

## Chapter One

### Introduction

Across America, those involved in institutions of higher education are monitoring two trends regarding degree completion. The first is an increase in the length of time to degree among students (Astin & Oseguera, 2006; Cope, 1978). The second is an increase in the number of students who do not complete their degree (Dennis, 1998; National Center for Educational Statistics, 2001).

Statistics related to these two trends are telling. During the 1980s, more than 15 million men and women entered colleges and universities. Experts predicted that 40% would never achieve a degree, 40% would graduate in the “normal” four years, and 20% would delay their degree completion (Cope, 1978). In fact, one study found that in 1984, 39.9% of college students completed their degree in four years. This compares to 46.7% who completed a degree in four years in the late 1960s (Astin & Oseguera, 2006). Of 9,000 students included in a longitudinal study from 1996 to 2001, 13% of respondents were still enrolled after five years but had not completed a degree and 37% of respondents had not completed a degree and were no longer enrolled at their institution (National Center for Educational Statistics, 2001).

Fewer college students today are completing college in four years than was the case a decade ago. Only 36.4% of freshman who entered baccalaureate-granting colleges in fall 1994 were able to complete their bachelor’s degrees within four years (Astin & Oseguera, 2006). In 1998, only one student of every six completed a bachelor’s degree in four years (Dennis, 1998). As four year graduation rates have declined, five and six year graduation rates have increased. The degree completion rate jumps by nearly two-thirds—to 58.8%—if students are allowed six years to complete a bachelor’s degree (Astin & Oseguera, 2006).

Although it is a growing concern that students are taking longer than four years to earn a bachelor’s degree, the more serious concern is about those students who do not complete their degree at all. The reasons students drop out of college can be attributed to: a) individual characteristics, b) institutional characteristics, and c) student interaction within the college environment (Tinto, 1975). Individual characteristics are those such as family background, past educational experiences, and goal commitment. Institutional characteristics include institutional type, size, quality, and composition. Interaction within the college environment refers to

academic integration, social integration, and institutional commitment. Any one of these may explain a student's decision to drop out of college.

Students who drop out of college often suffer personal disappointments, financial setbacks, and lower career and life goals (Ramist, 1981). As college dropout rates continue to be a phenomenon on college campuses, the question arises as to why some students drop out and others graduate. More importantly, what is occurring at college campuses to retain students and lead them to graduation?

Some of the same factors influence both retention and attrition among college students (Cope 1978; Ramist, 1981; Tinto, 1987). However, additional explanations have been developed to explain student retention. One relates to integration of the student to the college. With all other things being equal, the higher the degree of academic and social integration into the college system, the greater the commitment to the specific institution and to the goal of college completion (Tinto, 1975).

There are several key experiences that are most likely to lead to academic integration. These include: a) faculty and student interactions, b) out of classroom academic activities, and c) academic performance (Tinto, 1987). These experiences lead to academic integration because they provide students with the opportunity to practice their classroom learning, develop leadership skills, and work with people from different backgrounds (Kuh, Kinzie, Schuh, & Whitt, 2005).

In particular, students who perceive that they matter to faculty, staff, and administrators may be more connected to those individuals (Braxton & Hirschy, 2004). As Kuh et al. (2005) noted:

Students learn firsthand how to think about and solve practical problems by interacting with faculty inside and outside of classrooms. As a result, teachers become role models, mentors, and guides for lifelong learning (p. 207).

The nature and number of interactions students have with faculty relate directly to academic success. Therefore, positive relationships between faculty and students affect academic integration.

Academic integration is also based on out-of-classroom activities. Classroom-based problem solving, peer tutoring, service learning and other community based-projects, internships, and involvement in a variety of educationally purposeful activities outside of the classroom lead

to academic integration (Kuh et al., 2005). These activities may prompt academic integration because of the amount of involvement in the educational “community.” Indeed, Tinto (1987) found that engagement in the community of the classroom can become a gateway for subsequent student involvement in the academic and social communities of the college.

Social integration refers to the extent of congruency between the individual student and the social system of a college or university (Braxton & Hirschy, 2004). The social life of the campus and a campus’ activities are an integral part of an institution’s ability to retain students (Dennis, 1998). In fact, Braxton & Hirschy (2004) proposed that the greater the level of institutional commitment to the welfare of the student, the more likely it is that the student will achieve social integration. Therefore, promoting social integration relies not only on the individual student but the institution as well.

Social integration is also influenced by behavior. Stage and Hossler (2000) argued that social integration relies on the behavior of a student and institution rather than the perception of integration. In other words, social integration will only take place if institutions are providing opportunities for students and students are becoming involved in those opportunities.

Experiences that lead to social integration include: a) informal peer group associations, b) semi-formal extracurricular activities, and c) interaction with faculty and administrative personnel within the college (Tinto, 1975). As students become more involved in campus activities, the more pronounced are the effects of a positive self-image and satisfaction with the overall college experience (Ramist, 1981). As students become involved in campus activities, they are more socially integrated into the institution, which in turn, improves student retention.

In short, academic and social integration occur when students are involved in their college experience. Involvement refers to the quality and quantity of the physical and psychological energy that the student invests in the college experience (Astin, 1985). Involvement in particular types of activities during the undergraduate years is associated with enhanced satisfaction with the institution and the academic career (Astin, 1977). Both student effort and institutional effort are needed to promote student involvement (Kuh, Schuh, Whitt, Andreas, Lyons, Strange, Krehbiel, & MacKay, 1991). Areas that relate to student involvement include: a) living on campus, b) membership in a social fraternity or sorority, c) working on research projects, and d) student-faculty relations (Astin, 1977; Kuh et al., 1991).

When students become more involved in their college experience, they achieve greater levels of integration in the social and academic systems of the institution. Students who are actively involved in both academic and out-of-class activities gain more from the college experience than those who are not so involved (Kuh et al., 1991). Higher levels of integration to the academic and social systems lead to higher levels of retention. Therefore, the more time students are involved during their college career, the more likely they are to be retained and graduate.

Research suggests, however, that college students are beginning to spend their time in activities associated with college life that have been made available to them within the recent past. In particular, students are using different forms of technology with increasing frequency. When asked about cellular phone use, 97% of 350 undergraduate students reported that they own cellular phones and 22.5% reported using their cellular phone for two hours or more per day (Gemmill & Peterson, 2006). Not only do students use cellular phones often, they use them for different reasons as well. In 2004, research found that along with talking, college students were using their cellular phone for text messaging, playing games, and accessing the Internet (Roach, 2004).

Along with owning a cellular phone, college students also own and use other technologies. Researchers found that 62% of college students own a stereo, 86% own a television, and 74% own a DVD player (Roach, 2004). The importance of these technologies to college students can be seen in the amount of money they spend on them annually. According to a report from the National Retail Federation's annual Back-to-College Consumer Intentions and Actions Survey, students will spend 27.5% more on electronic purchases in 2006 (as cited in "Freshmen Arrive," 2006). That translates to \$10.46 billion being spent on flat-panel TVs, video-game consoles, laptops, and digital music players ("Freshmen Arrive," 2006). College students are spending more time and more money on technology devices such as cellular phones, video consoles, stereos, televisions, and digital music players.

Personal computers are another form of technology prevalent on campuses. Many college students are spending a significant amount of time on computers. In part, computer use is second nature to them. Twenty percent of the students attending college today began using computers when they were between 5 and 8 years old, and all had begun using computers by the time they were between 16 and 18 years old (Jones, 2002). More students are coming to college with

personal computers as well as the experience and tools necessary to use computers for personal and academic purposes. When asked about familiarity with computers, 99.6% of college students reported that they had computer experience (Messineo & DeOlllos, 2005) and 97% reported that they had access to a personal computer where they lived (Gemmill & Peterson, 2006; Messineo & DeOlllos, 2005).

Not only are college students spending more time on computers, the reasons for computer use are also expanding. College students are using computers to communicate instantaneously with friends (instant messenger) and to access the Internet (Gemmitt & Peterson, 2006). More specifically, students are using instant messenger and the Internet as ways to stay connected to family and friends. Playing computer and Internet games has also increased computer use. Among 1,162 students surveyed, 31% reported playing online games once a week or more often and 37% reported playing computer games once a week or more often (Jones, 2003). Online shopping also has increased in popularity among college students. A total of 15% of online sales in 2002 came from college students (Rainie, Kalehoff, & Hess, 2002). Online social networking, such as Facebook, has also increased computer use for college students. Facebook tallies 250 million hits every day and ranks ninth in overall traffic on the Internet for college students (Bugeja, 2006).

Indeed, spending too much time on computers has become a problem in some cases. In one study, more than 100 of 1,078 participants met the criteria to be designated as computer dependent (Reisberg, 2000). In general, college students are increasing the amount of time that they use computers. Reasons for computer use have also begun to vary.

Although the amount of computer use among college students is on the rise, gaps between computer use and race and computer use and gender exist. For example, there is no longer a gap in computer access between African American and Caucasian American students, as institutions of higher education are providing students with computer labs and library computers ("Large and Growing," 1999). Regardless of computer access, however, Caucasian American students are still using computers slightly more than their African American counterparts. When assessing the level of computer use of 570 undergraduates at one particular institution, the researchers found 64.3% of Caucasian American students were considered to be frequent computer users while only 54.7% of African American students were (Hawkins & Paris, 1997).

In addition, almost half (45.3%) of the African American students in the study were considered to be infrequent computer users, while only 35.7% of Caucasian American students in the survey were considered to be infrequent computer users (Hawkins, & Paris, 1997). The gap persisted through 2005, when it was found that Caucasian Americans were more skilled overall in computer use than minority students (Messineo & DeOllos, 2005).

Differences by gender in computer use are also found among college students. College women continue to lack confidence and experience with computers. Only 19% reported possessing advanced computer skills and only 42.1% reported feeling comfortable with advanced computer use (Messineo & DeOllos, 2005). However, Internet use among women is on the rise. In 2005, 89% of women ages 18-29 were online compared with 80% of men in that age group (Fallows, 2005). Additionally, more women (94%) than men (88%) send and receive email (Fallows, 2005).

