Spring 5-7-2010

The correlates of computer use and academic achievement among college students from low income backgrounds

George Darwin Banks Jr.
James Madison University

The correlates of computer use and academic achievement among college students from low income backgrounds

George Darwin Banks, Jr.

A thesis submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

Master of Science in Education

Learning Technology and Leadership Education Department

April 2010

Table of Contents

List of Tables iv
List of Figures v
Abstract vi
Introduction 1
Statement of the Problem 1
Research Gap 4
Purpose of Study 5
Research Questions 6
Definition of Terms 6
Assumptions, Limitations & Scope 8
Literature Review 10
Situated Cognition Theory 11
Communities of Practice 17
Defining the Digital Divide 23
First Digital Divide: Computer Access 24
Second Digital Divide: Computer Use and Knowledge 27
Conclusion 31
Methodology 33
Description of Sample 34
Procedures 36
Research Design 38
Data Collection & Instrumentation 41
Results 43
Data Analysis 43
Participants Demographics 47
Quantitative Data 51
Qualitative Data 54
Conclusion 61

Discussion 63
Overview of Study 63
Limitations & Reflection 64
Interpretation of Data 69
Implications & Recommendations for Future Research 74
Conclusion 75
Appendices 78
Appendix A: Survey Instrument 78
Appendix B: Semi-Structured Focus-Group Questions 90
Appendix B: Semi-Structured Focus-Group Questions 90
Appendix C: Graphs & Tables 91
References 115

List of Tables

Table 4.1……47

Table 4.2……48

Table 4.3……48

Table 4.4……49

Table 4.5……49

Table 4.6……50

Table 4.7……51

Table 4.8……51

Table 4.9……53

Table 4.10……..54

List of Figures

Figure 1.1…………………………………………………………………………………2

Figure 2.1……………………………………………………………………………...11

Abstract

The following is a mixed method research study that explores the correlates between computer use and academic achievement among low-income college students at James Madison University. A sample of 42 sophomore, junior and senior students served as participants in this study. All participants were members of the university's Centennial Scholars Program, an initiative created by the university in 2004 to give high school students from low-income backgrounds the opportunity to go to college on full-tuition scholarship. Using a theoretical framework that incorporated situated cognition theory (Brown, Duguid & Collins, 1989), communities of practice (Wenger, 1998) and the digital divide (Attewell, 2001) the research conducted explored how students from low-income backgrounds engaged with computers for academic and non-academic purposes and how this engagement relates to academic achievement (GPA). Quantitative research returned evidence that a correlation exists between academic achievement and social networking for academic purposes among this population, while qualitative research further explored how this population engaged with computer for academic and non-academic purposes.

Introduction

Statement of the Problem

Since the founding of the United States of Americaover 200 hundred years ago the lives of Americans have been painted with vivid historical events surrounding inequality. From the struggles of Native Americans in the west to the enslavement of people of color in our southern states, we have had a longstanding history of divided treatment not only among different races, but also religion, sexual orientation and social status. In the final decades of the 20th century researchers discovered a new discriminatory divide claiming its place on America's timeline; a socioeconomic divide that is affecting our nation's educational system and could be cause for educational setback for many Americans as we progress in our use of technology.

This emerging social problem, more formally referred to as the "digital divide" has been defined as "an unfortunate situation where poor and minority families are less likely than other families to have access to computers or the Internet creating a technological gap between information 'haves' and information 'have-nots" (Attewell, 2001, p. 253). Furthermore, research surrounding the digital divide has been used in measuring inequalities of our knowledge driven society, bringing to light the harms of having disparities in the access to technology. However, while this divide is more commonly defined in terms of access, (which Attewell calls the "first digital divide") computer use has also been regarded as an issue surrounding this topic.

Figure 1.1 shows the statistical data on computer access collected from the National Center for Education Statistics (2003). This study showed that 51 percent of Black and Hispanic children, aged 15-19 had access to computers in their home. When

surveying White (non-hispanic) students from in the same age group, the results revealed that 83 percent had computers in their homes Although all socioeconomic levels were represented equally, the lower socioeconomic groups were largely comprised of Blacks and Hispanics. This study clearly demonstrates that there are many disproportions in computer access among those coming from low-socioeconomic backgrounds and those who do not.

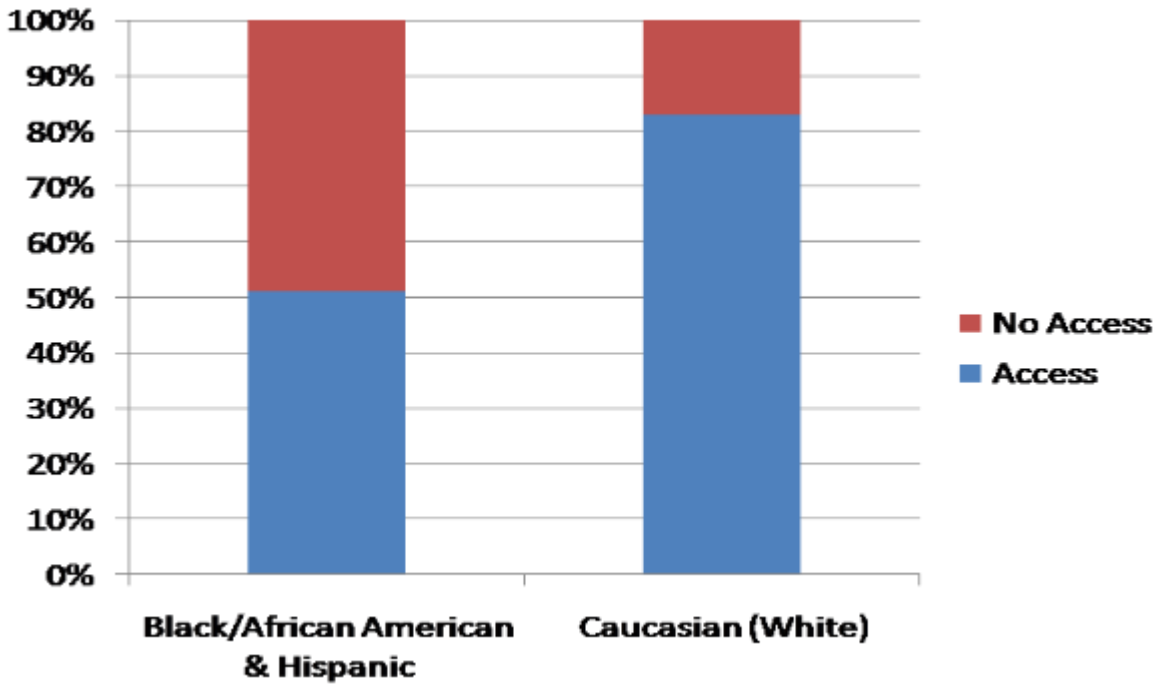


Figure 1.1 – National Center for Education Statistics (2003) study on computer use in school-aged children.

In an effort to further understanding of a digital divide driven by computer access this study will focus on examining the correlates of computer use and academic achievement. This research study was conducted on college students coming from low income backgrounds. By examining how participants are using computer for academic

and non-academic purposes and correlated this to academic achievement (GPA) the researcher sought to establish any relationships that existed between the two.

The participants in this study are members of James Madison University's Centennial Scholars program. The program was an initiative begun in 2004, to offer students from low socioeconomic backgrounds a chance to come to college on full tuition and room and board scholarships. Approximately 200 students participate in the program ranging in grade levels from college freshmen to graduate students. In order to continue to be financially supported by the program, students participating must actively engage and meet a variety of requirements, including remaining in good academic standing (by obtaining and maintaining a 3.0 GPA), completing 100 hours of community service, attending weekly professional development meetings and also attending 6 hours of monitored study hall per week. In addition to these requirements, one incentive to the program is all new students get a brand new laptop computer, complete with Microsoft Office applications.

Because low-come status (as defined by the Free Application for Federal Student Aid) is one of the major requirements for selection into this scholarship program participants may have faced inequities in access to and the use of technology prior to college. These kinds of disparities may no longer exist when computer access is provided to students in a college or university setting. Thus, this research will serve as a vessel in assessing the needs of this population by investigating how computer use may or may not impact the academic achievement of college students.

This research will be framed by situated cognition (Brown et. al, 1989) and the concept of communities of practice (Wenger, 1996), which will be discussed further in

the literature review. With the digital divide (Attewell, 200l) creating discrepancies in access, these participants who come from low-income background may have had a lack of experience with computers that has changed completely when entering a college campus where they have an abundance of access to technology. Evening the playing field, and breaking down this access barrier means that students may be face with a new challenge; a challenge that entails each student learning how to use the computers and accompanying technology in this new community. Identifying ways in which students learn alike and work together in this particular community will help further define trends and patterns of this population. The literature review will also discuss how the digital divide currently affects this community, and also the implications and affects it has had on America's educational system.

Research Gap

In his 2006 article on future trends in education Pascarella (2006) discusses the dire need for more research on information technology and computer use and how it has the potential to fundamentally change "the face of teaching and learning." He notes that "Although there is a modicum of research to suggest the potential for positive impacts of computers and information technology on student learning and cognitive development (e.g ,Flowers et al., 2000; Kuh & Vesper; Kulik & Kulik, 1991; Marttunen, 1997 as cited in Pascarella), the body of evidence is not yet clear and compelling" (p. 515). Pascarella suggests that future research should center on how technology affects not only students' academic achievement, but also how it impacts their interpersonal relationships and social networks.

