Web-enhanced Courses on the Educational Experience at Alabama Two-year Colleges.* The study is being done by Audrey Smallwood, who is a doctoral student at The University of Alabama.

Ms. Smallwood is being supervised by Dr. Nathaniel Bray who is an assistant professor in the Higher Education Administration program in the College of Education's Department of Education Leadership, Policy and Technology Studies.

What is this study about?

This study is being done to explore student and faculty opinions regarding the impact of web-enhanced courses on the educational experiences of students attending community colleges in Alabama. This study also seeks to determine if certain personal characteristics (e.g., age, gender, etc.) affect student and faculty opinions.

Why is this study important--What good will the results do?

This study is important/useful because little research currently exists on web-enhanced instruction as it relates to two-year college students. This study will help educators and administrators in two-year colleges learn how to better meet the needs of students when it comes to technology and learning.

Why have I been asked to take part in this study?

You have been asked to be in this study because you are at least 19 years of age and you are a student who is taking a web-enhanced course at an Alabama community college.

How many people besides me will be in this study?

About 500 other students will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, you will be asked to complete a 38-item survey in which you will be asked to rate the degree to which web-enhanced instruction has affected your educational experience. You will also be asked to provide certain personal characteristics such as age, gender, race/ethnicity, enrollment status, educational goals, computer usage patterns, etc.

How much time will I spend being in this study?

Being in this study will take about 30 minutes.

Will I be paid for being in this study?

You will not be paid for being in this study.

Will being in this study cost me anything?

There will be no cost to you in completing the survey except for your time.

Can the researcher take me out of this study?

The researcher or her designee may take you out of this study if he or she feels that you no longer meet the study requirements.

What are the benefits (good things) that may happen to me if I am in this study?

There are no direct benefits to you from being in this study.

What are the benefits to scientists or society?

This study will add to the limited research about the impact of web-enhanced instruction on the educational experience. It will also help educators and administrators in two-year colleges learn how to better meet the needs of students when it comes to technology and learning.

What are the risks (dangers or harm) to me if I am in this study?

There are no known risks associated with this study.

How will my confidentiality (privacy) be protected? What will happen to the information the study keeps on me?

All data collected during this study will be kept private. You will be asked not to provide your name or any student ID on your survey. All surveys collected will be stored in a locked file cabinet, to which only the researcher will have access. Once the data collected during this study have been analyzed, all surveys will be destroyed.

What are the alternatives to being in this study? Do I have other choices?

The alternative/other choice to being in this study is not to participate.

What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study right now, please ask them. If you have questions about the study later on, please call the researcher, Audrey Smallwood at [redacted]. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at [redacted].

Student Opinions toward the Impact of Web-Enhanced Instruction on the Educational Experience

This survey is designed to gather data regarding your opinion as to whether or not a web-enhanced course impacts your educational experience. For the purposes of this study, a web-enhanced course is one that meets on campus for regularly scheduled classes and utilizes Blackboard®, WebCT®, e-Learning®, or e-College® as a supplemental online tool to enhance teaching and learning without sacrificing face-to-face instructional time.

This survey is anonymous. Please do not write your name or any other identifying information on it.

Section I: Web-Enhanced Instruction

Because this class uses Blackboard®, WebCT®, e-Learning®, or e-College®, I am more likely to:
(Select one response per item.)

		Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1.	Ask for clarification when I do not understand something.	❍	❍	❍	❍	❍
2.	Communicate with my instructor outside the classroom.	❍	❍	❍	❍	❍
3.	Receive instructor comments within 48 hours.	❍	❍	❍	❍	❍
4.	Receive detailed comments from my instructor.	❍	❍	❍	❍	❍
5.	Actively participate in the course.	❍	❍	❍	❍	❍
6.	Actively participate in online discussion more than I would face-to-face discussions.	❍	❍	❍	❍	❍
7.	Discuss ideas and concepts taught in this course with my instructor.	❍	❍	❍	❍	❍
8.	Discuss ideas and concepts taught in this course with other students.	❍	❍	❍	❍	❍
9.	Work on assignments with other students.	❍	❍	❍	❍	❍
10.	Complete assignments on time.	❍	❍	❍	❍	❍
11.	Take more responsibility for my learning.	❍	❍	❍	❍	❍
12.	Work with someone from a racial or cultural background different from my own.	❍	❍	❍	❍	❍
13.	I am better able to juggle my course work with my work and/or home responsibilities.	❍	❍	❍	❍	❍
14.	Refer to the course syllabus posted online first when I have a question about course requirements before asking my instructor.	❍	❍	❍	❍	❍
15.	Monitor my progress in the course by checking the grade book.	❍	❍	❍	❍	❍

Survey continues on following page.

Because of the way <u>this course</u> uses Blackboard®, WebCT®, e-Learning®, or e-College®: (Select one response per item.)

	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
16 I am better able to understand the ideas and concepts taught in this course.	❍	❍	❍	❍	❍
17. I would take other courses that are web-enhanced.	❍	❍	❍	❍	❍
18. I am more likely to tell my instructor when I have a comment or complaint about the course.	❍	❍	❍	❍	❍
19. My educational experience has been enhanced.	❍	❍	❍	❍	❍
20. I spend too much time trying to gain access to a computer or computer terminal.	❍	❍	❍	❍	❍
21. I spend too much time trying to log on to the course management system (i.e., Blackboard®, WebCT®, e-Learning®, or e-College®) on the Internet.	❍	❍	❍	❍	❍
22. I spend too much time "surfing" the Internet instead of studying.	❍	❍	❍	❍	❍
23. I am at a disadvantage, because I do not possess adequate <u>computer</u> skills.	❍	❍	❍	❍	❍

24. How do you use the tools on Blackboard®, WebCT®, e-Learning®, or e-College® in this web-enhanced class? (Select all that apply.)

❍ I refer to the course syllabus that is posted.
❍ I check for course announcements from my instructor.
❍ I get contact information when I need to contact my instructor.
❍ I download and/or review posted post lecture notes and other course materials.
❍ I visit other websites that support and/or enhance the ideas/concepts I am trying to learn by clicking on links provided by my instructor.
❍ I actively participate in online discussions using the discussion board.
❍ I actively participate in online discussions using the chat feature.
❍ I take quizzes so that I can monitor my level of understanding of key concepts in the course.
❍ I take online examinations to check for mastery of key concepts.
❍ I use email to communicate with students in my class.
❍ I use email to communicate with my instructor.
❍ I submit assignments and/or assessments to my instructor electronically.
❍ I monitor my progress throughout the course by visiting the grade book to see my grades.

25. Please rate how often you use the following Blackboard®, WebCT®, e-Learning®, or e-College® tools in this course: Survey continues on following page.

	Never	Rarely	Sometimes	Often	Always
Announcements	❍	❍	❍	❍	❍
Faculty Information	❍	❍	❍	❍	❍
Discussion Boards	❍	❍	❍	❍	❍
Chat Rooms	❍	❍	❍	❍	❍
Assessments	❍	❍	❍	❍	❍
Syllabus	❍	❍	❍	❍	❍
Course Documents	❍	❍	❍	❍	❍
Email	❍	❍	❍	❍	❍
Electronic Submission Tools (e.g., Assignments)	❍	❍	❍	❍	❍
On-line Grade book	❍	❍	❍	❍	❍

Section II: Personal Characteristics

To gather data relative to the participants in this study, please respond to the following items. Remember, this survey is anonymous. There will be no way to determine your identify from the information you provide.

26. What is your age? _____

27. What is your gender? ❍ Male ❍ Female

28. What is your race/ethnicity? (Select only one.)
❍ American Indian/Alaskan native
❍ African American/Black
❍ Asian/Pacific Islander
❍ Hispanic/Latino
❍ White
❍ Other

29. What is your attendance status?

❍ I am taking **12 or more hours of coursework** and am considered **full time**.
❍ I am taking **11 or fewer hours of coursework** and am considered **part time**.

30. What is your employment status?
❍ I work **full time** (35 hours or more per week).
❍ I work **part time** (**less than 35 hours** per week).
❍ I am **not employed** at this time.
Survey continues on following page.

31. What is your educational goal?

❍ My goal is to learn the skills needed to get a job; I am not interested in earning an award at this time.
❍ My goal is to earn a certificate.
❍ My goal is to earn a diploma.
❍ My goal is to earn an associates degree.
❍ My goal is to transfer to a four-year institution to earn a BS degree.
❍ I am undecided about my educational goals at this time.

32. What is your **current household income**? ❍ Less than $20,000 Survey continues on following page.
❍ $20,000-$40,000
❍ More than $40,000

33. I was **raised in a household where the income level** was: ❍ Less than $20,000
❍ $20,000-$40,000
❍ More than $40,000

34. Have you selected your major area of study?

❍ Yes, my major area of study is _____
❍ No, I am undecided about my major area of study at this time.