To summarize, college students are taking longer to earn a bachelor's degree than those in past decades (Astin & Oseguera, 2006; Cope, 1978; Dennis, 1998). Along with an increased time to earn degree, there has been an increase in the number of college dropouts (National Center for Educational Statistics, 2001). Research suggests that individual characteristics, institutional characteristics, and student interaction within the college environment lead to college attrition as well as retention (Cope, 1978; Ramist, 1981; Tinto, 1987). This has led researchers to assess additional issues to explain college student retention.

One such issue is the integration of college students into the social and academic system of college (Tinto, 1975). Academic integration refers to faculty and student interaction, out of classroom activities, and academic performance (Braxton & Hirschy, 2004; Kuh et al., 1991; Kuh et al., 2005; Tinto, 1987). Social integration refers to informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and administrative personnel within the college (Braxton & Hirschy, 2004; Dennis, 1998; Tinto, 1975). There appears to be a relationship between academic and social integration and campus involvement (Astin, 1977 & 1985, Kuh et al., 1991). The more involved a student is in their college experience, the more likely they are to be retained and graduate.

Additionally, today's college students have reported spending a significant amount of time on technology devices, especially computers, during their college years (Gemmill & Peterson, 2006; "Freshmen Arrive," 2006; Jones, 2002; Messineo & DeOllos, 2005; Roach,

2004). A majority of students have access to or own a personal computer and use a computer for instant messaging, accessing the Internet, online shopping, computer games, and online social networking (Bugeja, 2006; Gemmitt & Peterson, 2006; Jones, 2003; Rainie, Kalehoff, & Hess, 2002). As the accessibility to computers increases, so does the time students spend on computers, and it has been found that some students are dependent on computers to unhealthy degrees (Reisberg, 2000).

Yet a gap between computer use and gender and computer use and race exists. Caucasian American college students are using computers more than their African American peers (Hawkins & Paris, 1997; Messineo & DeOllos, 2005). In terms of advanced computer use, men possess more skills and a greater degree of comfort than women (Messineo & DeOllos, 2005) although the amount of Internet use for email is on the rise among women aged 18-29 (Fallows, 2005).

Although there is extensive research available on academic and social integration (Astin, 1977 & 1985; Braxton & Hirschy, 2004; Dennis, 1998; Kuh et al., 2005; Tinto, 1975 & 1987) as well as on computer use among college students (Bugeja, 2006; Fallows, 2005; Gemmill & Peterson, 2006; Hawkins & Paris, 1997; Jones, 2002; Jones, 2003; "Large and Growing," 1999; Messineo & DeOllos, 2005; Rainie, Kalehoff, & Hess, 2002; Reisberg, 2000), there is a lack of literature about the influence computer use and race and computer use and gender has on academic and social integration. It was reasonable to question whether the use of computers plays a role in academic and social integration and this study examined that question.

#### Purpose of the Study

The purpose of this study was to examine the relationship between academic and social integration and of use of computers. Academic integration was defined as library use, learning in coursework, and experience with faculty. Social integration was defined as use of campus facilities, participation in clubs and organizations, personal experiences, and acquaintanceships with other students. Additionally, this study examined academic and social integration by race and level of computer use and by gender and level of computer use.

Participants in this study included students who completed the College Student Experience Questionnaire (Pace & Kuh, 1998) in 2005. The CSEQ measures student experiences in college, including academic and social experiences. The instrument also elicits data about respondents' use of computers. It is administered to a national sample of college students each

year. The dataset included 2,000 respondents and representative numbers of men and women as well as Caucasian and Non-Caucasian students.

### Research Questions

This study was designed to answer the following research questions:

- 1) Does academic integration differ by level of computer use?
- 2) Does social integration differ by level of computer use?
- 3) Does academic integration differ by level of computer use and race?
- 4) Does social integration differ by level of computer use and race?
- 5) Does academic integration differ by level of computer use and gender?
- 6) Does social integration differ by level of computer use and gender?

### Significance of the Study

This study was significant for several campus constituencies. One group that might benefit from the results includes faculty members. The findings provided faculty members with data on how student relationships with faculty may differ based on computer use. Faculty members might use the results to shape their relationships with students.

Those who serve as academic advisors are a second constituency that might benefit from the results of this study. The findings provided advisors with data about academic integration by level of computer use. Advisors might use the information to assess how to advise students to promote academic integration.

A third campus constituency that might benefit from the results of this study is student activities professionals. The results provided such administrators with data on academic and social integration by computer use and race and computer use and gender. Student activity administrators might use the results to consider ways to use computers to promote social integration.

The present study also had significance for future research. For example, this study explored the relationship between the level of computer use and academic integration. Future studies might examine the influence of computer use on retention among college students. Such a study would expand on the information available about the influence of computer use on college campuses.

This study also explored the level of computer use and academic and social integration in terms of select items of the CSEQ. Future studies might examine the outcomes of computer use



on different aspects of academic and social integration such as writing, scientific, and quantitative experiences as well as involvement in arts, music, or theatre. Such a study would expand on information about other forms of academic and social integration.

Also, this study explored academic and social integration by the level of computer use and race and computer use and gender. Future studies might examine academic and social integration and computer use by socioeconomic status, family background, or self-esteem. Such studies would expand on the general information available on integration among college students.

Finally, this study was also significant for future policy. The results provided budget officers with information about the level of computer use and the influence of such use on academic and social integration. Policymakers might use this information when considering the resources allocated to computer equipment on campus.

This study was also significant for academic policymakers. The results provided chief academic affairs officers with information about academic integration by level of computer use. Policymakers might use this information when considering policies regarding the use of computers in the classroom.

Lastly, the study provided chief student affairs officers with information about social integration. The results provided policymakers with information on social integration by level of computer use. Policymakers might use this information when establishing policies regarding the use of computers related to student activities.

#### Delimitations

As with all research, the present study had several delimitations. One dealt with the dataset. The data used for this study were preexisting and collected at different institutions throughout the country. It is possible that instructions given to participants on how to complete the CSEQ may have varied hence influencing how students completed the instrument. If so, this might have affected the results in some unforeseen manner.

A second delimitation dealt with the instrument that was used. The CESQ is a quantitative questionnaire. Participants were not provided the opportunity to explain the responses they selected. Providing participants with an opportunity to explain their answers may have changed the results of this study.

A third delimitation dealt with the definition of academic and social integration. Seven realms, based on the sub-items of the CSEQ, were used to define academic and social integration. It is possible that there are other realms that could have been used to define these terms. Using other realms may have led to different results than those identified in this study.

A final delimitation dealt with the differences in institutional settings of participants. Institutional factors were not controlled for when collecting data. It is possible that different institutions rely on the use of computers in different ways, hence affecting the use of computers by students. The results of the study might have been influenced by any such differences.

Despite these delimitations, this was a worthwhile study. It provided information about academic and social integration. Specifically, information about academic and social integration based on level of computer use and race and level of computer use and gender was generated. This study provided information that may be used in the implementation of future programs and also laid the groundwork for future research.

#### Organization of the Study

The present study is organized around five chapters. Chapter One introduced the topic of the study, the research questions, and the significance of the study. The second chapter reviews the literature relevant to the study. Chapter Three describes the methodology of the study, including the sampling techniques and the procedures used to collect and analyze the data. The fourth chapter describes the results of the study while the fifth and final chapter discusses those results and their implications for future practice, research and policy.

## Chapter Two

### Literature Review

To explore the research relevant to this study, first it was necessary to examine the literature on academic integration. From this search, factors that influence academic integration were identified and two factors were examined in detail. These were academic integration and race, and academic integration and gender. Next I explored the literature on social integration and focused on two subtopics: social integration and race and social integration and gender.

To fully explore my topic, however, it was also necessary to examine the research on computer use. Most of the work available on this topic examined reasons why computer use is on the rise on college campuses. Included in this increase of computer use, computer use and race and computer use and gender were examined. This literature review is organized around these three major categories and their respective subtopics.

#### Research on Academic Integration

Academic integration is defined as faculty and student interactions, out of classroom activities, and academic performance (Braxton & Hirschy, 2004; Kuh, et al., 2005; Tinto, 1987). According to researchers, students who interact with faculty in educational sessions out of the classroom and students who feel that they matter to faculty are more likely to be academically integrated into the institution than those who do not engage in such behaviors.

However, as research continues to flourish on the topic of academic integration, additional factors have been discovered that also lead to academic integration. One such factor is certainty with major. When assessing the needs of sophomores, certainty in choice of major and the amount of time students interact with faculty are positive predictors of academic success (Graunke & Woosley, 2005).

Additionally, the teaching style of the faculty member and the learning style of the student also play a role in the level of academic integration. In a study of teaching style and learning style within three disciplines, researchers found that the greater the disconnect between the teaching style of the faculty member and the learning style of the student, the less academic success and integration the student achieves (Zhang, 2006). Therefore, academic integration is affected by the ability of the faculty member to relate the material to the student as well as the ability of the student to understand the subject matter.

Individual characteristics of students have also been found to influence academic integration. One example is student motivation. Students with a learning goal orientation are more likely to report integration in academic self-control behaviors than performance-oriented students (Kennett & Keeper, 2006). That is, students who are academically engaged for the purposes of learning the material are more successful in college than those who are academically engaged for the purposes of earning a good grade.

Similarly, optimism in students is positively correlated with higher grades, which in turn correlates to success expectation behaviors (Heikkila & Lonka, 2006). The level of optimism that a student possesses positively correlates with self-regulation and task behavior. However, earning higher grades affects optimism; meaning that earning higher grades leads to an increase in optimism.

In addition to personal characteristics, student behavior is another factor that influences academic integration. Students who are more resourceful are much more likely to report mastery-oriented behaviors than students who are less resourceful (Kennett & Keefer, 2006). Resourcefulness refers to the ability of a student to make use of positive self-instructions, delay gratification, apply problem-solving methods, and employ self-control strategies to succeed academically.