In addition to this a 2001 study conducted by Lewis, Coursol, and Khan‘s (2001) study on how technology impacts student learning suggests the need for more research on this topic. This study was designed to examine the impacts of computer use on student learning as well as correlates technology use to academic achievement and success. In addition to this, while there is an abundance of research supporting the effect of the digital divide on students' college careers it is often conducted by using quantitative surveys of heterogeneous population, and using socioeconomic factors such as race, gender, ethnicity, and parent educational levels to examine how computer use impacts academic achievement. (Tien & Fu, 2008; Papastergiou & Solomonidou, 2005; Jackson et. al , 2008, Jackson et. al, 2009).

This study is unique in that it uses as participants a specific population of students already identified as having low socioeconomic status on a college campus. It is also uses a mixed methods research approach, where surveys will yield quantitative data about frequency and nature of computer use, and focus groups will further assess the impact of technology in the student lives.

Purpose of Study

The purpose of this study is to examine the correlates of computer use and the academic achievement of college students coming from low-income backgrounds. This study will also examine how these students are using computers for academic and non-academic use and how frequently they are participating in each type of use. Due to the digital divide expressed in the works of Attewell (2001) there have been inequalities in access to and use of computers between socioeconomic minorities and majorities. Further

research has shown that students from low-income backgrounds often come to college with a lack of computer experience (Jackson, et. al, 2008; Jackson et. al, 2009; Hosek, 2008; Tien & Fu, 2008). By examining the participants' prior experience, current use, and their academic achievement correlations and/or relationships may be identified. Research will be guided by the following two research hypotheses.

Research hypothesis one: A positive relationship exists between the frequency of computer use for academic purposes and academic achievement.

Research hypothesis two: A negative relationship exists between the frequency of computer use for non-academic purposes and academic achievement.

Research Questions

The following research study seeks to answer the following questions:

1. Does a relationship exist between frequency and nature of use of computers, and academic achievement?
2. How do postecondary students coming from low socioeconomic backgrounds engage with computers for academic purposes?
3. How do postsecondary students coming from low socioeconomic backgrounds engage with computers for non-academic purposes?

Definition of Terms

Computer Use: Each student in the Centennial Scholars program is given a laptop upon acceptance to the program, and arrival at James Madison University. This laptop comes equipped with Windows Vista and the Microsoft Office Suite. With James Madison University's campus being completely wireless, students also have complete access to the Internet. For academic work, James Madison University uses the course management

system Blackboard, offers online library access, and provides a wide array of online services for students. For this reason the researcher will frame computer use in this study by how participants use all these technologies for academic and non-academic purposes. By examining how frequently participants are using each of these technologies for academic and non-academic purposes and then correlating it to their academic achievement, the researcher analyzed if a relationship exists.

Low-income Background - The Centennial Scholars Program admits its participants based on what FAFSA (Free Application for Federal Student Aid) deems as low income background. This means that participants from the study had an Estimated Family Contribution (EFC) between $0 - $3000 in order for the student to be admitted to James Madison University. Other factors such as ethnicity, location prior to college and parents educational background have helped to further frame socioeconomic status for the participants.

Academic Achievement - In order to remain a member of the Centennial Scholar Program all participants must maintain a 3.0 GPA, attend six hours of study hall, complete 100 hours of community service over the course of the school year, and attend weekly group professional development. For the purposes of this study, and academic achievement will be defined solely by the 3.0 grade point average students must obtain and maintain to stay in the program.

Digital Literacy - According to the Partnership for 21st Century Skills (2004) information, media and technology skills are identified as skills that allow persons to cope with the rapid progression of technology and access to an abundance of information. In order to do this, individuals must have experience with computers that allows them to

develop these skills. For purposes of this study, digital literacy will be defined by how frequently they use their computers for academic and non-academic purposes, and if frequency of use correlates to their academic achievement. This will support the research hypotheses that more time spent using computers may have a relationship with how they achieve academic success.

Assumptions, Limitations & Scope

Prior research has shown that individuals from low-income backgrounds have little experience or access to technology (Warschauer, 2003; Warschauer, 2003b; Tien & Fu, 2008; Jackson et. al, 2008; Jackson et. al, 2009). In order to address prior research findings the survey in the present study included questions about the type of experience had with technology prior to college These questions also help to combat the assumption that low-income students lack access to computers prior to college. The scope of this study was also limited to participants in their sophomore, junior and senior year of college. Participants at these grade levels have had at least one year of experience with technology on the college campus, and have established a GPA which will be used to measure their academic achievement.

As a graduate mentor for the Centennial Scholars Program, the researcher has had several experiences which have led him to believe that the use of technology may impact academic achievement of students from low income backgrounds. These experiences include witnessing students struggle with their acclimation to technology in a college environment as well as having a lack of knowledge of different computer based services on campus. Existing research (Attewell, 2001; Warschauer, 2003; Papastergiou & Solomonidou, 2005) further supports the idea that the use of technology can impact

academic success, and thus gives solid grounding to further research on this topic. In order to provide further insight and offer a better-rounded outlook on the topic as a whole, it is necessary that this research be conducted.

In the broader picture this research will contribute to a better understanding of how socioeconomic status affects ones educational success. This study may help society to close the gap of inequality and move towards providing equal opportunities for all regardless of socioeconomic background. In the following literature review situated cognition theory(Brown et. al, 1989) is used to explain student learning and literature is reviewed on how the digital divide affects this learning experience.

Literature Review

As technology evolves in our society, it becomes apparent that a person must possess acertain level of digital literacy in order to be successful in his or her education and careers (Warschauer, 2003; The Partnership for 21st Century Skills, 2004). However, research has shown that due to a digital divide in terms of computer access and computer use, students from lower-income backgrounds may not have the same opportunities to become as digitally literate as their middle and upper class counterparts (Attewell, 2001;Behrman, 2002). This lack of digital literacy, or inexperience with computers could potentially hinder academic or workforce preparedness. Therefore this study aims to explore the relationship between computer use and academic achievement among students from low-socioeconomic backgrounds.

By examining research on the digital divide (Attewell, 2001), the researcher seeks to understand the how the use, lack of use, and lack of knowledge of computers affect low-income students. Furthermore, this study is framed through the lens of situated cognition theory (Brown et. al, 1989) , and through the concept of communities of practice (Wenger, 1998). The researcher explored how learning is bound to activity, and furthermore examine how learning and skills are bound to culture and community. By framing the research study in this way the researcher will be able to explore how low-income college students participating in the same community of practice engage with computers and they shared experienced. Figure 2.1 provides a depiction of the researcher's theoretical framework.

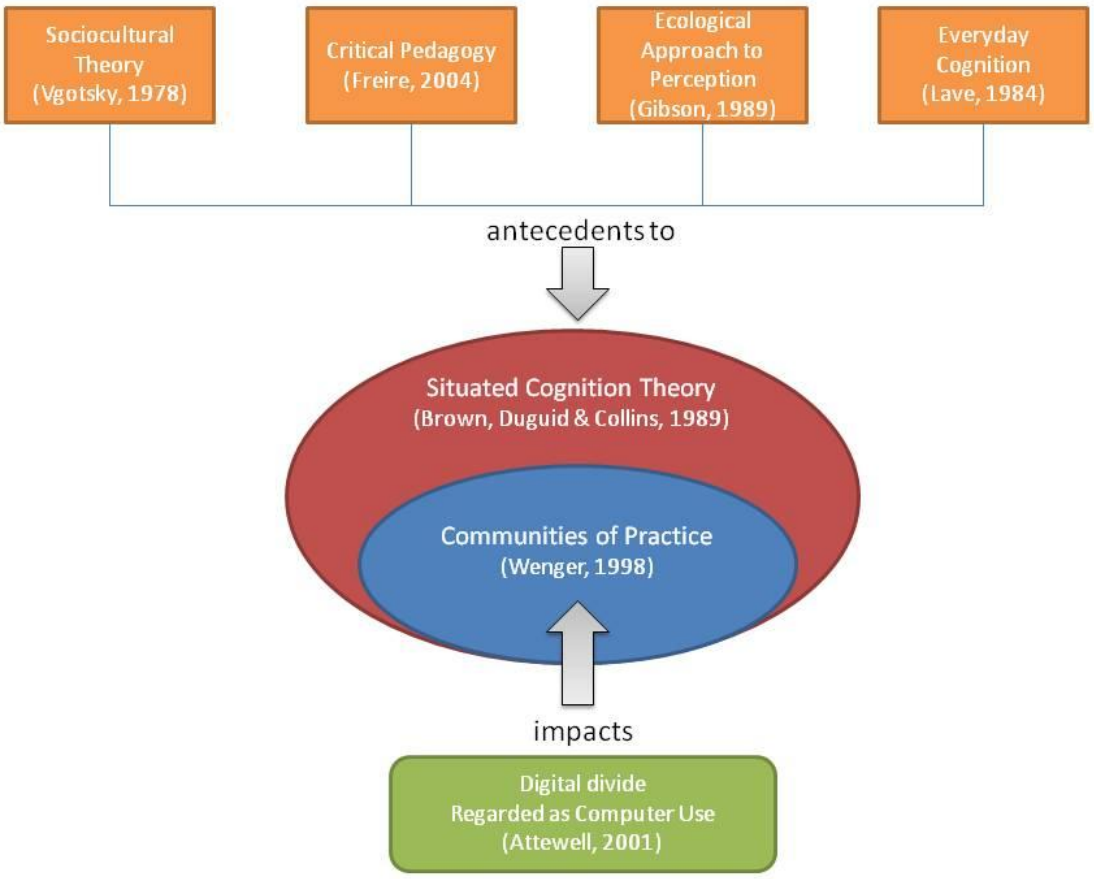


Figure 2.1 - Theoretical Framework

Situated Cognition Theory

Situated cognition theory is built on the assumption that one learns an activity by watching and mimicking what an expert in that area does (Lave, 1997). The framework of this theory incorporates declarative knowledge (knowing that) and procedural knowledge (knowing how) (Brown, Duguid & Collins, 1989; Driscoll, 1997). In essence, situated cognition theory holds the notion that what people "perceive, think, and do develops in a fundamentally social context [that] requires a reformulation of individual psychology" (p.156).