35. What is the main location from where you access the Internet?

❍ On campus ❍ Home ❍ Work ❍ Other

36. If accessing the Internet from a site other than campus, what type connection do you have?

❍ Dial up modem ❍ Cable modem ❍ DSL ❍ Work LAN ❍ Do not know

37. If accessing the Internet from a site other than campus, how satisfied are you with the speed in which you are able to connect to the Internet?

❍ Very satisfied
❍ Somewhat satisfied
❍ Satisfied
❍ Dissatisfied
❍ Somewhat dissatisfied
❍ Very dissatisfied

38. About how many hours a week do you use a computer (including email) for this course?

❍ Rarely or never ❍ 1-2 ❍ 3-5 ❍ 6-10 ❍ more than 10

Thank you for completing this survey!

APPENDIX M

RECRUITMENT EMAIL TO INSTRUCTORS REQUESTING PARTICIPATION IN ONLINE SURVEY

Audrey Smallwood

To: Instructor
Subject: ALABAMA COMMUNITY COLLEGE SYSTEM RESEARCH STUDY– REQUEST FOR PARTICIPATION

Because you have taught or are currently teaching one or more web-enhanced courses, you are being asked to participate in a research study exploring the opinions of faculty and students regarding the impact of these courses on the educational experiences of students attending community colleges in Alabama.

For this study, web-enhanced courses are those that utilize Blackboard®, e-College®, or some other course management system to supplement traditional classes without sacrificing "seat time." This study also seeks to determine if certain personal characteristics (e.g., age, gender, employment status, etc.) influence faculty and student opinions on this topic.

Because little research currently exists on web-enhanced instruction as it relates to two-year college students, this study will help educators and administrators in these institutions learn how to better meet the needs of students when it comes to technology and learning. Given the diverse populations of the students Alabama's two-year colleges serve and the time and money that many two-year colleges are investing in technology, insight into its value when it comes to teaching and learning is particularly important.

The study is being conducted by Audrey Smallwood, a doctoral candidate at The University of Alabama, and a 27-year veteran employee and former student of Alabama's community college system.

Your involvement in this online survey will only take 20 minutes. The survey includes items that will ask you to rate the degree to which web-enhanced instruction has affected your students' educational experience. As noted earlier, you will also be asked to provide certain personal characteristics.

I realize that your time is valuable and in short supply. However, I believe that faculty input is critical to fully understanding the impact of web-enhanced instruction on the educational experiences of the students we serve. Your participation in this survey is completely voluntary and anonymous.

After you have read the attached *Statement of Informed Consent*, please click on the link below to take the survey. By completing the survey, you are consenting to be a research participant. If you have any questions, please contact Audrey Smallwood via email at [redacted] or by phone at [redacted].

Thank you in advance for your participation in this study.

APPENDIX N

STATEMENT OF INFORMED CONSENT (INSTRUCTORS)

THE UNIVERSITY OF ALABAMA
Informed Consent for a Research Study

You are being asked to take part in a research study. This study is called *Student and Faculty Opinions toward the Impact of Web-enhanced Courses on the Educational Experience at Alabama Two-year Colleges.* The study is being done by Audrey Smallwood, who is a doctoral student at The University of Alabama.

Ms. Smallwood is being supervised by Dr. Nathaniel Bray who is an assistant professor in the Higher Education Administration program in the College of Education's Department of Education Leadership, Policy and Technology Studies.

What is this study about?

This study is being done to explore student and faculty opinions regarding the impact of web-enhanced courses on the educational experiences of students attending community colleges in Alabama. This study also seeks to determine if certain personal characteristics (e.g., age, gender, etc.) affect student and faculty opinions.

Why is this study important--What good will the results do?

This study is important/useful because little research currently exists on web-enhanced instruction as it relates to two-year college students. This study will help educators and administrators in two-year colleges learn how to better meet the needs of students when it comes to technology and learning.

Why have I been asked to take part in this study?

You have been asked to be in this study because you are an instructor who has taught or is currently teaching a web-enhanced course at an Alabama community college.

How many people besides me will be in this study?

About 500 other instructors will be in this study.

What will I be asked to do in this study?

If you decide to be in this study, you will be asked to complete a 41-item survey in which you will be asked to rate the degree to which web-enhanced instruction has affected your students' educational experience. You will also be asked to provide certain personal characteristics such as age, gender, race/ethnicity, highest degree earned, computer usage patterns, etc.

How much time will I spend being in this study?

Being in this study will take about 20 minutes.

Will I be paid for being in this study?

You will not be paid for being in this study.

Will being in this study cost me anything?

There will be no cost to you in completing the survey except for your time.

Can the researcher take me out of this study?

The researcher may take you out of this study if she feels that you no longer meet the study requirements.

What are the benefits that may happen to me if I am in this study?

There are no direct benefits to you from being in this study.

What are the benefits to scientists or society?

This study will help educators and administrators learn how to better meet the needs of students when it comes to technology and learning.

What are the risks to me if I am in this study?

There are no known risks associated with this study.

How will my confidentiality be protected? What will happen to the information the study keeps on me?

All data collected during this study will be kept private. You will not be asked to provide your name on the survey. All data collected will be stored at a secure survey site to which only the researcher will have access. Once the data collected during this study have been analyzed, they will be erased from the survey site.

What are the alternatives to being in this study? Do I have other choices?

Your alternative or other choice is not to participate in this study.

What are my rights as a participant?

Taking part in this study is voluntary—it is your free choice. You may choose not to take part at all. If you start the study, you can stop at any time. Leaving the study will not result in any penalty or loss of any benefits you would otherwise receive.

The University of Alabama Institutional Review Board (IRB) is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?

If you have questions about the study, please call the researcher, Audrey Smallwood at [redacted]. If you have any questions about your rights as a research participant you may contact Ms. Tanta Myles, The University of Alabama Research Compliance Officer, at [redacted].

APPENDIX O

SPSS DESCRIPTIVES AND FREQUENCY DISTRIBUTIONS

Descriptives - Students

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q1	328	1	4	1.74	.703
Q2	341	1	4	1.74	.657
Q3	335	1	4	1.76	.738
Q4	338	1	4	1.74	.734
Q5	336	1	4	1.68	.649
Q6	328	1	4	2.51	.929
Q7	335	1	4	2.10	.779
Q8	334	1	4	2.03	.786
Q9	329	1	4	2.08	.871
Q10	334	1	4	1.68	.664
Q11	337	1	4	1.70	.716
Q12	303	1	4	2.08	.850
Q13	332	1	4	1.90	.810
Q14	337	1	4	1.70	.729
Q15	337	1	4	1.61	.740
Q16	334	1	4	2.11	.764
Q17	333	1.00	4.00	1.9910	.86945
Q18	337	1	4	2.06	.850
Q19	329	1.00	4.00	1.9422	.80377
Q20	314	1	4	2.85	.775
Q21	310	1	4	2.88	.709
Q23	328	1	4	2.57	.747
Course Syllabus	282	1	1	1.00	.000
Instructor Contact Information	232	1	1	1.00	.000
Course Announcements	309	1	1	1.00	.000
Lecture Notes	262	1	1	1.00	.000
Other Course Materials	242	1	1	1.00	.000
Other Websites	161	1	1	1.00	.000
Discussion Boards	80	1	1	1.00	.000
Chats	34	1	1	1.00	.000
Quizzes	224	1	1	1.00	.000
Online Examinations	165	1	1	1.00	.000
Email Fellow Students	183	1	1	1.00	.000
Email Instructor	268	1	1	1.00	.000
Electronic Submission	234	1	1	1.00	.000
Gradebook	294	1	1	1.00	.000
Q25B Announcements-Frequency	341	1	5	3.81	1.233
Q25C Faculty Information-Frequency	339	1	5	2.66	1.266
Q25D Discussion Boards-Frequency	339	1	5	2.48	1.407
Q25E Chat Rooms-Frequency	334	1	5	1.69	1.072
Q25F Assessments-Frequency	337	1	5	3.50	1.408
Q25G Syllabus-Frequency	339	1	5	3.60	1.151
Q25H Course Documents-Frequency	340	1	5	3.94	1.151