Overall, many factors influence academic integration. Faculty interaction and teaching style (Graunke & Woosley, 2005; Zhang, 2006), commitment to major (Grauke & Woosley, 2005), and internalized student behaviors and attitudes (Heikkila & Lonka, 2006; Kennett & Keefer, 2006) all influence academic integration. However, research also shows that academic integration is influenced by a student's race and gender.

#### *Academic Integration and Race*

While research on academic integration has been available for the last 40 years, Non-Caucasian students were hardly ever included in those early studies. This is largely due to the number of Non-Caucasian students in college in the past. In 1975, 42% of Non-Caucasian high school graduates enrolled in colleges and universities, whereas in 1996, that percentage rose to 55% (Cohen, 1998). Researchers began studying student retention, involvement, and integration prior to the time Non-Caucasians had become a critical mass on college campuses (Rendon, Jalomo, & Nora, 2000). Perhaps what is most important about current theories and research on academic integration is that integration can mean something completely different to student

groups who have been historically marginalized in higher education (Hurtado & Carter, 1997). Therefore, many of the theories on academic integration are being revisited to include the viewpoints of Non-Caucasian students.

Currently, America's racial and ethnic minorities are grossly underrepresented in higher education and college completion rates are about a third higher among Caucasian Americans than African American college entrants and nearly twice as high among Caucasian Americans as among Hispanics (Astin, 1982). Differences between Caucasians and Non-Caucasians in higher education mirror the trends of achievement of Non-Caucasians in high school. Consistently, the average scores of African Americans on standardized achievement tests in high school are considerably below those of Caucasians, with the average of scores for African Americans being one standard deviation below that of Caucasians (Patchen, 1982). Results from a case study at Berkeley High School, California, revealed that Caucasian women are the top academic performers in their high school, regardless of gender bias that may exist in standardized tests (Wing, 2006).

The lack of success among Non-Caucasian students in high school can also be attributed to the socioeconomic issues. As noted in the *State of Black America* (1992), inadequate preparation in unequal schools and continued racial prejudice have trapped more than a third of African Americans in a cycle of poverty and a quality of life comparable to the Third World countries (as cited in Hopkins, 1997). African American children are tracked into slow learner groups, and they are three times as likely as their Caucasian counterparts to be placed into classes for mentally, behaviorally, and emotionally impaired students (Hopkins, 1997). Although other factors exist that influence academic achievement, many Non-Caucasian students in public education do not succeed due to the lack of resources they receive. In turn, many students are limited throughout the remainder of their educational lives.

Yet not all Non-Caucasian students face such hardships in high school. Throughout the country, many Non-Caucasian students graduate from high school and matriculate to higher education. For some, the understanding of the collegiate culture leads to integration and success in college. When assessing how students become integrated in their new environment, Kuh & Love (2000) found that students use an interpretive scheme or sense making system developed through experiences of their cultures of origin. Restated, if a student's culture of origin emphasizes the importance of attending college, the family within the culture of origin values

higher education, or the culture of origin supports the student, the student is more likely to be retained and become involved at the institution.

Supportive families have been found to be better predictors of African American students' educational aspirations than level of parental education or occupation (Clark, 1983). For African American students, a culture of origin that values family support can lead to academic integration. Hurtado, Carter, & Spuler (1996) found that maintaining family relationships and support was vital to the successful transition and adjustment to college among academically talented Latino students as well (as cited in Hurtado, & Carter, 1997). Again, the culture of origin influences academic integration. Nora, Castaneda, & Cabrera (1992) found that family support increased the chances that students of color would engage socially and academically with faculty and peers (as cited in Kuh, & Love, 2000).

Along with supportive families, institutional environment also plays a role in academic integration for Non-Caucasian students. When assessing 1,600 African American and Caucasian undergraduate students enrolled in four private liberal arts institutions, two predominately Black and two predominately White, it was found that college environment has a significant influence on virtually all outcome domains, from personal to cognitive for African American and Caucasian students at both predominately Black and predominately White institutions (Watson & Kuh, 1996). Therefore, students attending an institution that provides a campus climate that matches the student's own background can contribute to the student's overall academic integration.

Activities and relationships with faculty, administrators, and students greatly influenced African American students' gains at PBLAIs (predominantly Black liberal art institutions), which suggests that historically Black institutions provide African American students with a developmentally powerful educational environment (Watson & Kuh, 1996). When reviewing the current literature from 1988-2000, researchers found that African American students attending predominantly Black institutions appeared to gain in educational attainment beyond what might be the case at a predominately White institution (Pascarella & Terenzini, 2005).

Academic integration among students of other races has also been investigated. In the fall of 1990, 287 first and third year Latino students were assessed with respect to their sense of belonging to the institution (Hurtado & Carter, 1997). Frequent discussions of course content with other students outside of class related to a strong sense of belonging. In the third year of

school, connections with faculty members also led to a strong sense of belonging. A sense of academic belonging by the student leads to successful academic integration.

The College Student Experience Questionnaire (Pace, 1990) was administered to 25,429 students in 1990. Information from respondents showed that 38% of Caucasian and Asian students reported that their grades were B+ or better; but only 17% of the Hispanic and 13% of the African American students reported B+ or better grades. Also, Asian students spent more time on their school work than any other group-56% spending about 40 hours a week or more, compared to 40% of Caucasian students, 39% of Hispanic students and 33% of the African American students (Pace, 1990). Results from this study have several implications. The first is that time spent studying has a direct effect on grades. The second is that higher grades relate to a stronger degree of integration into the academic realm. The third is that Caucasian students and Asian students are more academically integrated than African American and Hispanic students.

Overall, several factors have been shown to influence academic integration and race. High school success before college (Patchen, 1982), culture of origin (Kuh & Love, 2000), supportive families (Hurtado, Carter, & Spuler, 1996), institutional environment (Watson & Kuh, 1996), connections with faculty (Hurtado & Carter, 1997), and time spent on studying (Pace, 1990) all impact academic integration and race. But what role does gender play in academic integration?

#### *Academic Integration and Gender*

A study conducted in 1989 yielded significant results related to academic integration and gender. The study included 149 seniors from 12 different institutions who were interviewed on their overall experience in college. Students were asked to comment on five general questions that elicited data on their gain in academic and social competence (Kuh, 1995).

The results from the study reveal many significant findings. First, women report more contacts with faculty than men. For women, these contacts are more likely to lead to gains in interpersonal competence (self awareness, autonomy, confidence, social competence and sense of purpose), whereas men associate their contacts with faculty to gains in cognitive complexity (reflective judgment and application of knowledge) (Kuh, 1995). Contacts with faculty result in different forms of academic integration between men and women.

Men (19.4%) more frequently attributed cognitive complexity (reflective judgment and application of knowledge) to contextual properties of the institution than did women (9.3%)

(Kuh, 1995). Restated, men were more likely to attribute their ability to apply knowledge based on the ethos, values and morals of the institution attended. Therefore, the type of institution a student attends has an impact on cognitive complexity or academic integration.

While peer interactions have been associated with social integration, some studies have found that women (27.1%) more frequently attribute gains in cognitive complexity (reflective judgment and application of knowledge) to peers than do men (16.9%) (Kuh, 1995). That is, interaction with peers will more likely lead to academic integration for women than for men.

A review of the current literature indicates that differences in race and differences in gender exist for academic integration. To fully understand the topic of this study, I also explored the research on social integration.

### Research on Social Integration

Social integration refers to the extent of congruency between the individual student and the social system of an institution (Braxton & Hirschy, 2004), the social life of the campus (Dennis, 1998) and the behavior of the student (Stage & Hossler, 2000). Experiences that lead to social integration include: a) informal peer group associations, b) semi-formal extracurricular activities, and c) interaction with faculty and administrative personnel within the college (Tinto, 1975). As students become involved in campus activities, they are more socially integrated into the institution, which, in turn, improves student retention. Both race and gender influence social integration, however.

#### *Social Integration and Race*

A student's chances of staying in college seem to be enhanced by involvement in extracurricular activities (Astin, 1975). However, the increased complexity of environments with multiple racial-ethnic communities and opportunities for multiple memberships pose new challenges for understanding students' social interaction and affiliation (Hurtado, & Carter, 1997).

There are several aspects of a college that increase a student's social integration to the institution. Membership in social fraternities or sororities and participation in varsity athletics, for example, lead to an increase in persistence rates among African American and Caucasian students (Astin, 1975). Therefore, being involved in a club or organization can increase African American and Caucasian students' social integration regardless of race.



Upon assessing 149 seniors at 12 institutions, Kuh (1995) found that compared to students of color, Caucasian students attribute more gains in practical competence (practical competence and vocational competence) to leadership experiences whereas African American (26.9%) mention more frequently than Caucasian students (21.6%) that peers influence gains in interpersonal competence (self awareness, autonomy, confidence, social competence and sense of purpose). Therefore, leadership experiences are more likely to lead to social integration for Caucasian students whereas interactions with peers are more likely to lead to social integration for African American students.

Pace (1990) found that African American students spend more time in college buildings and in activities than students of other races. When assessing involvement in clubs and organizations, African American students showed the highest levels of involvement, whereas Asian students showed the lowest levels. African American students used the Student Union at the highest rates, followed by Hispanics, Caucasians, and then Asian students. Not only does involvement in campus clubs and activities lead to social integration, but living on campus had also been found to relate to social integration, regardless of race. Living in a residence hall during the freshman year increases African American and Caucasian students' chances of finishing college (Astin, 1975).

Overall, involvement in a social fraternity or sorority, sport (Astin, 1975), club or organization (Pace, 1990), or living on campus (Astin, 1975) increases a student's social integration into a college or university. Results indicate that race does not play a role in integration of students based on club or organization involvement. However, Caucasian students are more likely to relate gains in practical competence to leadership opportunities whereas African American students are more likely to relate gains from peer relations (Kuh, 1995). Along with recognizing the differences between social integration and race as important for the purposes of this study, research on social integration and gender should also be examined.