Situated cognition theory involves the idea that learning is bound to culture situated in activity and coins the notion that knowledge is not simply accrued but is instead a lived practice. (Brown et. al, 1989) These practices that are "meaningful actions, actions that have relations of meaning to one another in terms of some culture system" (Lemke,2000 p. 43) .

The idea of situated learning was first expressed in an article by Brown et. al (1989) who argued that all knowledge is situated in activity bound to social, cultural and physical contexts. In essence this means learning is not simply an accumulation of knowledge, but instead learning occurs through a combination of knowledge, and actual experience. For example, when a toddler is learning language, it is not just enough for him to have the knowledge of words that exist, he must instead be placed or "situated" in activities that help him begin to form the words and sentences. Activities that require them to start by learning to formulate and make simple sounds that are later formed into words, and then eventually into sentences. Furthermore, this activity is bound to culture, in that, depending on certain cultural factors such as geographic area, background and parents, each "child" that is learning language will have vastly different outcomes, which are reflected in the language they speak as well as dialect. The idea of situated learning being bound to culture is further supported by Behrman (2002) who created a model based on how culture is situated cognition in its most raw form.

In Behrman's (2002) culture-as-situated cognition model, it is outlined explicitly how cognition is situated and pragmatic. In explanation, cognition is defined by "social context, human artifacts, physical spaces, tasks and language" (p. 2). Behrman guides his research in situated cognition to define three distinct points**:**

1. Cognitive Processes are context sensitive meaning that "cognition emerges from moment by moment interaction with the environment" (Smith & Semin, 2004, p. 4).

2. This context sensitivity does not depend on conscious awareness of the impact of psychologically meaningful features of situations on cognition (Fiske, 1992; Schwarz, 2007).

3. Third, while the working self-concept is context sensitive, context effects on cognitive processes are not necessarily mediated by self-concept (Smith & Semin, 2004).

Defining these three components of situated cognition helps emphasize exactly how culture impacts or effects the theory of cognition as a whole (Behrman, 2002). Furthermore, the culture-as-situated cognition model helps to further assess situated cognition in a variety of lights, including how cognition not only takes place in our generalized world, but also in our education, personal relationships and geographic locations. Shifting the focus from prior theories that learning and knowledge are driven by self-concept, situated cognition instead is framed in the context that learning occurs in the sociocultural setting (Driscoll, 2005). While environmental and sociocultural factors play a role in this example of situated cognition, it must also be noted that learning in this context can also be facilitated by an expert (teacher, adult, parent) who guides the learner in his or her development; a concept is known as cognitive apprenticeship (Collins, Brown and Newman, 1987).

Often when teaching novices, experts or masters of particular skills fail to realize the various processes required to become proficient in these skills (Collins et. al, 1987;

Collins, Brown & Holum, 1991). In order to aid these experts in more effectively teaching these novices the cognitive apprenticeships "are designed, among other things, to bring these tacit processes into the open, where students can observe, enact, and practice them with help from the teacher" (Collins, Brown & Newman, 1987, p. 4).

Through coaching and mentoring, cognitive apprenticeships allow masters to model behaviors in a real-world context and this learning is placed in a cognitive framework (Collins et. al, 1991). Furthermore, cognitive apprenticeship incorporates three specific processes that engage learners further, including:

- [Identifying] the processes of the task and[making] them visible to students;
- [Situating] abstract tasks in authentic contexts, so that students understand the relevance of the work; and
- [Varying] the diversity of situations and articulate the common aspects so that students can transfer what they learn (Collins et. al, p. 3)

Collins et. al (1991) identify cognitive apprenticeships as an "instructional paradigm for teaching"(p.17). The researchers express the idea that apprenticeship is the way people learn most naturally both inside and outside of the classroom and as such learners in all settings should be "encouraged to become the expert" (p. 17). Cognitive apprenticeship also shows how theories derived from situated cognition (Brown, Duguid and Collins, 1989) are tied closely to how people learn inside and outside of the classroom. However to foster further understanding of situated cognition theory, particularly in the educational context, one must examine knowledge as a "lived practice" (Driscoll, 2005).

Learners accrue knowledge by their daily living practices in their society or community. These practices are “meaningful actions, actions that have relations of meaning to one another in terms of some culture system” (Lemke, 1997 p. 43). One good example of knowledge accruement through lived practices can be found in a research study completed by Behrman (2002b). Through looking at literacy among children, the researcher was able to gain insight to how reading and writing are very social or “lived practices”; practices that require students to be actively engaged in their society or community in order to be successful. From this the researcher concludes that a person's literacy is tied actively to the community in which he or she is involved.

Many foundational aspects of situated cognition’s theoretical framework have been drawn from the works of Lev Vygotsky (1978) and his research on sociocultural theory. In Vygotsky (1978) sociocultural theory holds that humans learn and develop through their interactions with others and the environment. Vygotsky described learning as embedded within social events and occurring as a child interacts with people, objects, and events in their environment. In addition to this, Vygotsky how using tools (such as computers, books, and traditions) in this environment help learners to further develop skills needed to survive in their culture. Many concepts of situated cognition theory (Brown et. al, 1989) incorporate the idea that culture and tools play a role in how a person learns in various situated contexts.

In addition to Vygotsky’s (1978) sociocultural theory, situated cognition has drawn on a variety of theories including critical pedagogy (Freire, 2004), the ecological approach to perception (Gibson, 1989) and everyday cognition (Rogoff & Lave, 1984; Lave, 1988) Each of these theories have served as antecedents to situated cognition, and

as such each of these theories play a role in the inner workings of situated cognition theory itself.

Critical pedagogy is deeply rooted in critical theory, and focuses on the development of critical consciousness, "which enables learners to recognize connections between their individual problems and experiences and the social contexts in which they are embedded"(Freire, 2004, p. 42). Like situated cognition (Brown et. al, 1989) critical pedagogy incorporates how cultural factors such as race, gender, sexuality, ethnicity, nationality, and age contribute to a person's ability to learn. However, in critical pedagogy, learning is bound to the experience of both the learner and the teacher and can only occur through meaningful, critical dialogue. Similarly, the ecological approach to perception (Gibson, 1989) incorporates how an animal's (humans included) physical environment, has an impact on how they perceive the world.

Gibson (1989) emphasized on how perception is directly bound to activity. Incorporating concepts involving biology such as optical flow and visual guidance Gibson was able to establish how physical environment has an effect on how an animal will perceive and engage in particular activities. In essence, in order for an animal to effectively tackle the completion of any activity, it is not just enough that it knows "what" it is approaching but also how it is approaching and if they need to adjust their approach. In situated cognition theory (Brown et. al, 1989; Lave, 1997) learning is bound to activity and environment, and in this social context, the perception of the task one is approaching plays a role in this learning. In relation to this study, the researcher explores participants' activities in college (physical environment), in an effort to understand how their computer activities in this environment affect learning and academic achievement.

Finally, situated cognition theory (Brown et. al, 1989; Lave, 1997) incorporates the research of Rogoff and Lave (1984) and their ethnographic studies on how people learn in everyday situations. This Rogoff and Lave (1984) call everyday cognition.. Further research, shows that how people learn in everyday life is much different than when placed in a classroom environment that requires them to solve precise, well-defined problems. In summary, everyday cognition is used to establish how a person learns in a setting outside of the formal classroom or lab as well as in their everyday interaction and environment. From everyday cognition, situated cognition theory incorporates how aspects learned in everyday culture and environments are incorporated when learning occurs in other environments (such as classroom or other monitored environments). This research closely relates to the the idea that in situated cognition theory, learning is "conceived as increasing participation in communities of practice" (Driscoll, 2005 p. 159).

Communities of Practice

Communities of practice (Wenger, 1998) are "collaborative, informal networks that support [learners] in their efforts to develop shared understanding and engage in work-relevant knowledge building" (Hara & Kling, 2002 p. 3). Wenger (1998) states that communities of practice can further be defined by the following factors:

1. Mutual engagement, connecting participants in a variety of ways and defining membership;
2. Participation in joint enterprise, a negotiated way of working together to achieve something; and

3. A shared repertoire of "routines, words, tools, ways of doing things…which have become part of its practice" (p.83).

Originally coined by Wenger (1998) communities of practice are formed through things that "matter to people" (p.82); meaning, the *practices* involved in a community are derived from what the members of those communities see as vital. Through his research Orr (1992) further emphasizes how mutual engagement, participation in joint enterprise, and shared repertoire define communities of practice.

Orr's (1992) ethnographic study of copy machine workers analyzed the practices and learning among this organizational communities of practice. The researcher discussed how these technicians become a part of the community from the time they set foot on the job. Through a mutually decided form of communication each participant in this community learns from one another in the end having a mutual reliance on each other to be successful in the job. Finally Orr's research shows that through their interaction in this type of environment they were able to foster organizational learning and help each member of the community achieve success both individually and as part of a team. Though Orr's research uses this concept in the context of the corporate/organizational environment, other research studies (Behrman, 2002) have used communities of practice to explain how learning occurs in social, classroom, academic, and everyday environments.

In more research by Behrman (2002) the researcher explains that there are at least three orientations to communities of practices to which learners can belong. The three orientations (experiential, classroom and anticipatory) help further explain how situated cognition theory takes place in various learning environments, and provides further

framing for specific communities of practice. An orientation refers to how a learner becomes involved in a community of practice, and the implications for learning within this community of practice. While these three orientations in this study are closely tied to reading and literacy they can also be used to identify various other activities in a variety of learning environments.