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q25I Email-Frequency	341	1	5	3.67	1.274
Q25J Electronic Submission-Frequency	335	1	5	3.60	1.404
Q25K Gradebook-Frequency	341	1	5	4.02	1.202
Vector 1-Student-Instructor Interaction	337	1	4	1.96	.621
Vector 2-Student Collaboration	327	1	4	2.06	.733
Vector 3-Active Learning	342	1	4	2.11	.603
Vector 4-Feedback	341	1	4	1.71	.581
Vector 5-Time on Task	342	1	4	2.36	.482
Vector 6-High Expectations	337	1	4	1.70	.716
Vector 7-Respect for Diversity	303	1	4	2.08	.850
Age	341	19	61	26.51	8.854
Gender	342	1	2	1.77	.420
Age_Generational	341	1	3	1.34	.522
Race/Ethnicity	340	1	3	1.36	.605
Attendance status	339	1	2	1.27	.445
Employment status	341	1	3	2.20	.755
Educational goal	339	1	6	4.10	1.150
Current household Income	332	1	3	1.96	.840
Household income growing up	331	1	3	2.24	.780
Main internet access point	323	1	4	1.94	.472
Type internet connection	296	1	5	2.82	1.049
Satisfaction with Internet speed	301	1	6	1.99	1.110
Hours per week using computer	341	1	5	3.25	1.147
Divisions Students New	335	1	8	4.24	1.607
Institutional Classification	342	1	3	1.35	.663
Valid N (listwise)	10				

Frequencies-Students

Statistics

		Q1	Q2	Q3	Q4	Q5	Q6	Q7
N	Valid	328	341	335	338	336	328	335
	Missing	14	1	7	4	6	14	7

Statistics

		Q8	Q9	Q10	Q11	Q12	Q13	Q14
N	Valid	334	329	334	337	303	332	337
	Missing	8	13	8	5	39	10	5

Statistics

		Q15	Q16	Q17	Q18	Q19	Q20	Q21
N	Valid	337	334	333	337	329	314	310
	Missing	5	8	9	5	13	28	32

Statistics

		Q23	Course Syllabus	Course Announce ments	Instructor Contact Information	Lecture Notes	Other Course Materials
N	Valid	328	282	309	232	262	242
	Missing	14	60	33	110	80	100

Statistics

		Other Websites	Discussion Boards	Chats	Quizzes	Online Examinations	Email Fellow Students
N	Valid	161	80	34	224	165	183
	Missing	181	262	308	118	177	159

Statistics

		Email Instructor	Electronic Submission	Gradebook	Q25B Announcements-Frequency	Q25C Faculty Information-Frequency	Q25D Discussion Boards-Frequency
N	Valid	268	234	294	341	339	339
	Missing	74	108	48	1	3	3

Statistics

		Q25E Chat Rooms-Frequency	Q25F Assessments-Frequency	Q25G Syllabus-Frequency	Q25H Course Documents-Frequency	Q25I Email-Frequency
N	Valid	334	337	339	340	341
	Missing	8	5	3	2	1

Statistics

		Q25J Electronic Submission-Frequency	Q25K Gradebook-Frequency	Vector 1-Student-Instructor Interaction	Vector 2-Student Collaboration	Vector 3-Active Learning	Vector 4-Feedback
N	Valid	335	341	337	327	342	341
	Missing	7	1	5	15	0	1

Statistics

		Vector 5-Time on Task	Vector 6-High Expectations	Vector 7-Respect for Diversity	Age	Gender	Age_ Generational
N	Valid	342	337	303	341	342	341
	Missing	0	5	39	1	0	1

Statistics

		Race/Ethnicity	Attendance status	Employment status	Educational goal	Current household Income	Household income growing up
N	Valid	340	339	341	339	332	331
	Missing	2	3	1	3	10	11

Statistics

		Main internet access point	Type internet connection	Satisfaction with Internet speed	Hours per week using computer	Divisions Students New	Institutional Classification
N	Valid	323	296	301	341	335	342
	Missing	19	46	41	1	7	0

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	137	40.1	40.8	40.8
	Agree	173	50.6	51.5	92.3
	Disagree	22	6.4	6.5	98.8
	Strongly Disagree	4	1.2	1.2	100.0
	Total	336	98.2	100.0	
Missing	System	6	1.8		
Total		342	100.0		

Q6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	52	15.2	15.9	15.9
	Agree	104	30.4	31.7	47.6
	Disagree	124	36.3	37.8	85.4
	Strongly Disagree	48	14.0	14.6	100.0
	Total	328	95.9	100.0	
Missing	System	14	4.1		
Total		342	100.0		

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	71	20.8	21.2	21.2
	Agree	177	51.8	52.8	74.0
	Disagree	71	20.8	21.2	95.2
	Strongly Disagree	16	4.7	4.8	100.0
	Total	335	98.0	100.0	
Missing	System	7	2.0		
Total		342	100.0		

Q8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	84	24.6	25.1	25.1
	Agree	170	49.7	50.9	76.0
	Disagree	66	19.3	19.8	95.8
	Strongly Disagree	14	4.1	4.2	100.0
	Total	334	97.7	100.0	
Missing	System	8	2.3		
Total		342	100.0		

Q9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	88	25.7	26.7	26.7
	Agree	153	44.7	46.5	73.3
	Disagree	63	18.4	19.1	92.4
	Strongly Disagree	25	7.3	7.6	100.0
	Total	329	96.2	100.0	
Missing	System	13	3.8		
Total		342	100.0		

Q10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	139	40.6	41.6	41.6
	Agree	168	49.1	50.3	91.9
	Disagree	22	6.4	6.6	98.5
	Strongly Disagree	5	1.5	1.5	100.0
	Total	334	97.7	100.0	
Missing	System	8	2.3		
Total		342	100.0		

Q11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	141	41.2	41.8	41.8
	Agree	165	48.2	49.0	90.8
	Disagree	21	6.1	6.2	97.0
	Strongly Disagree	10	2.9	3.0	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Q12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	80	23.4	26.4	26.4
	Agree	137	40.1	45.2	71.6
	Disagree	68	19.9	22.4	94.1
	Strongly Disagree	18	5.3	5.9	100.0
	Total	303	88.6	100.0	
Missing	System	39	11.4		
Total		342	100.0		

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	108	31.6	32.5	32.5
	Agree	166	48.5	50.0	82.5
	Disagree	40	11.7	12.0	94.6
	Strongly Disagree	18	5.3	5.4	100.0
	Total	332	97.1	100.0	
Missing	System	10	2.9		
Total		342	100.0		

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	145	42.4	43.0	43.0
	Agree	158	46.2	46.9	89.9
	Disagree	24	7.0	7.1	97.0
	Strongly Disagree	10	2.9	3.0	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Q15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	171	50.0	50.7	50.7
	Agree	136	39.8	40.4	91.1
	Disagree	19	5.6	5.6	96.7
	Strongly Disagree	11	3.2	3.3	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Q16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	65	19.0	19.5	19.5
	Agree	184	53.8	55.1	74.6
	Disagree	69	20.2	20.7	95.2
	Strongly Disagree	16	4.7	4.8	100.0
	Total	334	97.7	100.0	
Missing	System	8	2.3		
Total		342	100.0		

Q17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	103	30.1	30.9	30.9
	Agree	154	45.0	46.2	77.2
	Disagree	52	15.2	15.6	92.8
	Strongly Disagree	24	7.0	7.2	100.0
	Total	333	97.4	100.0	
Missing	System	9	2.6		
Total		342	100.0		

Q18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	93	27.2	27.6	27.6
	Agree	150	43.9	44.5	72.1
	Disagree	75	21.9	22.3	94.4
	Strongly Disagree	19	5.6	5.6	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Q19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	99	28.9	30.1	30.1
	Agree	167	48.8	50.8	80.9
	Disagree	46	13.5	14.0	94.8
	Strongly Disagree	17	5.0	5.2	100.0
	Total	329	96.2	100.0	
Missing	System	13	3.8		
Total		342	100.0		

Q20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	3.5	3.8	3.8
	Agree	85	24.9	27.1	30.9
	Disagree	155	45.3	49.4	80.3
	Strongly Disagree	62	18.1	19.7	100.0
	Total	314	91.8	100.0	
Missing	System	28	8.2		
Total		342	100.0		

Q21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	1.2	1.3	1.3
	Agree	87	25.4	28.1	29.4
	Disagree	162	47.4	52.3	81.6
	Strongly Disagree	57	16.7	18.4	100.0
	Total	310	90.6	100.0	
Missing	System	32	9.4		
Total		342	100.0		

Q23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	3.8	4.0	4.0
	Agree	154	45.0	47.0	50.9
	Disagree	123	36.0	37.5	88.4
	Strongly Disagree	38	11.1	11.6	100.0
	Total	328	95.9	100.0	
Missing	System	14	4.1		
Total		342	100.0		

Course Syllabus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	282	82.5	100.0	100.0
Missing	System	60	17.5		
Total		342	100.0		

Course Announcements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	309	90.4	100.0	100.0
Missing	System	33	9.6		
Total		342	100.0		

Instructor Contact Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	232	67.8	100.0	100.0
Missing	System	110	32.2		
Total		342	100.0		

Lecture Notes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	262	76.6	100.0	100.0
Missing	System	80	23.4		
Total		342	100.0		