#### *Social Integration and Gender*

Both men and women cite boredom more often than poor grades as their reason for dropping out of college; and it is, in fact, the single reason given most frequently by men (Astin, 1975). In this instance, boredom refers to noninvolvement. Therefore, if students are not involved in aspects of the institution, they are more likely to drop out.

Involvement in campus activities has a positive affect on social integration. Membership in social fraternities or sororities and participation in varsity athletics leads to an increase in persistence rates among both men and women (Astin, 1975). While differences between men and women were not found, it is important to note that men and women who are involved in the college are more likely to be socially integrated.

Living on campus has also been found to relate to social integration and gender. Living in a residence hall, sorority or fraternity house during the freshman year increases a student's chances of finishing college for both men and women in nearly every type of institution (Astin, 1975). However, differences in living do exist for men and women. Astin (1975) found that living away from home in a private room or apartment increases a man's chances of finishing school; however integration for women generally decreases by living in a private room or apartment. Overall, living on campus, especially for the first and second years of college, increases social integration for both men and women.

In summary, research indicates that academic and social integration differ by race and by gender. However, to fully explore my topic, research on computer use for race and computer use and gender must be explored.

#### Research on Computers

Today's college students have become increasingly familiar with computers. This stems from their experience in using computers in the past as well as coming to college owning a computer (Gemmill & Peterson, 2006; Messineo & DeOllos, 2005). Studies have shown that students use their computer for multiple reasons. These include communicating instantaneously with friends (instant messenger), accessing the Internet, playing computer and Internet games, online shopping, and online social networking (Bugeja, 2006; Gemmitt & Peterson, 2006; Jones, 2003; Rainie, Kalehoff, & Hess, 2002). Along with the research available on why computer use has increased among college students, research on race and gender and the level of computer use has also been conducted.

#### *Computer Use and Race*

In the United States, the network society is creating two parallel information and communications systems - one for Caucasians and one for African Americans ("Large and Growing", 1999). A review of current research shows that differences in computer use and race exist at institutions of higher education.

One difference is application of computer programs. Among the 570 students surveyed in one study, 74% of Caucasian Americans indicated using two or more applications on the computer such as word processing and email, while 44% of African Americans indicated using the computer for word processing only (Hawkins & Paris, 1997). Differences between these two groups with respect to computer application may be due to the lack of ownership of computer resources.

For Caucasian and African American college students who own computers, a gap exists between the types of resources each group has in terms of computers. When reviewing computer ownership among Caucasian students, 75% owned a computer with a CD-Rom, 89% owned a computer with a printer, and about 75% owned a computer with a modem to access the Internet. When reviewing the same features for African American students, 56% owned a computer with a CD-Rom, 75% owned a computer with a printer and 40% owned a computer with access to the Internet (“Large and Growing”, 1999). For both groups, the majority of students have the resources available to them on their computer, however African American students significantly lag behind their Caucasian student peers in using those resources. This may explain why African American students tend to use fewer applications on their computer than Caucasian students.

African American and Caucasian students also differ by computer literacy and frequency of computer use. When assessing computer use and literacy of undergraduate students at a large institution (Hawkins & Paris, 1997), overall computer use does not differ based on racial background; however frequency of computer use does differ based on racial background. African American students tend to be more represented among infrequent computer users than are Caucasians, by 10 percentage points (Hawkins & Paris, 1997).

Yet other researchers have found different results with respect to computer use. In 1993, 2,685 students from 24 institutions were assessed on their level of computer and email use (Flowers, Pascarella, & Pierson, 2000). First year Latino students attending a two-year college had significantly lower computer and email use than first year Asian American, Caucasians, and African American students. First year African Americans at four year colleges, however, reported the lowest computer and email rates. Computer use was found to have significant positive effects on end of the year reading comprehension for first year African American students and email use was found to have a significant negative effect on end-of-the-year reading comprehension for first year Latino students (Flowers, Pascarella, & Pierson, 2000).

When assessing the amount of time spent on the Internet, African American women were found to be online more than African American men. In fact, 60% of African American women are Internet users compared with 50% of African American men (Fallows, 2005). While results indicate that there are differences among African American students, the results of this study also indicate differences in Internet use based on gender.

### *Computer Use and Gender*

Gender is believed to be a correlate of computer literacy primarily because as early as the middle school grades girls begin to shy away or are steered away from science and mathematics courses (Hawkins & Paris, 1997). It is in these courses that computers are more likely to be used as tools and seen as integral to the instructional process (Hawkins & Paris, 1997). While this finding may explain the difference in computer use by gender, there are other differences between men and women.

In a study involving 40 students from the University of North Carolina, Chapel Hill, researchers failed to find differences between men and women in terms of “chatting” on the Internet (Shaw & Gant, 2002). While chatting online lowered depression and loneliness, and self-esteem and perceived social support increased, there were no differences between genders. However, other research indicates that men spend a significantly greater number of hours surfing the Internet than women (Fallows, 2005; Lewis, Coursol, & Khan, 2001).

Trends in computer use from 2000-2005 have revealed that men go online more frequently than women. Specifically, 44% of men go online at least several times a day, compared with 39% of women (Fallows, 2005) and men spend more hours a day browsing the Internet (Lewis et al., 2001). While differences by gender for chatting online have not been found, surfing and browsing the Internet have yielded differences between the sexes.

However, a study of 124 undergraduate students enrolled in a career exploration class showed no differences by gender in terms of comfort with technology. When assessed on their overall comfort using technology for class assignments, 83% of the respondents reported that they were comfortable using computers (Lewis et al., 2001). When assessing differences by gender, results revealed no significant gender differences in the use of email, educational technology, or the Internet. However, results did find that men were more likely than women to use multimedia technology and use the Internet for recreational purposes (Lewis et al., 2001).

Not only do men and women differ with respect to their use of computers, they also differ in their comfort with technical aspects of computers. As reported by Fallows (2005), significantly more men than women maintain and fix their own computers. Men are more interested than women in technology, and men are more confident in themselves as searchers and users of the computer and Internet. Although not all of the research reviewed in this section was consistent in terms of findings, the inference can be made that men and women differ in their use of and comfort with computers.

To summarize, research has been conducted on academic integration and race (Astin, 1982; Clark, 1983; Cohen, 1998; Hopkins, 1997; Hurtado & Carter, 1997; Kuh & Love, 2000; Pace, 1990; Pascarella & Terenzini, 2005; Patchen, 1982; Rendon, Jalomo, & Nora, 2000; Watson & Kuh, 1996; Wing, 2006) academic integration and gender (Kuh, 1995), as well as social integration and race (Astin, 1975; Hurtado, & Carter, 1997; Kuh, 1995; Pace, 1990) and social integration and gender (Astin, 1975). Research on computer use and race (Fallows, 2005; Flowers, Pascarella, & Pierson, 2000; Hawkins & Paris, 1997; “Large and Growing”, 1999) and computer use and gender (Fallows, 2005; Hawkins & Paris, 1997; Lewis et al., 2001; and Shaw & Gant, 2002) has also been conducted. The research that has been conducted reveals that academic integration, social integration, and computer use are impacted by race and gender. However, the review of the literature does not reveal the impact that computer use, race and gender may have on academic and social integration. Therefore, this study is significant, as it will close the gap in the literature between academic and social integration and computer use and race and gender.

## Chapter Three

### Methodology

The purpose of this study was to examine the relationship between academic and social integration and computer use. Academic and social integration, as well as computer use, were measured through specific items on the CSEQ. Additionally, this study examined academic and social integration by computer use and race and computer use and gender. The study was designed to answer the following research questions:

- 1) Does academic integration differ based on the level of computer use?
- 2) Does social integration differ based on the level of computer use?
- 3) Does academic integration differ by level of computer use and race?
- 4) Does social integration differ by level of computer use and race?
- 5) Does academic integration differ by level of computer use and gender?
- 6) Does social integration differ by level of computer use and gender?

This chapter describes the methodology employed in the study. This includes the sample selection process, the instrumentation, reliability and validity of that instrument, and the procedures used to collect and analyze the data.

#### Sample Selection

I sought a random sample of those who responded to the 2005 CSEQ. In 2005, 10,662 students completed the CSEQ. I requested a total of 2,000 respondents in my data set. The data set provided me with a sample size that included a sufficient numbers of males and females as well as Caucasian and Non-Caucasian students.

#### Instrumentation

To elicit data about the research questions posed in the study, I used data from the CSEQ (Pace & Kuh, 1998). The CSEQ (see Appendix A) is designed to gather data on how college students spend their time during the school year by having participants respond to items using a “very often, often, occasionally, or never” Likert-type scale. The CSEQ assesses the quality of effort students expend in using institutional resources and opportunities provided for their learning and development.

The instrument has a total of seven sections. The first section, Background Information, includes 18 subscales that elicit demographic data such as age, sex, marital status, and

classification in college. The second section, College Activities, includes a total of 11 subscales and elicits data about the types of activities in college in which the respondent had been engaged.

Section three, Conversations, includes two subscales: Topics of Conversation and Information in Conversations. Reading/Writing is the fourth section and it includes two subscales. These two subscales elicit information on the number of books that are read and used for writing during an academic school year. Section five, Opinions about Your College or University, includes two subscales. These two subscales elicit data on how well respondents like their current institution and if respondents would attend the same school if they could start again. The College Environment is measured in section six. This section includes 10 subscales and elicits data from the respondent on how well the institution emphasized particular aspects of student involvement as well as the type of relationship the institution has with the respondent. The last section, Estimate of Gains, elicits data on how much respondents believe they have gained academically, socially and emotionally while attending the institution.

For the purposes of this study, Section Two, College Activities, was selected to assess academic and social integration. Within the College Activities section, the subscales that were used include: Library, Course Learning, Experiences with Faculty, Campus Facilities, Clubs and Organizations, Personal Experiences, and Student Acquaintances. Three of the subscales were used to measure academic integration, and four of these subscales were used to measure social integration.