The experiential communities orientation (Behrman, 2002) "considers students' background or home community and attempts to find ways of exploiting the background experience" (p. 28). By understanding that important opportunities to learn come up in learners everyday interaction with their home community, the researcher explains that we must also understand that the learning that occurs in their home communities has a direct connection to how they learn in their school communities. Although college students engage in active learning in their school community, the environmental factors outside of the classroom have an impact on the learning that takes place. As Behrman explains, teachers and administrators mediate classroom learning but at home parents, mentors and other adults facilitate the learning environment. In essence, students develop inside and outside of the classroom and as such each learner carries experiences from each into both communities.

The second orientation discussed in Behrman's (2002) research deals with the classroom community orientation. The classroom community orientation focuses on "the student's present involvement as a member of a school community and focuses on issues of position, privilege and authority within the classroom" (p. 28). The idea of the classroom community orientation is most closely tied to cognitive apprenticeship (Collins et. al, 1987), in which a mentor explains and models activities to a community of

learners. Using components of cognitive apprenticeship students engage in group activity and discussion allowing them to collaborate and develop together. Eventually individual students develop their own knowledge and learning experiences from the classroom setting contributing this to personal grown outside of the community.

Finally, Behrman (2002) discusses anticipatory community orientation, which "considers a student's future involvement in a workplace or advanced academic community (such as college and attempts to prepare students for this transition" (p. 28). In this orientation the classroom is seen as a weak "substitute" for learning that occurs outside of the classroom. As such education in this community is framed to supplement learning activities that take place outside of the classroom. As explained by Behrman, experts within the "domain" of the community serve as mentors observing and overseeing the activities of the learning. Unlike the classroom community or experiential community setting where teachers or mentors give specific learning tasks to the group in this setting the mentors only suggest activities to promote learning occur, and actual decisions on how the tasks will occur are left up to the novice.

Orientation to communities of practice (Behrman, 2002) helps to further describe how learning activities in a social and community context is very much bound to the culture, background and personal experiences of the learners themselves. When examining the concept of communities of practice in a social context, such as education it is also easy to see how communities of practice can bring people together. According to Brown & Diguid (2001) communities of practice cultivate their own "style, their own sense of taste, judgment, and appropriateness, their own slang and in-terms" (p. 143). For this reason it is essential to understand the inner-workings of these groups in a variety of

settings; particularly how they learn, and how they coincide and exist within one another (Wenger, 1998; Jawitz, 2007).

It is often assumed that a learner can only belong to one community of practice at a time, however, this could not be further from the truth (Jawitz, 2007). Communities of practice can coincide with each other, and even exist within one another. One thing that must be noted is that each community of practice is unique in its own right. Each contains its own set of norms, and cultural factors that bind it. These boundaries are important when defining where one community ends and another one begins (Wenger, 1998). No matter the case, communities of practice are heavily defined by the active members participating in the community.

A learner's initial participation in a community of practice can be tied to several different ideas. The most widely used of these ideas comes from Lave and Wenger (1991) who believe that participation occurs through a very distinct socialization process known as legitimate peripheral participation. According to Jawitz (2007) "Peripherability refers to the relatively low-risk environment in which the first experience of participation takes place, and legitimacy refers to the recognition of newcomers as potential new members of the community of practice"(p. 187). As one gains more experience with a community, and begins to become an active member they begin to form an identity built on past experience, and future prospects of being an actively engaged in this new community of practice. Lave and Wenger (1991) believe that involvement in communities of practice is tied to past experiences and future possibilities within a community is tied into three trajectories that could truly affect their participation in the community. These three trajectories include:

- Inbound trajectories: where newcomers are on track to become full members;
- Peripheral trajectories: where participation in the community of practice does not necessarily lead to full membership; and
- Boundary trajectories: where participation involves maintaining membership across the boundaries of different communities of practice.

For purposes of the present study the researcher uses boundary trajectories to explain how college students maintain membership across a variety of communities of practice. With the digital divide (Attewell, 2001) possibly posing certain implications for this population's computer use prior to college, as well as them being involved in a wider campus community, it was important to analyze the computer experience they had in their environments prior to college, and how this may or may not play a role in their experience in their current environment. In essence, how their membership in one community of practice has affected their involvement in another.

The concept of communities of practice as a whole, has been used to ground studies of how community populations learn. In research concerning minorities (ethnic, socioeconomic, geographic, gender and otherwise), the concept has not only provided support for how people learn in groups, and but also how they interact within their own communities. For purposes of this study it is important to examine how communities of practice play a role in the learning of minority college students.

Research suggests that cultural aspects such as economic status, ethnicity, gender and age can all play a role in how one becomes a member in a community of practice (Wenger, 1998; Behrman, 2002). As such, it is important to understand more specifically

how culture and background play a specific role in the development of individual students. In the current study, the researcher sought to establish how low income college students' prior use and knowledge of computers played a role in how they engage with computers in their current communities of practice.

Defining the Digital Divide

The digital divide is one of the ways in which inequality is measured in a knowledge driven society (Attewell, 2001; Tien & Fu, 2008). It originally derives from a technological gap, where there is a skewed distribution in the access and use of technology among those in differing demographic groups. This includes socioeconomic status, gender, age, race or ethnicity and geographic area (Tien & Fu, 2008). The term "digital divide" became popularized in the early 1990s, when the United States government referred to it as the "lack of access to information technology such as Internet access or computer ownership among specific groups" (Papastergiou & Solomonidou, p. 380)

While access to technology has been deemed as the original focus of the digital divide, many researchers argue that this definition neglects many other components caused by the digital divide (Attewall, 2001; Taylor & Harper, 2003; Light 2001). In essence, these researchers believe that the term digital divide, must also include the inconsistencies in how people are using computers and the technological skills they have developed through experience with computers. These two varying viewpoints have caused the concept of the "digital divide" to be categorized into two separate levels: the first digital divide being defined in terms of people's availibilty and access to computers,

and the second digital divide that is focuse on the differences in actual use and knowledge of computers.

First Digital Divide: Computer Access

According to Hosek (2008), the 1990s "saw the rise of what turned out to be overly optimistic attitudes"(p. 147) towards computer and Internet use. Views that implied inaccessibility to technology were slowly dissolving and would soon no longer pose a problem as everyone would have access to a computer. However, as time has progressed it has become more and more apparent that while access to technology is increasing everywhere it is still a major problem. Using her research on women and their use of technology, Hosek (2008) hones the point that in order for one to successfully thrive in this technologically rich society, they must be able to have access to technology and actively participate in using technology.

As our current society becomes more and more dependent on the use of information and communication technologies (ICTs), it is important to gauge where, when and how people access computers (Hawkins, 1995). On a larger scale, one researcher brings to surface an idea of how lack of access to computers is creating a hosts of social problems (Warschauer, 2003). In his dissection of the digital divide, Warschauer has constructed his own concept driven by the idea of technology promoting social inclusion. Through his idea of "technological determinism" he emphasizes that the "mere presence or absence of technology has a determining affect on behavior and social development" (p. 34).

While Warschauer (2003) believes that a divide defined solely in terms of access is a major issue in our society, he also access must be analyzed and is a large component

in closing the digital divide. The researcher defines access specifically as having three parts: devices, conduits and literacy. The first component *devices* refers to the physicals devices, in this case the computer.

Devices include cost of maintenance and computer software programs, training, and administration which all contribute to the total cost of ownership of a computer (Warschauer, 2003). Additionally, this category includes the replacement of broken computer parts, and the need to upgrade software. Each of these components can create a digital divide when those from low-income backgrounds cannot afford to purchase or maintain the devices themselves.

The second component that can define access is the conduits, such as telephone access, electricity, and Internet services which have the ability to connect users to an abundance of information (Warschauer, 2003). Warschauer argues that having the "device" is not enough to define access to a computer but that instead, these conduits can help in truly defining how people are able to engage and learn from computers. Conduits give people access to more than the device, which can or cannot lead them to become more literate when using a computer. Warschauer (2003) believes that the third component, literacy, defines access, and refers to (in this context) a person's skill in using the device and conduits. Research has shown that literacy is practiced "on a highly unequal basis, and is highly correlated to with income at an individual and societal level" (p. 2).

Rowe (2003) it is discusses further how Internet service providers and other Internet technologies "only exist in areas in which there is a high demand for them" (p. 6). According to the data there is a larger lack of access to computers in poor rural

America than in more urban North America. This supports research conducted by the NTIA (2000) that the poor are less likely to have physical access to computers than their middle and upper class counterparts. However, this gap in terms of access is not a problem germane to North American civilization itself. On a global scale "access to knowledge is uneven, and technology is not improving the situation" (Hosek, 2008, p. 147).

According to a 2006 Intel report, only 10% of the world's population has access to computers or web-connectivity. This has created many social barriers, in that people with a lack of access often are less literate in computers than people who do have the access (Hosek, 2008) Because technology has been an instrumental part in building strong knowledge based societies it is important to understand the role having open access could play in the progression of society. This access can potentially lead to attaining and sustaining strong economic growth, in a current global economy that is in disarray (Ahmed, 2007). For this reason, the governments of many countries are developing initiatives and policies designed to specifically combat this issue.

In a 2000 report, the Organization for Economic Co-operation and Development (OECD, 2000) urges national governments to support policies that promote access to ICTs. The OECD believes that the problems with computer access cannot be resolved unless government intervention takes place. It is essential that people who live in areas of low economic growth have access the same type of technologically as those whoe live in economically strong areas or else they will miss out on the "benefits of an information society" (Hawkins, 2006, p. 293).