Other Course Materials

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	242	70.8	100.0	100.0
Missing	System	100	29.2		
Total		342	100.0		

Other Websites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	161	47.1	100.0	100.0
Missing	System	181	52.9		
Total		342	100.0		

Discussion Boards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	80	23.4	100.0	100.0
Missing	System	262	76.6		
Total		342	100.0		

Chats

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	34	9.9	100.0	100.0
Missing	System	308	90.1		
Total		342	100.0		

Quizzes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	224	65.5	100.0	100.0
Missing	System	118	34.5		
Total		342	100.0		

Online Examinations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	165	48.2	100.0	100.0
Missing	System	177	51.8		
Total		342	100.0		

Email Fellow Students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	183	53.5	100.0	100.0
Missing	System	159	46.5		
Total		342	100.0		

Email Instructor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	268	78.4	100.0	100.0
Missing	System	74	21.6		
Total		342	100.0		

Electronic Submission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	234	68.4	100.0	100.0
Missing	System	108	31.6		
Total		342	100.0		

Gradebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	294	86.0	100.0	100.0
Missing	System	48	14.0		
Total		342	100.0		

Q25B Announcements-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	25	7.3	7.3	7.3
	Rarely	31	9.1	9.1	16.4
	Sometimes	54	15.8	15.8	32.3
	Often	105	30.7	30.8	63.0
	Always	126	36.8	37.0	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Q25C Faculty Information-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	73	21.3	21.5	21.5
	Rarely	90	26.3	26.5	48.1
	Sometimes	94	27.5	27.7	75.8
	Often	43	12.6	12.7	88.5
	Always	39	11.4	11.5	100.0
	Total	339	99.1	100.0	
Missing	System	3	.9		
Total		342	100.0		

Q25D Discussion Boards-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	120	35.1	35.4	35.4
	Rarely	64	18.7	18.9	54.3
	Sometimes	69	20.2	20.4	74.6
	Often	43	12.6	12.7	87.3
	Always	43	12.6	12.7	100.0
	Total	339	99.1	100.0	
Missing	System	3	.9		
Total		342	100.0		

Q25E Chat Rooms-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	204	59.6	61.1	61.1
	Rarely	70	20.5	21.0	82.0
	Sometimes	30	8.8	9.0	91.0
	Often	18	5.3	5.4	96.4
	Always	12	3.5	3.6	100.0
	Total	334	97.7	100.0	
Missing	System	8	2.3		
Total		342	100.0		

Q25F Assessments-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	54	15.8	16.0	16.0
	Rarely	24	7.0	7.1	23.1
	Sometimes	63	18.4	18.7	41.8
	Often	91	26.6	27.0	68.8
	Always	105	30.7	31.2	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Q25G Syllabus-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	22	6.4	6.5	6.5
	Rarely	29	8.5	8.6	15.0
	Sometimes	100	29.2	29.5	44.5
	Often	100	29.2	29.5	74.0
	Always	88	25.7	26.0	100.0
	Total	339	99.1	100.0	
Missing	System	3	.9		
Total		342	100.0		

Q25H Course Documents-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	23	6.7	6.8	6.8
	Rarely	15	4.4	4.4	11.2
	Sometimes	52	15.2	15.3	26.5
	Often	119	34.8	35.0	61.5
	Always	131	38.3	38.5	100.0
	Total	340	99.4	100.0	
Missing	System	2	.6		
Total		342	100.0		

Q25I Email-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	31	9.1	9.1	9.1
	Rarely	35	10.2	10.3	19.4
	Sometimes	60	17.5	17.6	37.0
	Often	105	30.7	30.8	67.7
	Always	110	32.2	32.3	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Q25J Electronic Submission-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	49	14.3	14.6	14.6
	Rarely	25	7.3	7.5	22.1
	Sometimes	55	16.1	16.4	38.5
	Often	89	26.0	26.6	65.1
	Always	117	34.2	34.9	100.0
	Total	335	98.0	100.0	
Missing	System	7	2.0		
Total		342	100.0		

Q25K Gradebook-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	20	5.8	5.9	5.9
	Rarely	27	7.9	7.9	13.8
	Sometimes	41	12.0	12.0	25.8
	Often	91	26.6	26.7	52.5
	Always	162	47.4	47.5	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Vector 1-Student-Instructor Interaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	7.9	8.0	8.0
	1	38	11.1	11.3	19.3
	2	36	10.5	10.7	30.0
	2	56	16.4	16.6	46.6
	Agree	68	19.9	20.2	66.8
	2	33	9.6	9.8	76.6
	3	34	9.9	10.1	86.6
	3	23	6.7	6.8	93.5
	Disagree	7	2.0	2.1	95.5
	3	4	1.2	1.2	96.7
	4	6	1.8	1.8	98.5
	4	2	.6	.6	99.1
	Strongly Disagree	2	.6	.6	99.7
	4	1	.3	.3	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Vector 2-Student Collaboration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	57	16.7	17.4	17.4
	2	43	12.6	13.1	30.6
	Agree	115	33.6	35.2	65.7
	3	60	17.5	18.3	84.1
	Disagree	33	9.6	10.1	94.2
	4	9	2.6	2.8	96.9
	Strongly Disagree	10	2.9	3.1	100.0
	Total	327	95.6	100.0	
Missing	System	15	4.4		
Total		342	100.0		

Vector 3-Active Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	21	6.1	6.1	6.1
	1	37	10.8	10.8	17.0
	2	41	12.0	12.0	28.9
	Agree	98	28.7	28.7	57.6
	2	58	17.0	17.0	74.6
	3	8	2.3	2.3	76.9
	3	43	12.6	12.6	89.5
	Disagree	22	6.4	6.4	95.9
	3	7	2.0	2.0	98.0
	4	1	.3	.3	98.2
	4	2	.6	.6	98.8
	Strongly Disagree	4	1.2	1.2	100.0
	Total	342	100.0	100.0	

Vector 4-Feedback

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	82	24.0	24.0	24.0
	1	48	14.0	14.1	38.1
	2	1	.3	.3	38.4
	2	58	17.0	17.0	55.4
	Agree	104	30.4	30.5	85.9
	2	24	7.0	7.0	93.0
	3	10	2.9	2.9	95.9
	Disagree	7	2.0	2.1	97.9
	3	3	.9	.9	98.8
	4	1	.3	.3	99.1
	Strongly Disagree	3	.9	.9	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Vector 5-Time on Task

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	1	.3	.3	.3
	1	2	.6	.6	.9
	1	1	.3	.3	1.2
	2	4	1.2	1.2	2.3
	2	29	8.5	8.5	10.8
	2	4	1.2	1.2	12.0
	2	17	5.0	5.0	17.0
	Agree	49	14.3	14.3	31.3
	2	42	12.3	12.3	43.6
	2	4	1.2	1.2	44.7
	2	1	.3	.3	45.0
	2	44	12.9	12.9	57.9
	3	10	2.9	2.9	60.8
	3	47	13.7	13.7	74.6
	3	4	1.2	1.2	75.7
	3	8	2.3	2.3	78.1
	3	24	7.0	7.0	85.1
	Disagree	28	8.2	8.2	93.3
	3	14	4.1	4.1	97.4
	3	2	.6	.6	98.0
	3	1	.3	.3	98.2
	3	5	1.5	1.5	99.7
	4	1	.3	.3	100.0
	Total	342	100.0	100.0	

Vector 6-High Expectations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	141	41.2	41.8	41.8
	Agree	165	48.2	49.0	90.8
	Disagree	21	6.1	6.2	97.0
	Strongly Disagree	10	2.9	3.0	100.0
	Total	337	98.5	100.0	
Missing	System	5	1.5		
Total		342	100.0		

Vector 7-Respect for Diversity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	80	23.4	26.4	26.4
	Agree	137	40.1	45.2	71.6
	Disagree	68	19.9	22.4	94.1
	Strongly Disagree	18	5.3	5.9	100.0
	Total	303	88.6	100.0	
Missing	System	39	11.4		
Total		342	100.0		