The three subscales that were used to measure academic integration were Library, Course Learning, and Experiences with Faculty. Library refers to the overall use of library resources during the academic year and includes a total of eight items. Participants are asked if they used the library as a quiet place to study or if they used an index or database to find materials on some topic. Course Learning refers to the use of course materials to further understand the subject matters and includes a total of 11 items. Participants are asked if they completed assignments for class or if they completed a paper or project by integrating ideas from various sources. Experiences with Faculty refers to the level of involvement between the student and faculty member in and outside of the classroom and includes a total of 10 items. In this subsection, participants are asked if they discussed information relevant to the class or career plans with a faculty member or if they worked with a faculty member on a research project.

The four subscales that were used to measure social integration were Campus Facilities, Clubs and Organizations, Personal Experiences, and Student Acquaintances. Campus Facilities refers to the use of campus facilities to become involved on campus and includes a total of eight items. Participants are asked if they were involved in a sports team or if they used campus recreational facilities. The Clubs and Organizations subscales assess the level of participation in clubs or organizations and includes a total of five items. Participants are asked if they have attended a meeting for a club or organization or if they have served in a leadership role for a club or organization. Personal Experiences refers to the exploration of experiences that define the personality of an individual and the subscale includes eight items. Participants are asked if they have asked a friend for help with a personal problem or if they have asked a friend to provide true thoughts about their friendship. Student Acquaintances refers to meeting and conversing with students different from oneself and includes 10 items. Participants are asked if they have become acquainted with a student from a different country or if they have had discussions with students from different countries.

The subscale Computer and Information Technology from the College Activities section was used to assign respondents to a computer use group. Within the Computer and Information Technology subscale, there are nine items. These items refer to use of computers and information technology to complete academic assignments or communicate with peers. Participants are asked if they have used a computer or word processor to prepare papers or if they have used email to communicate with faculty members and peers. Responses to the Computer and Information Technology items were used to divide the data set into two groups, low users and high users (described later in this section).

Although the CSEQ includes a Background Information section, I did not use that section to identify respondents' race and gender. To protect the confidentiality of the respondents, staff that manage the CSEQ data collection process at Indiana University coded race and gender for each participant included in my dataset prior to sending me the data. As a result, I had the demographic information about participants that I needed for my analysis, but the remaining demographic information about respondents was protected.

#### Validity/Reliability

Validity is the cornerstone of any assessment procedure, since an assessment tool is valid only if it measures what it is meant to measure (Gonyea, Kish, Kuh, Muthiah, & Thomas, 2003).



Validity for the CSEQ was measured two different ways; through content validity and construct validity. In terms of content validity, the CSEQ has been recognized as valid by assessment professionals in higher education (Gonyea et al., 2003). It is a survey instrument that reliably measures educational practices that affect student outcomes (Gonyea et al., 2003). One way to measure construct validity is to test whether scores on the CSEQ are consistent with scores on instruments that measure similar constructs. Responses to the CSEQ writing scale are consistent with other research. For example, scores on the CSEQ writing scale are similar to other measures of time spent on academic work, grades, and aspirations (Gonyea et al., 2003). These findings suggest that the CSEQ is a valid instrument.

Reliability, defined as freedom from measurement error, is the property of a survey in which questions that have similar meaning and intent elicit similar responses over time and populations (Gonyea et al., 2003). The reliability of the CSEQ has been measured by analyzing the correlation patterns among items within the same measurement scales. Correlations within the Quality of Effort (alpha scores of .74 to .92), the College Environment (alpha scores of .70 to .75), and Estimate of Gains (alpha scores of .78 to .87) factors support the claim that the instrument is reliable (Gonyea et al., 2003).

#### Data Collection Procedures

To collect the dataset, I took several steps. The first step involved gaining approval from the Institutional Review Board for Research Involving Human Subjects (IRB). The IRB approval letter appears in Appendix B. Second, I submitted a proposal to the Project Associate for the CSEQ Research Program, the program office that manages the administration and scoring of the CSEQ at Indiana University. The proposal included the purpose and logistics of the study, a timeline for the study, research questions, and any specific requirements for the dataset.

Upon receipt of my proposal, the Project Associate selected a random sample of 2,000 respondents and coded respondents for race and gender. The responses were downloaded into an SPSS file, copied to a CD, and sent to me by mail. Respondent and institutional identification were not provided in order to protect the confidentiality and privacy of participants.

#### Data Analysis Procedures

The first step in analyzing the data was to collapse the response options for each item. The response options on the CSEQ ranged from Very Often to Never. For the subscales that were used for academic and social integration, I collapsed the data into two categories. I

categorized “Very Often” and “Often” as a ‘Yes’ response and “Occasionally” and “Never” as a ‘No’ response. I selected the items on the CSEQ that I would use to represent academic and social integration and collapsed the responses to those items accordingly.

I then categorized respondents as either low or high computer users. First, I converted the response options for each item on the Computer and Information Technology subscale to scores. A response of “Very Often” was assigned a score of 4, “Often” was assigned a score of 3, “Occasionally” was assigned a score of 2, and “Never” was assigned a score of 1. Next, I calculated each respondent’s total score on all nine of items in the subscale. Then, I identified the median of the scores. By finding the median, I was able to classify the respondents from the data set as either low or high computer users. Those that fell below the median line were classified as low users. Those that fell above the median were classified as high users. Separating the data set into the two categories allowed me to answer all six of the research questions posed in this study.

Once the data were collapsed and scored, several groups were formed to answer the six research questions. These groups were based on computer use, race, and gender. To answer the first two research questions, the groups included: high and low computer users. To answer questions three and four, the groups included: female high computer users, male high computer users, female low computer users and male low computer users. To answer the final two research questions, the groups included: Caucasian high computer users, Caucasian low computer users, Non-Caucasian high computer users, and Non-Caucasian low computer user.

I analyzed the data to address the research questions posed in this study. The first research question examined whether there were differences in academic integration by level of computer use. To address this question, I sorted the respondents into two groups: high and low computer users. I then calculated the frequency with which the two groups of computer users (low and high) fell into each response group (yes or no) for each item on the subscales of the CSEQ that measured academic integration. Finally, I performed Chi square tests ( $p < .05$ ) to compare those frequencies. I also calculated Cramer’s V statistic to examine the strength of association between variables where significance was revealed.

The second research question examined whether there were differences in social integration by level of computer use. To answer this question, I followed the same procedures as I used to examine academic integration. However, I used the items on the subscales of the CSEQ that measured social integration.

The third and fourth research questions examined whether academic and social integration, respectively, differed by level of computer use and race. In order to answer the second research question, I sorted the participants' responses into four groups (Caucasian high users, Caucasian low users, Non-Caucasian high users, Non-Caucasian low users). Then, I calculated the frequency with which each group responded to each item on the subscales of the CSEQ related to academic and social integration. I compared the frequency using chi square tests ( $p < .05$ ) to see if there were significant findings. If significant differences were revealed, I conducted post-hoc tests to identify which groups differed and calculated Cramer's V to assess the strength of the relationship of those differences.

Research questions five and six were very similar to research questions three and four, however, instead of computer use and race being examined, computer use and gender was examined. I sorted the participants' responses into four groups (male high users, male low users, female high users, female low users). Then, I calculated the frequency with which each group responded to each item on the subscales of the CSEQ related to academic and social integration. I compared the frequencies using chi square tests ( $p < .05$ ) to see if there were significant findings. If significant differences were revealed, I conducted post-hoc tests to identify which groups differed and, again, calculated a Cramer's V.

In conclusion, this study explored relationships between academic and social integration and computer use, and academic and social integration by computer use and race and by computer use and gender. The methodology described in this chapter was sufficient to address the research questions in this study.

## Chapter Four

### Results

In this chapter, I report the results of the data analysis. I begin with a description of the characteristics of the sample. Next, the results for academic and social integration and computer use are reported. To answer the third and fourth research questions posed in this study, the results of academic and social integration by computer use and race are offered. Finally, to answer the last two research questions, the results of academic and social integration by computer use and gender are reported.

#### Characteristics of the Sample

The total sample included 2,000 respondents who completed the College Student Experience Questionnaire in 2005. To check for sample error, I compared the sample against the population with respect to race and gender and found that the percentage of males and females as well as Caucasians and Non-Caucasians in the sample was not significantly different than the percentages in the population. To assign participants to levels of computer use, first I assigned all responses on the Computer Use and Technology section of the CSEQ a numerical value. The response options ranged from Never (1) to Very Often (4). Therefore, scores on computer use could range from 9 (in instances where a person responded Never to all 9 items on the scale) to 36 (in cases where a person responded Very Often to all 9 items). This represented a 24-point range of scores with a score of 23 falling exactly halfway between 9 and 36. The dataset already had the total score for all nine items on the Computer and Information Technology scale for each respondent. I then examined the spread of scores. Just over half of users reported a score of 23 or less while the remaining respondents reported scores higher than 23. Therefore, as noted in Table One, 42.9% of respondents were classified as high computer users while 53.9% were classified as low computer users. Since the analysis was based on High and Low Computer Users, the characteristics of the sample are reported as such. Females comprised 61.21% and males comprised 36.8% of the total sample. Female High Computer Users comprised 26.6% and Male High Computer Users comprised 16.8% whereas Female Low Computer Users comprised 34.5% and Male Low Computer Users comprised 19.9%. Caucasians represented 69.4% and Non-Caucasians represented 27.4% of the total sample. Caucasian High Computer Users represented 28.8%, Caucasian Low Computer Users represented 40.4% whereas Non-Caucasian High