In our society we have already begun to see a close in this gap in access among certain populations. A recent report by the National Center for Education Statistics (NCES, 2006) shows that 91 percent of children ages 3 through grade 12 have access to a computer in school and of that 59% have Internet access. However, figures are much different when examining home computer usage. The same study reports that only "37 percent of poverty level families have computers at home compared to 88% of families making more than $75,000 a year" (NCES, 2006, p. 1).

Lewis (2001) reports that lack of access to technology at home may have hindering affects on students coming from low-income backgrounds in their academic careers. Her research adds that universally, the majority of home computer use among school age children is spent playing video games, and not doing academic related tasks. Considering that many students from low-income backgrounds are less likely to have after school supervision, they are more likely to use the computer to do non-academic related tasks on the computer. This further echoes Warschauer's (2003) view on computer literacy, that if students are not using a computer in ways that promote their social and professional development, they put themselves at risk of not "thriving in our technologically driven society" (p. 10). Hence, this is why the new discussion on the digital divide has shifted from a focus on the inequities of access, and instead focuses on the computer use and knowledge among different demographic groups.

Second Digital Divide: Computer Use and Knowledge

Since the turn of the century reports and statistics have shown that the divide in computer access has been gradually closing (NITA, 2000). While this digital gap in terms of computer access is disappearing, other research hsa shown (Enoch & Soker, 2006) that

differences in use may not disappear at the same rate. Attewell (2001) discusses in depth the second digital divide, a gap defines in terms of computer use.

According to Cindy Long (2008) the computer use divide is often referred to as the *participation gap*. This participation gap does not just include the differences between how different groups use computers but also looks at the differences in opportunities to develop digital literacy. In support, Enoch & Soker (2006) believe that "even if general access to computers and the Internet could be made available to all…some students would still suffer from computer anxiety, others would lack computer literacy or have no access to an informal network of advice and support" (p. 36).

According to Attewell (2001) merely having access to technology does not equal one being able to use technologies and for this reason it has become essential that research continues to be constructed on how this use is causing specific disparities in our current society. While many still focus on the digital divide in terms of access, many researchers have begun to conduct studies that emphasize the nature of use, time spent and purpose for using computers. Further research supports the claim that the computer use divide still exists. In a research study by Enoch and Soker (2006), for example, the researchers examine how factors such as age, ethnicity and gender affect a students' use of web-based instruction. Enoch and Soker (2006) found that while a gap in terms of computer access has closed rapidly, there is still a persistent gap in nature of computer and Internet use among different ethnicities and age groups. They suggest that colleges and universities offer more opportunities to use web-based instruction in order to facilitate a closing to this gap.

Coulter (2008) states in his research that in order to address the computer use divide must reframe the ideas behind it. In his research of K-12 students, he concluded that computer use is not solved by sitting people at computers and having them do drills to learn proper technological skills. In order for people to gain true literacy in computers, they need to engage with them in ways that are enjoyable.

Jackson et. al (2008) examine how students are using computers among difference races, genders and ages. They found that children's computer use affected their academic performance, in that children who had a longer span of experience with computers had higher grades than more recent users. In conjunction with this, children who played videogames longer had lower grades than those who spent less time playing video games. In their discussion, the researchers make the point that type of computer activity contributes greatly to a student's digital literacy. Therefore, if students are not engaged in the appropriate activities on the computer, they will fall behind in developing the skills needed to survive in our knowledge driven society.

According to Salpeter (2003) ""technology is, and will continue to be, a driving force in workplaces, communities, and personal lives in the 21st century" (para. 1). It is important that students know more than just core subjects such as reading and math. They must learn the importance of "importance of incorporating information and communication technologies into education from the elementary grades up."(para.7) The researcher notes that especially in inner city and low-income schools technology training is pushed to the back burner. As it pertains to technology Salpeter believes that students must develop skills in critical thinking and problem solving, problem identification and formulation, accountability and adaptability, as well as "communicate, process

information, and use research tools (such as word processing, e-mail, groupware, presentation software, and the Internet) to access, manage, integrate, evaluate, create, and communicate information." (p. 2)

Stein (2006) further explains the technological skills needed to succeed in life. Stein explains that in order to be competitive in the education and the corporate environment there is a certain level of digital literacy and skill that must be acquired. She emphasizes that in the 21st century "the meaning of 'knowing' has shifted from being able to remember and repeat information to being able to find and use it" (p. 10).

According to the Partnership for 21st Century Skills (2004), there are four areas of skills individuals need to develop. These four sets of skills (life and career; learning and innovation; information, media and technology; core subjects and themes) are essential to helping individuals achieve success in work and life (The Partnership for 21st Century Skills, 2004). Life and career skills refer to those skills individuals need to develop a in flexibility, adaptability, self-direction, leadership, cross-cultural and accountability. This area of skills, in particular, allows students to navigate their work and life environments competitively, especially in an information age. Learning and innovation skills refer to an individual's ability to think critically, work creatively, and communicate effectively with others. Much like life and career skills, learning and innovation skills helps individuals to be able to compete more vigorously in their work and life environments.

Core subjects and theme skills referred to an individual's ability to master those core subjects such as reading, writing, mathematics, sciences and social studies. These skills aid students in further understanding the world around them and contribute to their overall development as adults. Lastly, information, media and technology skills are

identified as skills that allow persons to cope with the rapid progression of technology and access to an abundance of information. According to the partnership for 21st Century Skills (2004) individuals accomplish this by developing information literacy, media literacy and ICT literacy. As the topic of the second digital divide and developing 21st century skills has become a hot-topic in our society (NTIA, 2000; Attewell, 2001; NCES, 2006) researchers have recommended that more studies be conducted on how students engage with computers in our society and how this engagement relates to their academic achievement.

Conclusion

As this research study seeks to examine the relationship between computer use and academic achievement among low-income college students, it is important to identify the themes in research that have led to the research problem. Research has shown that learners who have a lack of experience with computers lack the skills needed to become digitally literate. (Warschauer, 2003; Warschauer, 2003b; The Partnership for 21st Century Skills, 2004) In addition to this, other research has shown that frequency and nature of computer use could have a potential impact on academic achievement (Jackson et. al, 2008, Jackson et. al, 2009; Hosek, 2008).

The present study has been framed in situated cognition theory (Brown et. al, 1989), and communities of practice (Wenger, 1998). Situated cognition theory holds the idea that learning is bound to activity that is embedded in culture. Within this population it is important to examine how computer activities are closely tied to low-income college student culture and environment. Furthermore this study examines how computer activities create learned behaviors that may interfere or support these students' academic

achievement. In addition, the participants were examined as a community of practice because they were members of the same scholarship program, at the same university with identical access to technology.

Communities of practice are defined by mutual engagement, participation in a joint enterprise and shared repertoire of tools (Wenger, 1998). In this study the researcher concentrated specifically on the shared repertoire of tools and ways of doing things, in this case, activities on their computers. By examining the participants' learning through their involvement in this community of practice (as defined first by their involvement in a scholarship program), he sought to establish if any shared experiences existed among these group of learners when it came to becoming acclimated to technology in their current environment. The researcher also uses this as a concept to further define areas in which a digital divide may have impacted this group and how they engage with each other. In the following chapter, the research methodology will be discussed.

Methodology

The purpose of this study was to examine the relationship between computer use and the academic achievement (GPA) of college students coming from low socioeconomic backgrounds. The participants in this study were forty two (42) college students who are members of James Madison University's Centennial Scholars Program. The Centennial Scholars Program is a full-tuition scholarship where the Centennial Scholars are given a brand-new laptop computer upon arriving at James Madison University. This study will examine how these students are using their computers for academic and non-academic use and how frequently they are participating in each type of use and the relationship between computer usage and academic achievement. This chapter will address the researcher's formulation of this topic, research design and methodology, as well as describe the participant population and requisite procedures taken to complete this research study.

This research study was formulated through a combination of research, faculty oversight and passion for the topic from the researcher. Having an inner-passion for diversity and equal education, the researcher's intent from the beginning was to conduct research that would contribute in some part to these ideas. Furthermore, the researcher's significant experience with technology was also a factor influencing his thesis research topic.

The final research questions were correlative in nature, and intended to examine the relationship between computer use and academic achievement among college students from low-income background. They also sought to explore further how college students from low-income backgrounds engage with computers for academic and

nonacademic purposes. After establishing the research question, the researcher was then able to continue constructing the research methodology. This included selecting participants and constructing data collection instruments (to be discussed later on in this chapter). Upon reaching this methodology the researcher applied to the Institutional Review Board, to obtain permission from James Madison University to conduct research.

Description of Sample

The participants in this study were sophomore, junior and senior members of James Madison University's, Centennial Scholars program. The Centennial Scholars Program at James Madison University is an initiative that was put into place in 2004, to give students from low socioeconomic backgrounds a chance to come to college on full tuition/ room and board scholarships. Approximately 180 students participate in the program ranging in grade levels from college freshmen to graduate students. In order to continue to be financially supported by the program, participating students must actively engage and meet a variety of requirements. These requirements include remaining in good academic standing (by obtaining and maintaining a 3.0 GPA), completing 100 hours of community service, attending weekly professional development meetings and also attending 6 hours of monitored study hall per week. An incentive for program participation is that all new students get a brand new laptop computer, complete with Microsoft Office applications (Breeden, 2009).

In order to ensure complete understanding and increased participation in this study the researcher explained the purpose of the research study to all students in the Centennial Scholars Program at one of the group's weekly professional development

meetings in October of 2009. After receiving IRB approval on October 19th, 2009, the researcher e-mailed an online survey invitation to all Centennial Scholars students. After receiving survey responses, freshman and graduate student data was discarded. While the Centennial Scholars Program has members from all years and levels of education in college (freshman through graduate student), the researcher sought to look at strictly undergraduates who had established a cumulative GPA; as such only sophomore, juniors and senior students were able to be considered as participants in this study. This left the researcher with a total possible participant pool of approximately 120 students.