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19	69	20.2	20.2	20.2
	20	52	15.2	15.2	35.5
	21	22	6.4	6.5	41.9
	22	18	5.3	5.3	47.2
	23	20	5.8	5.9	53.1
	24	9	2.6	2.6	55.7
	25	15	4.4	4.4	60.1
	26	17	5.0	5.0	65.1
	27	11	3.2	3.2	68.3
	28	6	1.8	1.8	70.1
	29	5	1.5	1.5	71.6
	30	9	2.6	2.6	74.2
	31	9	2.6	2.6	76.8
	32	8	2.3	2.3	79.2
	33	5	1.5	1.5	80.6
	34	5	1.5	1.5	82.1
	35	2	.6	.6	82.7
	36	6	1.8	1.8	84.5
	37	6	1.8	1.8	86.2
	38	8	2.3	2.3	88.6
	39	5	1.5	1.5	90.0
	40	6	1.8	1.8	91.8
	41	1	.3	.3	92.1
	42	6	1.8	1.8	93.8
	44	1	.3	.3	94.1
	45	5	1.5	1.5	95.6
	46	3	.9	.9	96.5
	47	1	.3	.3	96.8
	48	3	.9	.9	97.7
	51	1	.3	.3	97.9
	53	2	.6	.6	98.5
	57	2	.6	.6	99.1
	59	1	.3	.3	99.4
	60	1	.3	.3	99.7
	61	1	.3	.3	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	78	22.8	22.8	22.8
	Female	264	77.2	77.2	100.0
	Total	342	100.0	100.0	

Age_Generational

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19-27	233	68.1	68.3	68.3
	28-48	100	29.2	29.3	97.7
	49-66	8	2.3	2.3	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Race/Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	241	70.5	70.9	70.9
	African American	76	22.2	22.4	93.2
	Other	23	6.7	6.8	100.0
	Total	340	99.4	100.0	
Missing	System	2	.6		
Total		342	100.0		

Attendance status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time	247	72.2	72.9	72.9
	Part-time	92	26.9	27.1	100.0
	Total	339	99.1	100.0	
Missing	System	3	.9		
Total		342	100.0		

Employment status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time	70	20.5	20.5	20.5
	Part-time	134	39.2	39.3	59.8
	Not employed	137	40.1	40.2	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Educational goal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Learn new skills	20	5.8	5.9	5.9
	Earn a certificate	19	5.6	5.6	11.5
	Earn a diploma	17	5.0	5.0	16.5
	Earn on Associate's	147	43.0	43.4	59.9
	Transfer	122	35.7	36.0	95.9
	Undecided	14	4.1	4.1	100.0
	Total	339	99.1	100.0	
Missing	System	3	.9		
Total		342	100.0		

Current household Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less then $20,000	123	36.0	37.0	37.0
	$20,000-$40,000	98	28.7	29.5	66.6
	More than $40,000	111	32.5	33.4	100.0
	Total	332	97.1	100.0	
Missing	System	10	2.9		
Total		342	100.0		

Household income growing up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $20,000	70	20.5	21.1	21.1
	$20,000-$40,000	111	32.5	33.5	54.7
	More than $40,000	150	43.9	45.3	100.0
	Total	331	96.8	100.0	
Missing	System	11	3.2		
Total		342	100.0		

Main internet access point

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Campus	38	11.1	11.8	11.8
	Home	274	80.1	84.8	96.6
	Work	3	.9	.9	97.5
	Other	8	2.3	2.5	100.0
	Total	323	94.4	100.0	
Missing	System	19	5.6		
Total		342	100.0		

Type internet connection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dial UP modem	20	5.8	6.8	6.8
	Cable modem	94	27.5	31.8	38.5
	DSL	139	40.6	47.0	85.5
	Work Lan	4	1.2	1.4	86.8
	Other	39	11.4	13.2	100.0
	Total	296	86.5	100.0	
Missing	System	46	13.5		
Total		342	100.0		

Satisfaction with Internet speed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very satisfied	135	39.5	44.9	44.9
	Somewhat satisfied	71	20.8	23.6	68.4
	Satisfied	71	20.8	23.6	92.0
	Dissatisfied	16	4.7	5.3	97.3
	Somewhat dissatisfied	4	1.2	1.3	98.7
	Very dissatisfied	4	1.2	1.3	100.0
	Total	301	88.0	100.0	
Missing	System	41	12.0		
Total		342	100.0		

Hours per week using computer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely or Never	22	6.4	6.5	6.5
	1-2	66	19.3	19.4	25.8
	3-5	119	34.8	34.9	60.7
	6-10	74	21.6	21.7	82.4
	More than 10	60	17.5	17.6	100.0
	Total	341	99.7	100.0	
Missing	System	1	.3		
Total		342	100.0		

Divisions Students New

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arts & Humanities	11	3.2	3.3	3.3
	Business	30	8.8	9.0	12.2
	Education	12	3.5	3.6	15.8
	Health	224	65.5	66.9	82.7
	Natural Sciences	6	1.8	1.8	84.5
	Behavioral/Social Sciences	8	2.3	2.4	86.9
	Technical	13	3.8	3.9	90.7
	Undecided	31	9.1	9.3	100.0
	Total	335	98.0	100.0	
Missing	System	7	2.0		
Total		342	100.0		

Institutional Classification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	258	75.4	75.4	75.4
	Suburban	48	14.0	14.0	89.5
	Urban	36	10.5	10.5	100.0
	Total	342	100.0	100.0	

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q1	162	1	4	2.17	.733
Q2	167	1	4	1.93	.729
Q3	165	1	4	1.73	.693
Q4	166	1	4	1.83	.693
Q5	162	1	4	2.31	.760
Q6	125	1	4	2.53	.894
Q7	152	1	4	2.36	.694
Q8	152	1	4	2.34	.709
Q9	152	1	4	2.34	.720
Q10	164	1	4	2.29	.664
Q11	167	1	4	2.30	.780
Q12	127	1	4	2.43	.740
Q13	160	1	4	2.09	.725
Q14	168	1	4	2.54	.840
Q15	140	1	4	1.76	.685
Q16	161	1	4	2.29	.637
Q17	150	1.00	4.00	2.1000	.59922
Q18	166	1	4	2.16	.669
Q19	167	1.00	4.00	1.9042	.62318
Q20	157	1	4	3.18	.678
Q21	160	1	4	3.04	.708
Q23	158	1	4	3.16	.701
Course Syllabus	159	1	1	1.00	.000
Instructor Contact Information	156	1	1	1.00	.000
Course Announcements	145	1	1	1.00	.000
Lecture Notes	105	1	1	1.00	.000
Other Course Materials	145	1	1	1.00	.000
Other Websites	114	1	1	1.00	.000
Discussion Boards	67	1	1	1.00	.000
Chats	15	1	1	1.00	.000
Quizzes	55	1	1	1.00	.000
Online Examinations	84	1	1	1.00	.000
Email Students Individually	156	1	1	1.00	.000
Email Class	143	1	1	1.00	.000
Electronic Submission	115	1	1	1.00	.000
Gradebook	137	1	1	1.00	.000
Q25B Announcements-Frequency	166	1	5	3.86	1.217
Q25C Faculty Information-Frequency	157	1	5	3.90	1.411
Q25D Discussion Boards-Frequency	160	1	5	2.58	1.460
Q25E Chat Rooms-Frequency	157	1	5	1.59	.927
Q25F Assessments-Frequency	162	1	5	3.38	1.495
Q25G Syllabus-Frequency	168	1	5	4.73	.793
Q25H Course Documents-Frequency	166	1	5	4.47	.983
Q25I Email-Frequency	168	1	5	4.51	.862

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q25J Electronic Submission-Frequency	158	1	5	3.49	1.563
Q25K Gradebook-Frequency	162	1	5	4.23	1.402
Lectures	168	1	5	3.70	1.356
Teacher-led discussions	168	1	5	3.24	1.306
Student-led discussions	168	1	5	2.35	1.084
Case studies	169	1	5	2.08	1.202
Group activities	169	1	5	2.64	1.212
Student presentations	167	1	5	2.11	1.127
In-class writing assignments	168	1	5	2.61	1.371
Experiential assignments/activities	164	1	5	2.82	1.401
Hands-on activities	167	1	5	3.09	1.476
Vector 1-Student-Instructor Interaction	166	1	4	2.26	.606
Vector 2-Student Collaboration	144	1	4	2.34	.660
Vector 3-Active Learning	169	1	4	2.35	.620
Vector 4-Feedback	169	1	4	1.77	.536
Vector 5-Time on Task	170	1	4	2.76	.448
Vector 6-High Expectations	167	1	4	2.30	.780
Vector 7-Respect for Diversity	127	1	4	2.43	.740
Gender	169	1	2	1.69	.465
Age	168	25	69	45.73	10.680
Age_Generational	168	1	4	2.45	.555
Race/Ethnicity	169	1	3	1.33	.661
Highest Degree Earned	170	1	4	2.21	.739
Employment status	169	1	3	1.83	.484
Full-time teaching experience	166	1	7	4.37	1.937
Part-time teaching experience	165	1	7	2.93	1.358
Divisions	166	1	7	3.61	2.366
Internet access	170	2	3	2.95	.212
Internet Access	170	1	2	1.95	.212
Hours spent using computer at home	170	1	7	5.18	1.321
Hours spent using computer at work	170	1	7	5.87	1.262
Hours of Professional Development	169	1	5	2.30	1.044
Professional development topics covered	159	1	4	2.58	1.070
Interaction with Students-Web-Enhanced	169	1	6	3.47	1.282
Interaction with Students-Comparison to Traditional	166	1	5	2.91	1.133
Institutional Classification	170	1	3	1.28	.606
Valid N (listwise)	3				