Table 1

*Characteristics of the Sample (N=2000)*

Characteristic	High Computer Use		Low Computer Use		Total	
	n	%	n	%	n	%
Computer Use	858	42.9	1077	53.9	1935	96.7
Missing					65	3.3
Sex						
Male	328	16.8	389	19.9	736	36.8
Female	521	26.6	675	34.5	1221	61.1
Missing					43	2.2
Race						
Caucasian	553	28.2	790	40.4	1387	69.4
Non-Caucasian	280	14.3	247	12.6	547	27.4
Missing					66	3.3
Age						
19 or younger	241	12.3	396	20.2	657	32.9
20-23	479	24.5	517	26.4	1025	51.3
24-29	83	4.2	84	4.3	174	8.7
30-39	31	1.6	38	1.9	74	3.7
40-55	14	0.7	27	1.4	42	2.1
Over 55	1	0.1	1	0.1	3	0.2
Missing					25	1.3
Marital Status						
Not Married	775	39.6	947	48.4	1778	88.9
Married	58	3.0	80	4.1	141	7.1
Divorced	9	0.5	24	1.2	36	1.8
Separated	4	0.2	7	0.4	11	0.6
Widowed	1	0.1	1	0.1	2	0.1
Missing					32	1.6
Institutional Type						
Doc-Ext	41	2.1	56	2.8	130	6.5
Doc-Int	169	8.5	203	10.2	377	18.9
Master's	425	21.3	520	26.0	982	49.1
Liberal Arts	73	3.7	107	5.4	184	9.2
General Colleges	85	4.3	106	5.3	194	9.7
AA	14	0.7	20	1.0	36	1.8
Other					97	4.9

Characteristic	High Computer Use		Low Computer Use		Total	
	n	%	n	%	n	%
College Classification						
Freshman, first year	221	11.1	370	18.5	611	30.6
Sophomore	72	3.6	136	6.8	219	11.0
Junior	188	9.4	204	10.2	401	20.1
Senior	352	17.6	338	16.9	712	35.6
Graduate Student	7	0.4	6	0.3	14	0.7
Unclassified	6	0.3	9	0.5	16	0.8
Missing					27	1.4
Access to a Computer						
Yes	843	42.2	1042	52.1	1947	97.4
No	6	0.3	22	1.1	29	1.5
Missing					24	1.2

Computer Users represented 14.3% and Non-Caucasian Low Computer Users represented 12.6% of the total sample. The majority of the respondents ranged between the ages of 20 and 23 (51.3%) and were classified as Seniors (35.6%). When asked if they had access to a computer, 97.4% reported 'Yes' while 1.5% reported 'No'. It is interesting to note that within those who had access to a computer, 42.2% were classified as High Computer Users while 52.1% were classified as Low Computer Users. For those who did not have access to a computer, .3% were classified as a High Computer Users while 1.1% were classified as a Low Computer User.

#### Academic Integration and Computer Use

I originally planned to employ chi-square tests to analyze the data. However, when I received the dataset from CSEQ staff at Indiana University, Bloomington, the responses for each item in each subsection had been summed. That is, the data had been recoded so that Never represented 1, Occasionally represented 2, Often represented 3, and Very Often represented 4. The sum of the items for each subsection had been calculated for each of the 2,000 respondents. Since I was provided with this data, I elected to conduct the data analysis using independent t-tests and ANOVAs, which are more powerful statistical tests than chi-squares. The first research question examined academic integration and computer use as measured by three subsections on the CSEQ that represent academic integration: Library, Course Learning, and Experiences with Faculty.

The response options for academic integration ranged from Never (1) to Very Often (4). Scores on Library could range from 8 (in instances where a person responded Never to all 8 items on the scale) to 32 (in cases where a person responded Very Often to all 8 items), which represented a 24-point range of scores. Scores on the 11-item Course Learning scale could range from 11 to 44. Finally, scores on Experiences with Faculty could range from 10-40 (10-item scale).

I first calculated the mean scores for each subsection for each group of participants (high and low computer users). I then ran independent t-tests to compare those means. As illustrated in Table 2, mean scores for High Computer Users were significantly higher than those of Low Computer Users on the Library and Experiences with Faculty Scales ( $p < .05$ ). That is, High Computer Users used the Library and had Experiences with Faculty significantly more often than Low Computer Users. The results show no significant difference between High and Low Computer Users on the Course Learning scale.

Table 2

*Results of t-tests on Academic Integration by level of Computer Use (N=2000)*

Group	n	M	sd	F	t	df	p
Library				39.19	11.62	1596	.00
High Computer Use	845	18.16	5.32				
Low Computer Use	1060	15.55	4.26				
Course Learning				.01	15.69	1880	.93
High Computer Use	830	34.75	5.35				
Low Computer Use	1052	30.80	5.48				
Experiences with Faculty				4.77	16.31	1652	.00
High Computer Use	846	25.46	6.72				
Low Computer Use	1058	20.74	5.67				



### Social Integration and Computer Use

The four subsections of the CSEQ that measure social integration are: Campus Facilities, Clubs and Organizations, Personal Experiences, and Social Acquaintances. The response options for social integration ranged from Never (1) to Very Often (4). Scores on Campus Facilities could range from 8 (in instances where a person responded Never to all 8 items on the scale) to 32. Scores on the 5-item Clubs and Organizations scale could range from 5 to 20. While scores on Personal Experiences could range from 8 to 32 (8-item scale). Finally, scores on Social Acquaintances could range from 10-40, given the 10 items on the scale.

To examine social integration and computer use, I calculated mean scores for both groups (high and low computer users) for each CSEQ subsection. Then I ran independent t-tests to compare means ( $p < .05$ ). As illustrated in Table 3, mean scores of High Computer Users were significantly higher on all four scales than those of Low Computer Users. Restated, High Computer Users used Campus Facilities, participated in Clubs and Organizations, created Personal Experiences and had Social Acquaintances significantly more often than Low Computer Users.

### Academic Integration by Computer Use and Race

To examine academic integration by computer use and race, first I sorted respondents into four groups: Caucasian High Computer Users, Non-Caucasian High Computer Users, Caucasian Low Computer Users, and Non-Caucasian Low Computer Users. I then calculated mean scores for each group for each of the three academic integration scales on the CSEQ. I compared means using an ANOVA ( $p < .05$ ). Results are reported in Table 4. The results indicate no significant differences among the groups on any of the three scales. Therefore, Library, Course Learning, and Experiences with Faculty do not differ by level of computer use and race.

### Social Integration by Computer Use and Race

To examine social integration by computer use and race, I sorted respondents into four groups: Caucasian High Computer Users, Non-Caucasian High Computer Users, Caucasian Low Computer Users, and Non-Caucasian Low Computer Users. I then calculated mean scores for each group for each of the four CSEQ scales that measure social integration. The results revealed a significant difference on the Personal Experiences scale ( $p < .05$ ) (see Table 5). By using independent t-tests to compare each pair of means, a significant difference between Caucasian

Table 3

*Results of t-tests on Social Integration by level of Computer Use (N=2000)*

Group	n	M	sd	F	t	df	p
Campus Facilities				30.61	12.44	1895	.00
High Computer Use	840	19.03	5.33				
Low Computer Use	1057	16.21	4.53				
Clubs and Organizations				76.35	9.14	1906	.00
High Computer Use	844	10.35	4.68				
Low Computer Use	1064	8.58	3.77				
Personal Experiences				5.63	12.11	1902	.02
High Computer Use	842	21.49	5.33				
Low Computer Use	1062	18.64	4.91				
Student Acquaintances				4.28	13.24	1894	.04
High Computer Use	842	28.65	6.88				
Low Computer Use	1054	24.55	6.57				

Table 4

*Results of ANOVAs on Academic Integration by Computer Use and Race (N=2000)*

Group	n	M	sd	F	df	p
Library				.19	3	.66
Caucasian/HCU	543	18.01	5.26			
Non-Caucasian/HCU	277	18.53	5.36			
Caucasian/LCU	781	15.52	4.21			
Non-Caucasian/LCU	421	15.82	4.51			
Course Learning				.72	3	.40
Caucasian/HCU	536	34.95	5.28			
Non-Caucasian/HCU	271	34.35	5.46			
Caucasian/LCU	771	30.86	5.34			
Non-Caucasian/LCU	243	30.74	5.95			
Experiences with Faculty				1.15	3	.28
Caucasian/HCU	547	25.67	6.83			
Non-Caucasian/HCU	275	25.03	6.55			
Caucasian/LCU	778	20.65	5.62			
Non-Caucasian/LCU	242	20.70	5.64			

*Notes:*

*HCU=High Computer Use*

*LCU=Low Computer Use*

Table 5

*Results of ANOVAs on Social Integration by Computer Use and Race (N=2000)*

Group	n	M	sd	F	df	p
Campus Facilities				1.18	3	.28
Caucasian/HCU	542	18.82	5.26			
Non-Caucasian/HCU	275	19.61	5.37			
Caucasian/LCU	781	16.11	4.42			
Non-Caucasian/LCU	239	16.34	4.77			
Clubs and Organizations				.52	3	.47
Caucasian/HCU	545	10.35	4.57			
Non-Caucasian/HCU	276	10.49	4.91			
Caucasian/LCU	782	8.61	3.78			
Non-Caucasian/LCU	244	8.43	3.75			
Personal Experiences				4.4	3	.04b
Caucasian/HCU	544	21.61	5.35			
Non-Caucasian/HCU	274	21.26	5.27			
Caucasian/LCU	781	18.44	4.84			
Non-Caucasian/LCU	243	19.20	4.98			
Student Acquaintances				2.15	3	.14
Caucasian/HCU	544	28.37	6.83			
Non-Caucasian/LCU	274	29.27	7.06			
Caucasian/LCU	776	24.05	6.34			
Non-Caucasian/LCU	241	25.97	7.03			

*Notes*

*HCU=High Computer Use*

*Low=Low Computer Use*

*a=significant difference between Caucasian/HCU and Non-Caucasian/HCU*

*b=significant difference between Caucasian/HCU and Caucasian/LCU*

*c=significant difference between Caucasian/HCU and Non-Caucasian/LCU*

*d=significant difference between Non-Caucasian/HCU and Caucasian/LCU*

*e=significant difference between Non-Caucasian/HCU and Non-Caucasian/LCU*

*f=significant difference between Non-Caucasian/HCU and Non-Caucasian/LCU*

High Computer Users and Caucasian Low Computer Users was found. Caucasian High Computer Users engaged in Personal Experiences significantly more often than Caucasian Low Computer Users. No other differences between groups were found.