From the survey participant population of 42 students, 12 (28%) of the survey respondents were selected to participate in the qualitative portion of the study that consisted of two focus groups of 4 participants each. The original intent of the researcher was to select a random sample of 8-12 participants to participate in the focus groups. Using a random sample generation tool at www.random.org, twelve participants were selected and e-mailed by the researcher. With a lack of response from the randomly selected participants the researcher then e-mailed all 42 participants to enlist their participation in the focus group. The researcher used the first twelve respondents to this mass e-mail message as members of the focus groups. In the end, 8 (19%) of participants (4 each) voluntarily participated in the focus groups. Of this population 2 (25%) were male, and 6 (75%) were female. The male to female ration closely related to the entire male to female ration at James Madison University that is currently 39 percent male, and 61 percent female.

All participants in this study were at least 18 years of age prior to their participation in this study. Their participation was completely voluntary and each

individual had the option to withdraw at any time without consequences. Additionally students who were selected on a voluntary basis for focus groups had the option to remove themselves from the process at any point without facing any penalties or consequences.

Procedures

This study took course over a six month period beginning in October of 2009 and ending in April of 2010. Research began pending the approval of James Madison University's Institutional Review Board. The researcher's original proposal to the IRB was submitted October 15th, 2009, and he was given permission to proceed with research on October 19th, 2009. However, due to the nature of the study and the involvement of underprivileged students, the IRB he required a full-board review before approval. The researcher received permission to collect his quantitative data collection, but was required to defend questions concerning the qualitative protocol. Specifically the researcher was asked to address questions and concerns pertaining to the protection of participants responses and identity as well as his selection of focus groups participants. Upon successfully addressing the IRB's concerns, the researcher was then able to proceed with his study.

The first portion of this study involved quantitative survey data that was collected through the Qualtrics online survey system. The survey consisted of 24 multiple choice questions (please see Appendix I) that were designed to require no more than 20 minutes to complete. Prior to accessing and completing the online survey, each participant was presented with an e-mail cover letter explaining the purpose of the research study and requesting their voluntary consent to participate. Before the e-mail (including survey

link) was sent to all possible participants, a copy of the message (including cover letter, contact information and survey instrument web-link included) was sent to the Director of the Student Retention for the Centennial Scholars program, Diane Strawbridge, for her approval. Before proceeding to take the survey all participants agreed that they understood the purpose of the study and any associated risks by clicking on the survey link.

The second part of this study consisted of collecting qualitative data through 2 focus group of a minimum of 4 students and a maximum of 6 students each using a semi-structured interview guide (please see Appendix II). Following the survey, a second e-mail was sent out to a random set of 12 survey respondents requesting their participation in one of two focus groups (each consisting of four to six students total). Focus group participants were selected randomly through the use of an online "random-sample generator" at www.random.org. When the first e-mail returned a lack of response from randomly generated participants, the researcher sent an e-mail to all 42 survey participants, using the first twelve self-selected respondents for his focus groups. Those who decided to voluntarily participate in one of the focus groups were given a consent form at the beginning of the group session. Informed consent was required in order for each student to participate in the focus groups. All focus groups were videotaped and recorded.

After receiving informed consent from all participants, the researcher began the focus group, by explaining the purpose of the research study. The researcher then posed the questions that wereidentified on the attached, semi-structured interview guide. Focus group participants were asked the exact same questions to maintain consistency in both

groups. Follow-up questions were also be posed as the researcher saw appropriate. In order to further explore the notion of community of practice (Wenger, 1998) the researcher also used the focus groups as an opportunity to view how students interact with each other within this community, including nonverbal body language and gestures when sharing their experiences. At the end of the focus group, all participants were thanked, and all collected information was be placed under lock and key until the analysis phase which will be discussed in Chapter Four.

Research Design

Survey Design and Instrumentation

The survey was designed for two specific purposes. First, respondents were required to answer questions pertaining to their demographic background. Following this respondents were asked questions about their prior experience with computers as well as questions about the frequency and nature of their academic and non-academic computer use.

The survey began with eight demographic questions that pertained to gender, race/ethnic background, parents' education level, area in which participants grew-up/lived prior to college, year in college, and cumulative GPA. The researcher selected this participant population due to their low-income status and family income prior to college. Due to a digital divide defined in terms of computer usage (Attewell, 2001) and research studies conducted on income status and computer use (Jackson et. al, 2006), it has been shown that a relationship exists between computer use and individuals coming from low-income backgrounds. The additional demographic factors such as race/ethnic background, parents' education level, gender and location were used to further frame the

socioeconomic factors. The reasoning behind this demographic framing was based on past research (Attewell, 2001; Warschauer, 2003; Tien & Fu, 2007; Jackson et. al., 2008; Jackson et. al, 2009; Enoch & Soker, 2006) conducted on the digital divide that tied each of these socioeconomic factors to having an impact on one's computer use. After responding to demographic questions, participants then moved to the second portion of the survey that dealt with computer use.

The initial questions on the second portion of the survey dealt with participants' prior experience with computer, and current use of computer-based services and software available to them on James Madison University's campus. These included Blackboard and the James Madison University Online Library Catalog. The researcher also posed a question concerning computer games as a possible activity that participants could engage with on their computers in a non-academic way. Following these questions, the survey included questions that dealt with how frequently they use Microsoft Office applications, the Internet, e-mail and social networking sites for both academic and non-academic purposes. Due to each participant being provided a laptop equipped with all Microsoft Office applications, and having the access to wireless Internet access, the activities asked about on the survey were framed by the technologies that all participants' had access to on their personal computers and in their academic environment. Furthermore, by paralleling how each participant used each of those technologies and software for academic and non-academic purposes, the researcher was able to establish a clear context to exactly how they were using their computers.

The response choices for all questions pertaining to the frequency of use for academic and non-academic activities was borrowed from a previous study conducted by

Jackson et. al (2008). In this study the researchers used this scale to assess the frequency of use for specific technology based activities among school-aged children prior to college. The study was conducted to assess how gender, race and other socioeconomic factors could correlate to computer use, but also to see if a relationship existed between the nature of computer use and academic achievement. The response options were categorical in nature and included a 9-point scale that ranged from 1=never to 9=Everyday for more than three hours. Responses in the study were then used to correlate to academic performance.

Focus Group Protocol

The qualitative component was a semi-structured focus group guide that was designed to delve deeper into topics discussed on the survey, and provide an in depth look at how these participants interacted within this community of practice (Wenger, 1998). This portion of the study was also designed to explore the three research questions (1) how do college students from low-income backgrounds engage with computers for academic purposes? (2) how do college students from low-income backgrounds engage with computers for non academic purposes? and (3) does a relationship exists between computer use and academic achievement among college students from low-income backgrounds.

To accomplish the exploration of all of these factors the researcher created focus group questions that dealt with how computers have impacted their lives as a whole. Furthermore, questions were design to explore how computer use and activities on their computers affected academic achievement. The researcher also posed three to five

additional questions in each focus group that came from data collected on the survey as well as other topics that may have come up throughout the conduction of the focus group.

Data Collection & Instrumentation

All survey data was analyzed using Qualtrics software for descriptive statistics and SPSS for linear regression analysis. While e-mail addresses were collected to enlist participants for focus groups, individual responses to survey questions were not tracked back to these e-mail addresses. Other identifiable data consisted of demographic information which included: race/ethnicity, year in college (by credit), gender and grade point average. The researcher obtained the right to use and publish all data. The data was stored in a locked, confidential location, only accessible by the researcher and his research chair.

Data collected from focus groups were kept in the strictest confidence. Each participants' name was coded in a way that was unidentifiable, (i.e: Jane Done= Participant 1A). Each focus group was videotaped and transcribed in order to ensure accuracy of data supplied by each participant. The researcher used Excel to examine all data collected in focus groups. At the completion of each focus group, all data was immediately stored in a locked file cabinet in 3345A Memorial Hall. Access to the locked file cabinet is controlled by the senior administrative assistant (Sandra Gilchrist) to the COE/LTLE Dept. Chair, Dr. Diane Foucar-Szocki. Access to the file cabinet must be approved by the Department Chairperson, Dr. Foucar-Szocki. Only Dr. Foucar-Szocki, Dr. Estes, Ms. Gilchrist and myself will have access to the raw data.

True name data and transcriptions from focus groups were stored in the above mentioned locked file cabinet in 3345A Memorial Hall. Survey materials and actual

surveys were stored electronically, in a password protected word document file and in the password protected Qualtrics database Focus group materials will be immediately destroyed following the completion of the research study on May 1st, 2010. Upon statistical analysis and coding of all quantitative and qualitative data, the researcher was able to begin analyzing the results on the research study. In the following section, the findings from each portion of this study are presented.

Results

The purpose of this study was to examine the relationship between computer use and the academic achievement (GPA) of college students coming from low socioeconomic backgrounds. The participants in this study were forty two (42) sophomore, junior, and senior college students who are members of James Madison University's Centennial Scholars Program. All participants were 18 years of age or older, and came from low-income background as defined by having an EFC (estimated family contribution) rate of less than $3000.00 per year as determined by FAFSA (Free Application for Federal Student Aid).