Frequencies - Instructors

Statistics

		Q1	Q2	Q3	Q4	Q5	Q6	Q7
N	Valid	162	167	165	166	162	125	152
	Missing	8	3	5	4	8	45	18

Statistics

		Q8	Q9	Q10	Q11	Q12	Q13	Q14
N	Valid	152	152	164	167	127	160	168
	Missing	18	18	6	3	43	10	2

Statistics

		Q15	Q16	Q17	Q18	Q19	Q20	Q21
N	Valid	140	161	150	166	167	157	160
	Missing	30	9	20	4	3	13	10

Statistics

		Q23	Course Syllabus	Course Announce ments	Instructor Contact Information	Lecture Notes	Other Course Materials
N	Valid	158	159	145	156	105	145
	Missing	12	11	25	14	65	25

Statistics

		Other Websites	Discussion Boards	Chats	Quizzes	Online Examinations	Email Students Individually
N	Valid	114	67	15	55	84	156
	Missing	56	103	155	115	86	14

Statistics

		Email Class	Electronic Submission	Gradebook	Q25B Announcements-Frequency	Q25C Faculty Information-Frequency	Q25D Discussion Boards-Frequency
N	Valid	143	115	137	166	157	160
	Missing	27	55	33	4	13	10

Statistics

		Q25E Chat Rooms-Frequency	Q25F Assessments-Frequency	Q25G Syllabus-Frequency	Q25H Course Documents-Frequency	Q25I Email-Frequency
N	Valid	157	162	168	166	168
	Missing	13	8	2	4	2

Statistics

		Q25J Electronic Submission-Frequency	Q25K Gradebook-Frequency	Lectures	Teacher-led discussions	Student-led discussions	Case studies
N	Valid	158	162	168	168	168	169
	Missing	12	8	2	2	2	1

Statistics

		Group activities	Student presentations	In-class writing assignments	Experiential assignments /activities	Hands-on activities	Vector 1-Student-Instructor Interaction
N	Valid	169	167	168	164	167	166
	Missing	1	3	2	6	3	4

Statistics

		Vector 2-Student Collaboration	Vector 3-Active Learning	Vector 4-Feedback	Vector 5-Time on Task	Vector 6-High Expectations	Vector 7-Respect for Diversity
N	Valid	144	169	169	170	167	127
	Missing	26	1	1	0	3	43

Statistics

		Gender	Age	Age_ Generational	Race/Ethnicity	Highest Degree Earned	Employment status
N	Valid	169	168	168	169	170	169
	Missing	1	2	2	1	0	1

Statistics

		Full-time teaching experience	Part-time teaching experience	Divisions	Internet Access	Hours spent using computer at home	Hours spent using computer at work
N	Valid	166	165	166	170	170	170
	Missing	4	5	4	0	0	0

Statistics

		Hours of Professional Development	Professional development topics covered	Interaction with Students-Web-Enhanced	Interaction with Students-Comparison to Traditional	Institutional Classification
N	Valid	169	159	169	166	170
	Missing	1	11	1	4	0

Frequency Table

Q1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	24	14.1	14.8	14.8
	Agree	95	55.9	58.6	73.5
	Disagree	35	20.6	21.6	95.1
	Strongly Disagree	8	4.7	4.9	100.0
	Total	162	95.3	100.0	
Missing	System	8	4.7		
Total		170	100.0		

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	44	25.9	26.3	26.3
	Agree	96	56.5	57.5	83.8
	Disagree	21	12.4	12.6	96.4
	Strongly Disagree	6	3.5	3.6	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	63	37.1	38.2	38.2
	Agree	89	52.4	53.9	92.1
	Disagree	8	4.7	4.8	97.0
	Strongly Disagree	5	2.9	3.0	100.0
	Total	165	97.1	100.0	
Missing	System	5	2.9		
Total		170	100.0		

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	53	31.2	31.9	31.9
	Agree	91	53.5	54.8	86.7
	Disagree	19	11.2	11.4	98.2
	Strongly Disagree	3	1.8	1.8	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	19	11.2	11.7	11.7
	Agree	83	48.8	51.2	63.0
	Disagree	50	29.4	30.9	93.8
	Strongly Disagree	10	5.9	6.2	100.0
	Total	162	95.3	100.0	
Missing	System	8	4.7		
Total		170	100.0		

Q6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	16	9.4	12.8	12.8
	Agree	45	26.5	36.0	48.8
	Disagree	46	27.1	36.8	85.6
	Strongly Disagree	18	10.6	14.4	100.0
	Total	125	73.5	100.0	
Missing	System	45	26.5		
Total		170	100.0		

Q7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	9	5.3	5.9	5.9
	Agree	90	52.9	59.2	65.1
	Disagree	43	25.3	28.3	93.4
	Strongly Disagree	10	5.9	6.6	100.0
	Total	152	89.4	100.0	
Missing	System	18	10.6		
Total		170	100.0		

Q8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	7.1	7.9	7.9
	Agree	86	50.6	56.6	64.5
	Disagree	45	26.5	29.6	94.1
	Strongly Disagree	9	5.3	5.9	100.0
	Total	152	89.4	100.0	
Missing	System	18	10.6		
Total		170	100.0		

Q9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	8.2	9.2	9.2
	Agree	80	47.1	52.6	61.8
	Disagree	50	29.4	32.9	94.7
	Strongly Disagree	8	4.7	5.3	100.0
	Total	152	89.4	100.0	
Missing	System	18	10.6		
Total		170	100.0		

Q10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	7.1	7.3	7.3
	Agree	99	58.2	60.4	67.7
	Disagree	46	27.1	28.0	95.7
	Strongly Disagree	7	4.1	4.3	100.0
	Total	164	96.5	100.0	
Missing	System	6	3.5		
Total		170	100.0		

Q11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	20	11.8	12.0	12.0
	Agree	90	52.9	53.9	65.9
	Disagree	44	25.9	26.3	92.2
	Strongly Disagree	13	7.6	7.8	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

Q12

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	6.5	8.7	8.7
	Agree	59	34.7	46.5	55.1
	Disagree	49	28.8	38.6	93.7
	Strongly Disagree	8	4.7	6.3	100.0
	Total	127	74.7	100.0	
Missing	System	43	25.3		
Total		170	100.0		

Q13

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	31	18.2	19.4	19.4
	Agree	87	51.2	54.4	73.8
	Disagree	38	22.4	23.8	97.5
	Strongly Disagree	4	2.4	2.5	100.0
	Total	160	94.1	100.0	
Missing	System	10	5.9		
Total		170	100.0		

Q14

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	16	9.4	9.5	9.5
	Agree	68	40.0	40.5	50.0
	Disagree	62	36.5	36.9	86.9
	Strongly Disagree	22	12.9	13.1	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Q15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	50	29.4	35.7	35.7
	Agree	76	44.7	54.3	90.0
	Disagree	11	6.5	7.9	97.9
	Strongly Disagree	3	1.8	2.1	100.0
	Total	140	82.4	100.0	
Missing	System	30	17.6		
Total		170	100.0		

Q16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	10	5.9	6.2	6.2
	Agree	101	59.4	62.7	68.9
	Disagree	44	25.9	27.3	96.3
	Strongly Disagree	6	3.5	3.7	100.0
	Total	161	94.7	100.0	
Missing	System	9	5.3		
Total		170	100.0		

Q17

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	16	9.4	10.7	10.7
	Agree	107	62.9	71.3	82.0
	Disagree	23	13.5	15.3	97.3
	Strongly Disagree	4	2.4	2.7	100.0
	Total	150	88.2	100.0	
Missing	System	20	11.8		
Total		170	100.0		

Q18

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	22	12.9	13.3	13.3
	Agree	100	58.8	60.2	73.5
	Disagree	40	23.5	24.1	97.6
	Strongly Disagree	4	2.4	2.4	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Q19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	39	22.9	23.4	23.4
	Agree	107	62.9	64.1	87.4
	Disagree	19	11.2	11.4	98.8
	Strongly Disagree	2	1.2	1.2	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

Q20

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	2.4	2.5	2.5
	Agree	12	7.1	7.6	10.2
	Disagree	92	54.1	58.6	68.8
	Strongly Disagree	49	28.8	31.2	100.0
	Total	157	92.4	100.0	
Missing	System	13	7.6		
Total		170	100.0		