#### Academic Integration by Computer Use and Gender

To examine academic integration by computer use and gender, first I created four groups: Male High Computer Users, Female High Computer Users, Male Low Computer Users, Female Low Computer Users. I then calculated mean scores for each group on each of the three CSEQ scales that measure academic integration and compared means using ANOVAs ( $p < .05$ ). Results revealed a significant difference on the Course Learning scale. To identify which pairs of means differed I ran independent t-tests. These post-hoc tests did not reveal any pairs that differed significantly, however. Results are reported on Table 6.

#### Social Integration by Computer Use and Gender

Finally, by using an ANOVA ( $p < .05$ ), I analyzed social integration by computer use and gender. No significant differences were found. Therefore, Campus Facilities, Clubs and Organizations, Personal Experiences, and Social Acquaintances did not differ by level of computer use and gender. Results can be found on Table 7.

In general, the results suggest some interesting patterns. These findings and their implications for future practice, research, and policy are discussed in the final chapter.

Table 6

*Results of ANOVAs on Academic Integration by Computer Use and Gender (N=2000)*

Group	n	M	sd	F	df	p
Library				1.08	3	.30
Male/HCU	322	17.69	4.39			
Female/HCU	514	18.48	4.19			
Male/LCU	384	15.38	5.08			
Female/LCU	662	15.69	4.82			
Course Learning				4.80	3	.03
Male/HCU	313	34.01	5.54			
Female/HCU	509	35.23	5.18			
Male/LCU	379	29.33	5.48			
Female/LCU	659	31.68	5.28			
Experiences with Faculty				.65	3	.42
Male/HCU	322	25.62	6.90			
Female/HCU	516	25.37	6.62			
Male/LCU	382	20.59	5.68			
Female/LCU	662	20.81	5.65			

*Notes:*

*HCU=High Computer Use*

*LCU=Low Computer Use*

*a=significant difference between Male/HCU and Female/HCU*

*b=significant difference between Male/HCU and Male/LCU*

*c=significant difference between Male/HCU and Female/LCU*

*d=significant difference between Female/HCU and Male/LCU*

*e=significant difference between Female/HCU and Male/LCU*

*f=significant difference between Female/HCU and Female/LCU*

Table 7

*Results of ANOVAs on Social Integration by Computer Use and Gender (N=2000)*

Group	n	M	sd	F	df	p
Campus Facilities				.32	3	.57
Male/HCU	318	19.67	5.25			
Female/HCU	514	18.68	5.33			
Male/LCU	383	17.02	4.51			
Female/LCU	661	15.76	4.48			
Clubs and Organizations				.56	3	.45
Male/HCU	323	09.98	4.57			
Female/HCU	512	10.59	4.72			
Male/LCU	386	08.38	3.84			
Female/LCU	664	08.69	3.73			
Personal Experiences				.00	3	.95
Male/HCU	321	19.95	5.21			
Female/HCU	512	22.47	5.20			
Male/LCU	386	17.07	4.43			
Female/LCU	662	19.56	4.89			
Student Acquaintances				.00	3	.95
Male/HCU	322	28.57	6.67			
Female/HCU	511	28.76	7.05			
Male/LCU	381	24.44	6.38			
Female/LCU	660	24.57	6.65			

*Notes:*

*HCU=High Computer Use*

*LCU=Low Computer Use*

## Chapter Five

### Discussion

In this chapter, I expand upon the results from the study. I begin with a detailed discussion of the results for the six research questions. Next, I relate the results to prior research. I outline prior research that my findings support and contradict. Then, implications for future practice and policy are explored. Finally, the chapter closes with a discussion of the limitations of the study and some general conclusions.

### Discussion

The first research question posed in this study explored differences in academic integration by level of computer use. To answer this research question, I examined the mean scores of high and low computer users for the three subsections on the CSEQ that measure academic integration: Library, Course Learning, and Experiences with Faculty. There were significant differences in mean scores by level of computer use for the Library and Faculty scales.

The Library subsection included eight items that measured how often a respondent had accessed the library and used the library for educational purposes, used an index or database, asked a librarian for help with finding information, or developed a bibliography for a term paper or report. The Experiences with Faculty subsection assessed how often respondents discussed course material or career plans with a faculty member inside and outside of the classroom, discussed ideas or worked on a research project with a faculty member, or worked harder as a result from feedback from an instructor, among other things.

These findings are interesting for several reasons. To start, high computer users used library resources significantly more often than low computer users. This might be interpreted in several ways. First, it could simply mean that high computer users have the skills necessary to use libraries more effectively. Many college and university libraries these days have automated their systems so online catalogues, search engines to conduct literature reviews, and other elements of the library require the use of a computer. It is possible that the high computer users had the skills they needed to take advantage of library services while low computer users did not. It is also possible that low users needed to develop their computer skills before they could make use of the library services on their campus and that might account for the significant differences



revealed in the study. In either instance, the connection between computer use and library use seems logical.

There was also a significant difference in terms of experiences with faculty. High computer users engaged in experiences with faculty significantly more often than low computer users. This finding might be interpreted in several ways. First, conversations or interactions that students may have with faculty might occur through the use of computer software including Instant Messaging, E-Mail, or Online Discussions. As a result, high computer users may be provided with more opportunities to have experiences with faculty than low computer users. It is also possible that using a computer enhances self-confidence among students so high computer users had higher levels of self-confidence that enabled them to interact with faculty more comfortably. Alternatively, it would seem reasonable to suggest that students need to use computers to complete much of their academic work and excel in their classes. Those with lower computer use scores, therefore, may not be succeeding in classes to the same degree as high users, and consequently, shy away from contact with faculty.

Finally, the findings are of interest because the results also suggest no significant difference between high and low computer users when looking at course learning. This may be due to the fact that the majority of students, regardless of level of computer use, participate in aspects of course learning, such as taking notes in class, completing reading assignments, or working with a group of students for a project. Such activities are simply part of being a college student so might not be affected by level of computer use.

The second research question posed in this study explored the difference in social integration by level of computer use. To answer this research question, the researcher examined the means of both high and low computer users for the four subsections of the CSEQ that measure social integration (Campus Facilities, Clubs and Organizations, Personal Experiences, and Student Acquaintances). There were significant differences in mean scores by level of computer use for all four subsections and in all instances high computer users were engaged in these activities significantly more often than low computer users.

The Campus Facilities subsection included eight items that measured how often respondents had used a campus facility to attend social and multicultural events, meet other students, play an intramural sport, or follow a workout schedule. For the Clubs and Organizations subsection, which included a total of five items, respondents were asked to rate

how often they attended a meeting of a club or organization, worked on an on-campus or off-campus committee, or served in a leadership capacity for a club or organization. The Personal Experiences subsection (eight items) assessed how often respondents had read a book, taken a test to measure personal growth, or talked with a friend, family member, or counselor about a personal problem. Finally the Student Acquaintances scale, which included a total of 10 items, assessed how often respondents had serious discussions with students who were from a different country or identified with a different race or ethnic background, had discussions with those from different political and philosophical backgrounds, or became acquainted with students of different backgrounds.

There are several reasons why social integration may differ by level of computer use. First, on many campuses, access to campus facilities is available through online resources. In order to minimize paperwork and processing time, registration for an intramural sport, reservations for lounge or study space, or a schedule of social and multicultural events may all be available online through the university web page. If so, high computer users might be more likely to access such information.

Additionally, students who use computers to check email, browse the university website, or participate in chat groups may become more involved socially. Through email, students may receive university updates about social and multicultural programs, and recreational and organizational events. High computer users may browse the university website to locate programs and services that might enable them to become more involved. All these kind of activities may lead to higher levels of campus engagement, which in turn, could produce higher levels of social integration.

Alternatively, low computer users may not know how to access specific information in order become involved. For example, if information for resources and processes are made available online, low computer users may not be able to find information on how to become involved. In addition, low computer users may not have the same opportunities to meet others. The inability (brought on by lack of skills) to meet others through online social networking such as Instant Messenger, E-Mail, Facebook, My Space, or Friendster may limit the social interaction that low computer users have.

The third research question posed in this study examined academic integration by level of computer use and race. No significant differences were found. This finding is interesting because

as previously noted, academic integration does differ by level of computer use; however, there is no significance based on the interaction between computer user and race. This may have occurred because there may not be a difference in computer use for the two race groups. In other words, Caucasians and Non-Caucasians may not differ in their level of computer use, which may have resulted in the failure to find significant differences among the four groups. Further research is needed to explore this finding more fully, however.

The fourth research question examined the difference in social integration by level of computer use and race. Comparisons of mean scores on the scales of Campus Facilities, Clubs and Organizations, and Social Acquaintances did not yield any significant difference by level of computer use and race. There was a significant difference in the Personal Experiences subsection. Post hoc tests on this scale indicated that the only significant difference between pairs of groups was between Caucasian High Computer Users and Caucasian Low Computer Users. Thus, the finding seems to say more about level of computer use than it does about race.

The next research question reviewed academic integration by level of computer use and gender. When comparing the means scores for Library and Experiences with Faculty, no significant differences among the four groups were found. However, Course Learning did yield a significant difference. The high mean score for Course Learning was 35.23 for Female High Computer Users and the low mean score was 29.33 for Male Low Computer Users. Post hoc tests, however, did not reveal any significant differences between pairs of means. This suggests that while some sort of interaction seemed to occur between computer use and gender on the Course Learning scale, further research would be needed to identify the nature of this difference.

The last research question in this study examined the difference in social integration by level of computer use and gender. No significant differences were found on any of the four scales that measure social integration. Again, while social integration does differ by level of computer use, it does not differ by level of computer use and gender. This seems to suggest that it is computer use that drives differences in social integration, rather than gender but more research would be needed before any firm conclusions could be drawn.

#### Relationship of the Findings to Prior Research

My findings in this study seem to support some prior research on issues related to social integration, computer use, race and gender and to contradict results of other previous research. For instance, the results support studies around the areas of accessibility of computers and

computer use and race. The results contradict studies around the areas of computer use and race and computer use and gender.