Data Analysis

This was a mixed method research study that utilized a survey to collect demographic data and information about the frequency and nature of the use of computers among the participant population. Frequency was measured using an 9-point ordinal scale (1-never;2-Less than Once a Month;3- Once a Month; 4 – A few times a Month; 5- Once a Week; 6 – A Few Times a Week; 7- Everyday for Less than an Hour; 8 – Everyday for 1 to 3 hours;9-Everyday for More than 3 hours.) The scale utilized in this study was derived from a prior research study (Jackson et al., 2006) in which they used a survey to determine if frequency and nature of use of computers correlated to academic achievement among school-aged (K-12) children. In order to categorize nature of use, questions posed on my survey pertained to how participants used computers for academic and non-academic related purposes (e.g. How often do you use the Internet for academic related purposes? How often do you use the Internet for non-academic related purposes?) Academic achievement in this study was also measured on an ordinal scale ranging from

below a 2.0 to a 4.0. The survey was constructed using the institution's sponsored survey software, Qualtrics, and a link to the survey was e-mailed through Blackboard to all 180 (approximate) sophomore, junior and senior students who are members of the Centennial Scholars Program The survey was left open for two weeks, during which time the participants had the option to complete it at their own convenience. Of the 120 possible participants in the survey, 42 students responded. The quantitative component of this study was guided by two hypotheses:

Research hypothesis one: A positive relationship exists between the frequency of computer use for academic purposes and academic achievement.

Research hypothesis two: A negative relationship exists between the frequency of computer use for non-academic purposes and academic achievement.

Due to the ordinal nature of the scaling in each question, a Spearman Correlation test was used to validate all data. A linear regression analysis was used to gauge if frequency and nature of computer use on academic and non-academic related activities could correlate negatively or positively to academic achievement. Using grade point average as the dependent variable (y), and responses to questions pertaining to frequency and nature as independent variables (x), the researcher was able to determine if the independent variables were predictors of the dependent variable. Results of the linear regression analysis will be discussed later in this chapter.

In order to more accurately gauge significance within this small participant size (n=42) the 9-point scale of responses pertaining to frequency were reduced into fewer groups before running the linear regression analysis. This involved combining response choices and reducing the nine (9) categories to five (5) categories. The new 5-point scale

was distributed as from 1-never;2-Less than Once a Month, Once a Month; 3 – A few times a Month, Once a Week; 4 – A Few Times a Week; Everyday for Less than an Hour; 5 -Everyday for 1 to 3 hour, Everyday for More than 3 hours. Results of the linear regression analysis will be discussed further, later in this chapter.

Following the survey, a follow-up e-mail was sent to twelve randomly selected survey participants requesting their voluntary involvement in the qualitative portion of this study. The qualitative data in this study was collected during two focus groups consisting of four participants in each, for a total of eight (8) participants. Participants were selected using a random sample tool, at www.random.org. After receiving no response from the selected participants, the researcher sent another follow-up e-mail to all forty-two (42) survey participants and selected the first twelve (12) respondents. Due to personal scheduling conflicts of participants, the final two focus groups were scheduled with four participants each.

The researcher used a semi-structured interview guide to organize the two sessions. Questions on the guide were framed by the research hypotheses and the three research questions mentioned in the introduction of this study:

- How do postecondary students coming from low socioeconomic backgrounds engage with computers for academic related tasks?
- How do postsecondary students coming from low socioeconomic backgrounds engage with computers for non-academic related purposes?
- Does a relationship exist between frequency and nature of use of computers, and academic achievement?

The semi-structured interview guide also included questions pertaining to quantitative results, and the researcher spontaneously added follow-up questions during the discussion to better understand the participant perspective. In an effort to analyze verbal responses and how each of these participants engaged with one another in their community of practice (Lave, 1991), all focus groups were videotaped, and all interactions were coded.

Upon completion of the focus groups, an e-mail was sent to all focus group participants asking them for their race and year in school. This helped the researcher to further define the demographics of the focus group and compare the smaller focus group participant demographics with the larger survey participant demographics. This was done to assess how well the smaller focus group population represented the larger survey population. All focus group videos were transcribed and coded in such a way that all participants' identities were kept confidential.

In order to organize data, the researcher grouped data by each of the research questions (academic use, non-academic use, and frequency) choosing quotes and interactions that pertained to each. After all responses were organized by research question, categories were created based on questions asked in the survey, as well as other topics that came up through discussion. In example, all quotes that pertained to the research question "how students engaged with computers for academic purposes" were first grouped as a response to the question, and then based on content of the quote, further codes were created (such as social networking for academic use). The full discussion of these qualitative results will be discussed later in this chapter.

Participants Demographics

While the total participant population was 120, the researcher received 42 respondents to the survey. Of this sample, fifteen (36%) identified themselves as sophomores according to number of credits, eight (19%) as juniors, and nineteen (45%) as seniors. Of all participants only one (2%) indicated having been at the university for less than a year. This means that of all participants in the study, there was only one transfer student (who had not attended James Madison University for a full year).

Table 4.1
Year in School (by credits)

Year	# of participants	%
Sophomore	15	36%
Junior	8	19%
Senior	19	45%
Total	**42**	**100%**

Other demographics data revealed that nine respondents (21%) were male, and thirty three (79%) were female. While females out number males heavily in this study, the numbers align with the wider population of James Madison University where females represent 60.9 percent of the population, and male represent 39.1 percent. The total population of attendance at the institution is approximately 17,300 students. In terms of race/ethnic background of participants nine (21%) were Caucasian/White; nineteen (45%) were African American/Black; five (12%) were Hispanic (Non-White); four (10%) were Asian/Pacific Islander; and five (12%) specified Other. With the choice to specify race in an "Other" category, two participants wrote that they were Biracial; two were Black and White; and one was White and Native American. With this being an income

based scholarship, traditionally ethnic minorities have majority representation in the scholarship program. Of the total student population 16.4 percent represent ethnic minorities (African American, Hispanic, Asian/Pacific Islander, Other) and 83.4 percent of students identify as Caucasian/White.

Table 4.2
Gender

Gender	# of Participants	%
Male	9	21%
Female	33	79%
Total	**42**	**100%**

Table 4.3
Race/Ethnic Background

Race/Ethnic Background	# of Participants	%
White/Caucasian	9	21%
Black/African American	19	45%
Hispanic (Non White)	5	15%
Asian/Pacific Islander	4	10%
Other: (Biracial)	5	12%
Total	**42**	**100%**

In response to questions posed about location prior to attending college, twenty participants (48%) indicated they grew up in a rural area (more than 30 miles outside of a major city), fourteen (33%) responded as growing up in a metropolitan area (with a population of 200,000 or more) and eight (14%) participants specified growing up in a suburban area (no more than 30 miles outside of the city). According to Attewell (2001), students coming from urban and rural backgrounds often have a lack of access to

computers. This helped to further define the population. Surprisingly, when participants were asked about their access to computers prior to college, forty (95%) indicated that they had access, while two (5%) indicated not having access. Of the forty participants who had access prior to college, thirty five (88%) had access at home, thirty three (83%) had access in school, twenty one (53%) had access at friends/relatives' homes and twenty nine (73%) had access at a public library or another public venue.

Table 4.4
Geographic location prior to college

Geographic location	# of participants	%
Urban (Metropolitan Area - more than 200,000 people)	14	33%
Suburban (No more than 30 miles outside Metropolitan Area)	8	19%
Rural (More than 30 miles outside of Metropolitan Area)	20	48%
Total	42	100%

Table 4.5
Access to computers prior to college

Access to computers	*# of Participants*	*%*
Yes	40	95%
No	2	5%
Total	**42**	**100%**

Table 4.6
Type of access prior to college

Type of computer access	*# of participants*	*%*
At home	35	88%
School	33	83%
Friend/Family Member's Home	21	53%
Public Library/Other Public Venue	29	73%
Total	**N = 40**	**--**

In several research studies involving computer-use and academic achievement (Tien & Fu, Jackson et. al, 2008, Attewell, 2001) parents' educational background can be used as a determinant of a person's socioeconomic background and has also been shown to be an indicator of a students' academic achievement. While this study did not focus on how parental educational background affected academic achievement, it was important to use this as an indicator to further define this participant population. When asked about father's educational background, twenty eight (67%) indicated that their fathers had a post-high school certification or less, five (12%) had Associate's degrees, seven (17%) had Master's degrees or higher. When it came to mother's education, twenty eight (66%) had a post-high school certification or less, four (10%) had Associate's degrees, eight (19%) had Bachelor's Degrees and two (5%) had Masters Degrees or higher.

Table 4.7 *Father's education level*		
Education level	*# of participants*	*%*
Post-high school certification/technical training or less	18	67%
Associates Degree	5	12%
Bachelor's Degree	7	17%
Master's Degree or higher (PhD.D, J.D., etc.)	2	5%
Total	**42**	**100%**

Table 4.6 *Mother's education level*		
Education level	*# of Participants*	*%*
Post-high school certification/technical training	28	66%
Associates Degree	4	10%
Bachelor's Degree	8	19%
Master's Degree or higher (PhD.D, J.D., etc.)	2	5%
Total	**42**	**100%**

Upon concluding the demographic portion of the survey, participants moved on to answer question related to the frequency and nature of their computer use. Questions pertaining to academic-related and non-academic related activities were designed to answer the research questions and address both research hypotheses in this study. The following portion of this chapter will address results as they pertain to the specific research hypothesis and research questions of this research study.

Quantitative Data

Hypothesis one: A positive relationship exists between the frequency of computer use for academic purposes and academic achievement.