Q21

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	4.1	4.4	4.4
	Agree	16	9.4	10.0	14.4
	Disagree	101	59.4	63.1	77.5
	Strongly Disagree	36	21.2	22.5	100.0
	Total	160	94.1	100.0	
Missing	System	10	5.9		
Total		170	100.0		

Q23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	2.4	2.5	2.5
	Agree	16	9.4	10.1	12.7
	Disagree	89	52.4	56.3	69.0
	Strongly Disagree	49	28.8	31.0	100.0
	Total	158	92.9	100.0	
Missing	System	12	7.1		
Total		170	100.0		

Course Syllabus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	159	93.5	100.0	100.0
Missing	System	11	6.5		
Total		170	100.0		

Course Announcements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	145	85.3	100.0	100.0
Missing	System	25	14.7		
Total		170	100.0		

Instructor Contact Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	156	91.8	100.0	100.0
Missing	System	14	8.2		
Total		170	100.0		

Lecture Notes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	105	61.8	100.0	100.0
Missing	System	65	38.2		
Total		170	100.0		

Other Course Materials

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	145	85.3	100.0	100.0
Missing	System	25	14.7		
Total		170	100.0		

Other Websites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	114	67.1	100.0	100.0
Missing	System	56	32.9		
Total		170	100.0		

Discussion Boards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	67	39.4	100.0	100.0
Missing	System	103	60.6		
Total		170	100.0		

Chats

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	8.8	100.0	100.0
Missing	System	155	91.2		
Total		170	100.0		

Quizzes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	55	32.4	100.0	100.0
Missing	System	115	67.6		
Total		170	100.0		

Online Examinations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	84	49.4	100.0	100.0
Missing	System	86	50.6		
Total		170	100.0		

Email Students Individually

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	156	91.8	100.0	100.0
Missing	System	14	8.2		
Total		170	100.0		

Email Class

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	143	84.1	100.0	100.0
Missing	System	27	15.9		
Total		170	100.0		

Electronic Submission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	115	67.6	100.0	100.0
Missing	System	55	32.4		
Total		170	100.0		

Gradebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	137	80.6	100.0	100.0
Missing	System	33	19.4		
Total		170	100.0		

Q25B Announcements-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	13	7.6	7.8	7.8
	Rarely	8	4.7	4.8	12.7
	Sometimes	34	20.0	20.5	33.1
	Often	46	27.1	27.7	60.8
	Always	65	38.2	39.2	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Q25C Faculty Information-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	17	10.0	10.8	10.8
	Rarely	13	7.6	8.3	19.1
	Sometimes	23	13.5	14.6	33.8
	Often	20	11.8	12.7	46.5
	Always	84	49.4	53.5	100.0
	Total	157	92.4	100.0	
Missing	System	13	7.6		
Total		170	100.0		

Q25D Discussion Boards-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	53	31.2	33.1	33.1
	Rarely	31	18.2	19.4	52.5
	Sometimes	33	19.4	20.6	73.1
	Often	16	9.4	10.0	83.1
	Always	27	15.9	16.9	100.0
	Total	160	94.1	100.0	
Missing	System	10	5.9		
Total		170	100.0		

Q25E Chat Rooms-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	99	58.2	63.1	63.1
	Rarely	35	20.6	22.3	85.4
	Sometimes	15	8.8	9.6	94.9
	Often	5	2.9	3.2	98.1
	Always	3	1.8	1.9	100.0
	Total	157	92.4	100.0	
Missing	System	13	7.6		
Total		170	100.0		

Q25F Assessments-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	27	15.9	16.7	16.7
	Rarely	25	14.7	15.4	32.1
	Sometimes	25	14.7	15.4	47.5
	Often	30	17.6	18.5	66.0
	Always	55	32.4	34.0	100.0
	Total	162	95.3	100.0	
Missing	System	8	4.7		
Total		170	100.0		

Q25G Syllabus-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	4	2.4	2.4	2.4
	Rarely	2	1.2	1.2	3.6
	Sometimes	6	3.5	3.6	7.1
	Often	11	6.5	6.5	13.7
	Always	145	85.3	86.3	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Q25H Course Documents-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	7	4.1	4.2	4.2
	Rarely	1	.6	.6	4.8
	Sometimes	14	8.2	8.4	13.3
	Often	29	17.1	17.5	30.7
	Always	115	67.6	69.3	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Q25I Email-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	2	1.2	1.2	1.2
	Rarely	5	2.9	3.0	4.2
	Sometimes	14	8.2	8.3	12.5
	Often	32	18.8	19.0	31.5
	Always	115	67.6	68.5	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Q25J Electronic Submission-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	31	18.2	19.6	19.6
	Rarely	15	8.8	9.5	29.1
	Sometimes	22	12.9	13.9	43.0
	Often	26	15.3	16.5	59.5
	Always	64	37.6	40.5	100.0
	Total	158	92.9	100.0	
Missing	System	12	7.1		
Total		170	100.0		

Q25K Gradebook-Frequency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	20	11.8	12.3	12.3
	Rarely	6	3.5	3.7	16.0
	Sometimes	6	3.5	3.7	19.8
	Often	15	8.8	9.3	29.0
	Always	115	67.6	71.0	100.0
	Total	162	95.3	100.0	
Missing	System	8	4.7		
Total		170	100.0		

Lectures

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	21	12.4	12.5	12.5
	Rarely	11	6.5	6.5	19.0
	Sometimes	27	15.9	16.1	35.1
	Often	47	27.6	28.0	63.1
	Always	62	36.5	36.9	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Teacher-led discussions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	28	16.5	16.7	16.7
	Rarely	17	10.0	10.1	26.8
	Sometimes	35	20.6	20.8	47.6
	Often	62	36.5	36.9	84.5
	Always	26	15.3	15.5	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Student-led discussions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	48	28.2	28.6	28.6
	Rarely	40	23.5	23.8	52.4
	Sometimes	57	33.5	33.9	86.3
	Often	19	11.2	11.3	97.6
	Always	4	2.4	2.4	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Case studies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	78	45.9	46.2	46.2
	Rarely	29	17.1	17.2	63.3
	Sometimes	39	22.9	23.1	86.4
	Often	16	9.4	9.5	95.9
	Always	7	4.1	4.1	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Group activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	40	23.5	23.7	23.7
	Rarely	34	20.0	20.1	43.8
	Sometimes	51	30.0	30.2	74.0
	Often	34	20.0	20.1	94.1
	Always	10	5.9	5.9	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Student presentations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	66	38.8	39.5	39.5
	Rarely	40	23.5	24.0	63.5
	Sometimes	44	25.9	26.3	89.8
	Often	10	5.9	6.0	95.8
	Always	7	4.1	4.2	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

In-class writing assignments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	51	30.0	30.4	30.4
	Rarely	28	16.5	16.7	47.0
	Sometimes	47	27.6	28.0	75.0
	Often	20	11.8	11.9	86.9
	Always	22	12.9	13.1	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Experiential assignments/activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	44	25.9	26.8	26.8
	Rarely	22	12.9	13.4	40.2
	Sometimes	40	23.5	24.4	64.6
	Often	35	20.6	21.3	86.0
	Always	23	13.5	14.0	100.0
	Total	164	96.5	100.0	
Missing	System	6	3.5		
Total		170	100.0		

Hands-on activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	38	22.4	22.8	22.8
	Rarely	22	12.9	13.2	35.9
	Sometimes	32	18.8	19.2	55.1
	Often	37	21.8	22.2	77.2
	Always	38	22.4	22.8	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

Vector 1-Student-Instructor Interaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	2	1.2	1.2	1.2
	1	7	4.1	4.2	5.4
	2	9	5.3	5.4	10.8
	2	23	13.5	13.9	24.7
	Agree	36	21.2	21.7	46.4
	2	33	19.4	19.9	66.3
	3	16	9.4	9.6	75.9
	3	18	10.6	10.8	86.7
	Disagree	7	4.1	4.2	91.0
	3	5	2.9	3.0	94.0
	4	4	2.4	2.4	96.4
	4	2	1.2	1.2	97.6
	Strongly Disagree	4	2.4	2.4	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Vector 2-Student Collaboration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	8	4.7	5.6	5.6
	2	9	5.3	6.3	11.8
	Agree	56	32.9	38.9	50.7
	3	34	20.0	23.6	74.3
	Disagree	28	16.5	19.4	93.8
	4	2	1.2	1.4	95.1
	Strongly Disagree	7	4.1	4.9	100.0
	Total	144	84.7	100.0	
Missing	System	26	15.3		
Total		170	100.0		

Vector 3-Active Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	3	1.8	1.8	1.8
	1	12	7.1	7.1	8.9
	2	3	1.8	1.8	10.7
	2	7	4.1	4.1	14.8
	Agree	50	29.4	29.6	44.4
	2	26	15.3	15.4	59.8
	3	9	5.3	5.3	65.1
	3	19	11.2	11.2	76.3
	Disagree	25	14.7	14.8	91.1
	3	8	4.7	4.7	95.9
	4	1	.6	.6	96.4
	4	3	1.8	1.8	98.2
	Strongly Disagree	3	1.8	1.8	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Vector 4-Feedback