In terms of computer access, when asked if they had access to a computer, 97.4% of respondents in my study reported “Yes.” This finding supports research conducted by Gemmill & Peterson (2006) and Messineo & DeOllos (2005). These researchers found that 97% of college students reported that they had access to a personal computer where they lived.

In terms of gender issues, Messineo and DeOllos (2005) found that only 42.1% of females reported feeling comfortable with advanced computer use. While the items on the CSEQ did not measure advanced computer use, in my study more women were considered low computer users (34.5%) than high computer users (26.6%). Therefore, the results of my study confirm that, overall, women do not use computers as often as men, at least in terms of the types of computer use measured by the CSEQ.

Out of the 2,000 respondents involved in my study, 42.9% of respondents were considered to be high computer users while 53.9% of respondents were considered to be low computer users. Messineo & DeOllos (2005) reported that when asked about familiarity with computers, 99.6% of college students reported that they were highly familiar with computers. Results from my study contradict this and suggest that familiarity with or use of computers is not as high.

Other researchers have found when assessing the level of computer use of 570 undergraduates at one particular institution, 64.3% of European American students were considered to be frequent computer users while only 54.7% of African American students were frequent users. However, the results from my study indicate that only 28.2% of the Caucasian respondents were classified as high computer users and that 14.3% of Non-Caucasian respondents were considered as high computer users. Although my study did not examine computer use for African American students, my results for Caucasian respondents appear to contradict the findings of the study conducted by Hawkins & Paris (1997).

These same researchers also found that nearly half (45.3%) of the African American students in the study were considered to be infrequent computer users, while only 35.7% of European American students fell into this category. Again, the results of my study contradict these findings. The percentage of Caucasian Low Computer Users was 40.4% while the percentage of Non-Caucasian Low Computer Users was 12.6%. Therefore, overall, my study

found that Caucasians were classified as low computer users at much higher rates than Non-Caucasians, whereas Hawkins and Paris (1997) found just the opposite.

Finally, Fallows (2005) reported that from 2000-2005, the trends for computer use revealed that men go online more frequently than women. Specifically, 44% of men go online at least several times a day, compared with 39% of women. Although the items on the CSEQ that measure computer use examine factors other than online use, the results of this study indicate that 26.6% of women were considered high computer users versus 16.8% of males. The results of my study may contradict those of Fallows, though more research would be needed to understand why this might have occurred.

#### Implications for Future Practice, Research, and Policy

The results of this study suggest several implications for future practice, research, and policy. The following section describes these implications in detail.

To start, the findings have several implications for those who serve as Librarians. The results suggest that low computer users report significantly lower levels of Library use. As Libraries continue to create online databases or card catalogs and continue to provide resources over the Internet, it would seem reasonable to suggest that Library staff also need to provide services to students to ensure that level of computer skill does not inhibit students from using the Library. For example, Library staff might offer classes or sessions that would teach students the skills needed in order to use online catalogs or databases. Staff members could also send campus mailers to all students that include information about the sessions offered or provide basic tips on how to access and use the library. Lastly, the Library staff could employ representatives who could meet with students individually to help them navigate the library and locate resources.

Results indicate that high computer users are significantly more involved in aspects of social integration (Campus Facilities, Clubs and Organizations, Personal Experiences, Social Acquaintances) than low computer users. This finding has several implications for multiple constituents. Again, as more information continues to be posted on the Internet, there are several steps that can be taken to ensure that programs or services do not exclude low computer users. First, campus facility managers could become involved in the orientation process for new and transfer students. During orientation, facility managers might have an informational booth or session to explain to students the services provided throughout the institution. They might explain to students how to reserve a lounge, how sign up for an intramural team, how to use or

reserve the recreational facilities provided, or how to navigate the campus website. Facility managers might also hang flyers around the campus or create table cards in dining facilities that remind students of upcoming services or programs. These materials could also include steps on how to find the information online. Any effort that both informs low computer users and encourages them to use computers more often would not only ensure that low users received relevant information but also encouraged greater computer use by low users.

A third implication relates to advisors and officers of campus clubs and organizations. These leadership representatives could become involved in the orientation process for new and transfer students to provide information about their organization to those who might be low computer users, therefore less likely to access information about the club or organization online. Also, the representatives could plan meet-and-greet sessions throughout the year to meet students who are low computer users and provide them with information about their club or organization. Lastly, representatives of clubs and organizations could advertise their organization in the school newspaper, or through other non-computer media sources such as flyers or posters. Again, these kinds of efforts would ensure that those who are low computer users have access to information about activities on campus that lead to greater levels of social integration.

Along the same lines, student activities professionals would also benefit from these findings. The results of this study provide student activities professionals with information that high computer users are significantly more involved in all aspects of social integration. Therefore, student activities professionals might want to send letters or other forms of written communication to students with information about student activities and programs offered at the institution. They might also hold informational sessions for students to illustrate programs and services available, as well as how to use their website as a tool for finding information. Lastly, student activities professionals could have volunteers pass out pamphlets containing information on student activities to students as they walk to class. All these efforts to reach out to students who might be low computer users might help such students engage in activities that lead to higher levels of social integration.

Beyond the co-curricular realm, there are also implications for academicians. The findings reveal that low computer users report lower levels of activities associated with academic integration. This suggests, for example, that faculty who rely on online learning tools (e.g., Blackboard) might need to ensure that all students in their classes know how to access and use

those tools. Likewise, faculty who hold virtual office hours may need to work with low computer users to ensure they understand how they can communicate with their professors. Finally, those responsible for technology services on campus may need to design special outreach programs to students so that those who are low users can learn how to use the technologies most frequently employed on the campus. All these efforts may lead to higher levels of engagement in activities associated with academic integration.

The study also had implications for future research. The data from the CSEQ in this study were used to assign respondents to high and low computer user groups and those items only asked about certain elements of computer use. A future study might measure computer use, for example, by the use of E-mail, hours spent on Instant Messenger, or hours spent shopping online. Such a study might yield more detailed information about particular aspects of computer use and academic and social integration.

This study also explored academic and social integration by level of computer use and race and gender. Future studies may examine academic and social integration by computer use and age, marital status, type of institution attended, major, religion, or sexual orientation. Such a study would expand on the information available on academic and social integration and computer use among college students.

While this study explored academic and social integration by level of computer use and race, only two race groups were used (Caucasian and Non-Caucasian). Future studies may examine academic and social integration by level of computer use and individual races (e.g. African American, Latino, Asian American). By examining computer use by each racial group, more specific information about computer use and race might be revealed.

Yet another future study could focus on other psychological characteristics of college students and level of computer use. For example, future scholars might examine self-esteem and computer use. My study focused on academic and social integration, however, a study on self-esteem (or other psychological measures) by level of computer use could offer insights into other factors that influence success in college.

The findings of this study reveal that high computer users are significantly more integrated, academically and socially. These findings have different implications for future policy. At the institutional level, policymakers may want to review requirements that students purchase a computer when matriculating. The findings suggest that high computer users are more

academically and socially integrated. Therefore, policymakers may want to assess the message that requiring all new students to purchase a computer sends to low computer users.

The findings of this study also provide chief student affairs officers with information about social integration and low computer users. Policymakers might use this information to provide more opportunities for social integration to occur for low computer users. For example, policymakers may want to establish policies about making information about programs and activities for students available in multiple formats, both electronic and non-electronic. This might ensure that low computer users can learn about the services available to them which, in turn, might lead to higher levels of social integration.

The results reveal that high computer users also have significantly more Experiences with Faculty than low computer users. Policymakers could use this information to design policies that promote academic integration. Many current faculty members access e-mail, Instant Messenger, Blackboard, WebCT, or other computer programs. Therefore, policymakers may wish to promulgate policies that encourage faculty members to meet with students through other media. Policies requiring faculty members to hold some traditional office hours (in addition to virtual office hours), for example, might provide low computer users access to faculty in a more familiar forum. Likewise, policies for faculty members that encourage them to arrive for classes early and to spend a few minutes after class in the classroom might also facilitate contact with faculty among low computer users.

#### Limitations of the Study

Although this study revealed significant results, several limitations were identified. One limitation dealt with the CSEQ items on the Computer and Information Technology scale. It is possible that items did not accurately measure computer use for today's college student. For example, there were no items about Instant Messaging, and that is an activity that many college students engage in. If the items on the CSEQ were not sufficient to accurately assign participants to high and low user groups, that might have influenced the findings.

A second limitation dealt with the subsections used to define both academic and social integration. Only three scales were used to define academic integration and only four scales were used to define social integration. There may be many more types of activities, not measured by the CSEQ, that lead to social and academic integration. The findings should be interpreted in that context.



A third limitation dealt with the candor of the respondents. Although the instrument is anonymous, respondents may have answered the items based on what they believed to be socially acceptable norms. Therefore, scores may not have accurately portrayed the activities of the participants. This may have skewed the data.

A fourth limitation dealt with the assignment of high and low computer users. In this study, all respondents were included and high and low computer users were assigned based on where their score on computer use fell in relation to the median (above or below). Had only the extremes of the distribution for low and high computer users been employed in the data analysis, different results may have been revealed.

A fifth limitation dealt with the items on the Library scale of the CSEQ. It is possible that the items on the Library scale did not adequately measure how students really use the library. For example, reading materials on reserve in the library (an item on the CSEQ) is an activity that may be dated in an era of online access to readings. If the items on the Library scale did not reflect how students use libraries, this may have skewed the findings.

A final limitation dealt with the percentages of males and females in the data set. Males represented only 36.8% while women represented 61.1% of the respondents. While the percentages of male and females of the data slice represented those in the full sample, it is possible this imbalance of sex influenced the findings in some unforeseen manner.

In conclusion, degree completion rates are of concern to college and university administrators. Academic and social integration are linked to higher levels of degree completion. My study revealed that academic and social integration, in turn, are influenced by level of computer use; higher levels of use lead to higher levels of integration. It would seem incumbent on college and university leaders, then, to identify policies and practices they can introduce that would promote computer use among students. This should lead to greater levels of integration, hence higher degree completion rates; a worthy goal by any estimation.