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	27	15.9	16.0	16.0
	1	27	15.9	16.0	32.0
	2	3	1.8	1.8	33.7
	2	23	13.5	13.6	47.3
	Agree	61	35.9	36.1	83.4
	2	17	10.0	10.1	93.5
	3	2	1.2	1.2	94.7
	3	5	2.9	3.0	97.6
	Disagree	2	1.2	1.2	98.8
	Strongly Disagree	2	1.2	1.2	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Vector 5-Time on Task

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.6	.6	.6
	1	1	.6	.6	1.2
	2	1	.6	.6	1.8
	2	6	3.5	3.5	5.3
	Agree	6	3.5	3.5	8.8
	2	3	1.8	1.8	10.6
	2	1	.6	.6	11.2
	2	13	7.6	7.6	18.8
	3	3	1.8	1.8	20.6
	3	39	22.9	22.9	43.5
	3	2	1.2	1.2	44.7
	3	5	2.9	2.9	47.6
	3	22	12.9	12.9	60.6
	Disagree	33	19.4	19.4	80.0
	3	14	8.2	8.2	88.2
	3	6	3.5	3.5	91.8
	3	5	2.9	2.9	94.7
	4	4	2.4	2.4	97.1
	4	1	.6	.6	97.6
	4	1	.6	.6	98.2
	4	1	.6	.6	98.8
	4	1	.6	.6	99.4
	Strongly Disagree	1	.6	.6	100.0
	Total	170	100.0	100.0	

Vector 6-High Expectations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	20	11.8	12.0	12.0
	Agree	90	52.9	53.9	65.9
	Disagree	44	25.9	26.3	92.2
	Strongly Disagree	13	7.6	7.8	100.0
	Total	167	98.2	100.0	
Missing	System	3	1.8		
Total		170	100.0		

Vector 7-Respect for Diversity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	6.5	8.7	8.7
	Agree	59	34.7	46.5	55.1
	Disagree	49	28.8	38.6	93.7
	Strongly Disagree	8	4.7	6.3	100.0
	Total	127	74.7	100.0	
Missing	System	43	25.3		
Total		170	100.0		

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	53	31.2	31.4	31.4
	Female	116	68.2	68.6	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25	2	1.2	1.2	1.2
	26	1	.6	.6	1.8
	28	5	2.9	3.0	4.8
	29	4	2.4	2.4	7.1
	30	2	1.2	1.2	8.3
	31	3	1.8	1.8	10.1
	32	8	4.7	4.8	14.9
	33	3	1.8	1.8	16.7
	34	4	2.4	2.4	19.0
	35	5	2.9	3.0	22.0
	36	5	2.9	3.0	25.0
	37	2	1.2	1.2	26.2
	38	5	2.9	3.0	29.2
	39	7	4.1	4.2	33.3
	40	5	2.9	3.0	36.3
	41	4	2.4	2.4	38.7
	42	7	4.1	4.2	42.9
	44	5	2.9	3.0	45.8
	45	4	2.4	2.4	48.2
	46	4	2.4	2.4	50.6
	47	3	1.8	1.8	52.4
	48	4	2.4	2.4	54.8
	49	3	1.8	1.8	56.5
	50	9	5.3	5.4	61.9
	51	4	2.4	2.4	64.3
	52	6	3.5	3.6	67.9
	53	4	2.4	2.4	70.2
	54	4	2.4	2.4	72.6
	55	8	4.7	4.8	77.4
	56	6	3.5	3.6	81.0
	57	7	4.1	4.2	85.1
	58	6	3.5	3.6	88.7
	59	3	1.8	1.8	90.5
	60	4	2.4	2.4	92.9
	61	5	2.9	3.0	95.8
	62	1	.6	.6	96.4
	63	1	.6	.6	97.0
	64	3	1.8	1.8	98.8
	67	1	.6	.6	99.4
	69	1	.6	.6	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Age_Generational

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19-27	3	1.8	1.8	1.8
	28-48	89	52.4	53.0	54.8
	49-66	74	43.5	44.0	98.8
	67-84	2	1.2	1.2	100.0
	Total	168	98.8	100.0	
Missing	System	2	1.2		
Total		170	100.0		

Race/Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	131	77.1	77.5	77.5
	African American	20	11.8	11.8	89.3
	Other	18	10.6	10.7	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Highest Degree Earned

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Baccalaureate	18	10.6	10.6	10.6
	Masters	112	65.9	65.9	76.5
	Doctorate	26	15.3	15.3	91.8
	Doctorate	14	8.2	8.2	100.0
	Total	170	100.0	100.0	

Employment status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Part-time	36	21.2	21.3	21.3
	Full-time	125	73.5	74.0	95.3
	Both Full- and Part-time	8	4.7	4.7	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Full-time teaching experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	18	10.6	10.8	10.8
	<1	6	3.5	3.6	14.5
	1-5	37	21.8	22.3	36.7
	6-10	30	17.6	18.1	54.8
	11-15	22	12.9	13.3	68.1
	16-20	16	9.4	9.6	77.7
	>20	37	21.8	22.3	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Part-time teaching experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	31	18.2	18.8	18.8
	<1	20	11.8	12.1	30.9
	1-5	72	42.4	43.6	74.5
	6-10	25	14.7	15.2	89.7
	11-15	8	4.7	4.8	94.5
	16-20	6	3.5	3.6	98.2
	>20	3	1.8	1.8	100.0
	Total	165	97.1	100.0	
Missing	System	5	2.9		
Total		170	100.0		

Divisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arts and Humanties	40	23.5	24.1	24.1
	Natural Sciences	42	24.7	25.3	49.4
	Technical	8	4.7	4.8	54.2
	Business	19	11.2	11.4	65.7
	Social Sciences	10	5.9	6.0	71.7
	Orientation	4	2.4	2.4	74.1
	Health	43	25.3	25.9	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Internet Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Campus Only	8	4.7	4.7	4.7
	Campus and Home	162	95.3	95.3	100.0
	Total	170	100.0	100.0	

Hours spent using computer at home

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No computer at home	1	.6	.6	.6
	Less than 1	3	1.8	1.8	2.4
	1-2	14	8.2	8.2	10.6
	3-5	31	18.2	18.2	28.8
	6-10	53	31.2	31.2	60.0
	11-20	34	20.0	20.0	80.0
	More than 20	34	20.0	20.0	100.0
	Total	170	100.0	100.0	

Hours spent using computer at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Computer	1	.6	.6	.6
	Less than 1	2	1.2	1.2	1.8
	1-2	5	2.9	2.9	4.7
	3-5	18	10.6	10.6	15.3
	6-10	28	16.5	16.5	31.8
	More than 20	46	27.1	27.1	58.8
	7	70	41.2	41.2	100.0
	Total	170	100.0	100.0	

Hours of Professional Development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	34	20.0	20.1	20.1
	1-4	82	48.2	48.5	68.6
	5-8	31	18.2	18.3	87.0
	9-16	13	7.6	7.7	94.7
	17+	9	5.3	5.3	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Professional development topics covered

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Use of tools in the CMS	43	25.3	27.0	27.0
	Strategies to enhance teaching and learning	9	5.3	5.7	32.7
	Both of the above	79	46.5	49.7	82.4
	I did not participate in PD activities relating to CMS	28	16.5	17.6	100.0
	Total	159	93.5	100.0	
Missing	System	11	6.5		
Total		170	100.0		

Interaction with Students-Web-Enhanced

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	8	4.7	4.7	4.7
	Less than 1	29	17.1	17.2	21.9
	1-2	55	32.4	32.5	54.4
	3-5	45	26.5	26.6	81.1
	6-10	16	9.4	9.5	90.5
	More than 10	16	9.4	9.5	100.0
	Total	169	99.4	100.0	
Missing	System	1	.6		
Total		170	100.0		

Interaction with Students-Comparison to Traditional

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spend more time interacting with students	30	17.6	18.1	18.1
	Spend less time interacting with students	20	11.8	12.0	30.1
	No difference in the amount of interaction	55	32.4	33.1	63.3
	Do not teach courses that are not web-enhanced	57	33.5	34.3	97.6
	I do not interact with students outside class time	4	2.4	2.4	100.0
	Total	166	97.6	100.0	
Missing	System	4	2.4		
Total		170	100.0		

Institutional Classification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	137	80.6	80.6	80.6
	Suburban	19	11.2	11.2	91.8
	Urban	14	8.2	8.2	100.0
	Total	170	100.0	100.0	