The first question addressed by the linear regression analysis was guided by the first research hypothesis, and served to see whether or not time spent on the computer for academic related activities correlated positively to academic achievement. Linear regression analysis was used to analyze if frequency and nature of computer use could be a predictor to academic achievement. This was chosen in order to establish if a relationship exists between the dependent and independent variables. With the dependent variable in this case being GPA (below 2.0 up to 4.0) the predictors for this variable included time spent on Blackboard, on the James Madison University Library catalog, and time spent using the Internet, social networking sites, e-mail and Microsoft Office applications for academic purposes. Time spent using social networking sites for academic related purposes showed a positive correlation to GPA. As displayed in Table 4.9, time spent using the other programs and tools for academic purposes showed no significant correlation to GPA.

Model Summary – Academic Computer Use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 Social Networking for Academic Purposes	.322[a]	.104	.082	1.860

a. Predictors: (Constant), Social Networking (Academic)

b. Dependent Variable: Current GPA

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Library Services	-.117[a]	-.769	.447	-.122	.969
	Blackboard	-.051[a]	-.335	.740	-.054	.997
	Microsoft Office (Academic)	-.266[a]	-1.823	.076	-.280	.991
	Internet (Academic)	-.075[a]	-.486	.629	-.078	.970

Table 4.9 – Computer use for academic purposes (linear regression analysis).

Hypothesis two: A negative relationship exists between the frequency of computer use for non-academic purposes and academic achievement.

The second question addressed by the linear regression analysis was guided by the second research hypothesis, and served to see whether time spent on the computer for non-academic related activities correlated negatively to academic achievement (GPA). With the dependent variable in this case being GPA (1 - below 2.0 ; 9- 4.0)the predictors for this variable included time spent playing computer games,, and time spent using the Internet, social networking sites, e-mail and Microsoft Office applications for non-academic purposes. The regression analysis showed no significant correlation between any of these activities and academic achievement.

Model Summary - Non-academic Computer Use

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Gaming	-.152[a]	-1.014	.317	-.160	.993
	Contact (Non-academic)	.070[a]	.394	.696	.063	.717
	Microsoft Office (Non-academic)	.139[a]	.907	.370	.144	.959
	Social Networking (Non-academic)	.053[a]	.320	.750	.051	.827
	Internet (Non-academic)	.041[a]	.266	.791	.043	.945

a. Dependent Variable: Current GPA

Table 4.10 – Computer use for non-academic purposes (linear regression analysis).

Qualitative Data

In addition to the statistical analysis of the quantitative results, additional qualitative data were also yielded. On the survey there were two questions posed to participants asking them to identify how many hours they had spent using the computer in the last week on academic related, and non-academic related tasks. The results showed that the average time spent on academic tasks in a week was 26.17 hours, and the average time spent on non-academic activities was 16.31 hours. This roughly translates to 60 percent of time spent on the computer for academic related activities, and 40 percent of time spent on the computer for non-academic activities.

Focus group participants were asked if they agreed or disagreed with the survey results showing that students tended to spend about 60 percent of the time using the computer for academic purposes and 40 percent of the time for non-academic purposes. In focus group 1, the majority of the group agreed that this was an accurate depiction.

The group justified their response by explaining that academic major, specific class coursework, class schedule as well as constraints of the scholarship program contribute to the amount of time they spend on the computer for academic purposes. As one participant quoted “It may even be 70-30 [70 percent academic/30 percent non-academic] because I’m in CSP (the Centennial Scholars Program)” The one other participant in focus group who agreed stated that this was because she was a social work major, and the majority of her academic work did not involve the use of a computer.

In the second focus group the reaction to the survey data about student time spent on academic and non-academic use differed. The majority of participants disagreed with the figures that more time was spent using computers for academic related purposes than non-academic purposes; explaining that when on their computers the majority of their activities have non-academic purposes. The only participant in the second focus group to agree with the figures gave a similar answer to those in the first focus group, indicating that she was a SMAD (School of Media Arts and Design) major, almost all of her academic work involved a computer.

In addition to this question, other themes involving frequency of use were brought up through focus group discussion. General education courses were perceived to require more computer related work than major courses. Access to technology were not limited to computers but also on telephones and iPods allowing participants to more frequently report using applications such as the Internet and games for non-academic purposes. These responses did not specifically show how frequency of computer use correlated to academic achievement. The responses did help to establish further how frequently college

students from low socioeconomic backgrounds engage with computers for academic and non-academic purposes.

How do postecondary students coming from low socioeconomic backgrounds engage with computers for academic related tasks?

While the time spent on the computer spent doing academic related activities showed no positive significance in predicting academic achievement, the qualitative research conducted provided further information to support how students engage with computers for academic activities. These responses aided in adding further depth to questions asked on the survey, and have been categorized as codes by the researcher.

Blackboard/Online Library Catalog

In both focus groups there was a general consensus that Blackboard was utilized by the majority of professors in all of their classes (general education and major requirements). The majority of participants expressed that as early as their first semester at the institution they were required to use Blackboard to turn in assignments, watch videos and post to the discussion board. In the second focus group, two participants indicated that they had had experience with Blackboard prior to college, and another participant mentioned having worked with a similar software called Jigsaw. They perceived this as aiding them, allowing them to be ahead of some of their peers who did not have access to Blackboard prior to college. Another participant in the focus group mentioned that her inexperience with Blackboard prior to college caused many difficulties in college, although professors aided her by posting instructions.

Another university service that was utilized frequently among this group, was the institution's online library catalog. As one participant mentioned "I think that my

professors rely on it for everything…um…because I know I'm in social work and we have to do a whole lot of research...and now-a-days they don't even tell you to go look in the library they tell you to go look on a research website and find articles on there to write about…so it definitely contributed to my academic career…" Many other participants seemed to echo these sentiments, in that academically the use of research databases has been a requirement in the majority of their core classes. Similarly, in both focus groups there was general consensus that the use of research databases has made completing assignments much easier for them.

E-mail

A few of the participants indicated that the presence of e-mail has been positive to their college career. One participant commented that prior to college she had never seen e-mail as a "big deal," but that since entering the college environment it has become extremely valuable. Other participants spoke of how that outside of Blackboard, e-mail is used most frequently to turn in assignments and get information needed for class. As one person concluded, "A lot of my professors still say e-mail is the fastest way to contact me" if they have a questions or concern about classes, assignments or etc.

Internet

A major theme for both focus groups was how the students engaged with the Internet for academic related purposes. Of these, a recurring topic that came up was the use of Google to complete assignments, research and papers for classes. One participant explained how it was much easier to sit at home and use Google rather than physically going to the library and studying. While many participants agreed with this viewpoint, one participant offered a different explanation stating that she would appreciate her work

more if she actually went to the library, rather than just typing searches into Google. While discussion on Google was identified by the group as the main use of the Internet for academic related purpose, one participant offered another tool used via the Internet. He explained that use of SparkNotes, online study guides and book reviews, have helped him tremendously in his study, and explained that prior to college one had to buy SparkNotes at the store, but that now it's much easier to access them for free on the Internet.

Social-Networking

One of the last topics that was discussed, moreso in Focus Group 1 than Focus Group 2, was the topic of social networking for academic purposes. While there was no significant positive correlation found between social networking for academic related purposes and grade point average, one participant mentioned that she had engaged in social networking with professors. Other participants agreed in that they have been added on Facebook by professors for purposes of contacting them for classes. The participant admitted that while it was only one professor, that she did use Facebook extensively to contact the class participants for assignments.

How do postecondary students coming from low socioeconomic backgrounds engage with computers for non-academic related tasks?

Although regression analysis did not return any significant negative or positive correlations between non-academic computer use and academic achievement (GPA) the qualitative research methods provided information to support how students engage with computers for non-academic support. These responses gave further depth to responses to the survey, and supported the second research question.

Over the course of the two focus groups there was an abundance of discussion on how these participants engaged with computers for non-academic purposes. From this discussion, several key topics including gaming, Internet related activities, e-mail and social networking were identified as ways in which participants engaged with computers for non-academic purposes. Under each of these categories were several additional topics brought to light by participants that further defined and described this engagement.

Gaming

While it was not discussed extensively, the topic of gaming arose in discussion in the second focus group. Two participants mentioned becoming "addicted" to computer games and online games in their spare time. They both identified gaming as a distraction to them when they are trying to complete academic work.

Internet

Of all activities on the computer for non-academic purposes, the Internet was the most widely discussed among members of both focus groups. While general use of the Internet was discussed briefly, additional themes emerged such as chatting, online shopping, as well as music streaming and video streaming. While each of these components was identified as important aspects of participants' everyday lives, they were also labeled as distractions and deterrents to their academic work.

When discussing chatting, a few participants in both groups mentioned that programs such as Skype and Gmail chat, have helped them to stay connected with family members and friends who are at home. While e-mail was discussed briefly, it became apparent that the participants do not necessarily engage in sending e-mails for non-academic purposes, but that logging into e-mail services such as Gmail give them the

opportunity to chat with people for non-academic purposes. The general consensus among participants was that chatting has become a major distraction to their academic work, because they find themselves having to multitask between conversation and school work.

Another activity that was stated as contributing to participants non-academic computer use involved online video streaming and music streaming. Participants identify Hulu and YouTube as sites frequently engaged with. Both services allow users to watch music videos, television shows and movies for free.. As one participant put it jokingly, "I think I spent a whole semester on YouTube." This comment was echoed by other participants across both focus group, as another participant stated, "I'm not going to lie…I've watched movies on Hulu during study hall." In the Centennial Scholars Program, all students who have less than a 3.0 GPA are required to participate in six hours of study hall per week (Centennial Scholars Program, 2009). The study halls are monitored and designed to help students allot time for their academic work in their schedules. Participants in both focus group agreed that the use of these tools has often caused distractions during these study sessions.

In addition to video streaming participants also indicated online shopping as an activity they engage in often. As one participant mentioned, "I'll get a coupon in my e-mail, and feel like I have to go to the website and shop." While other participants laughed at this comment they agreed that they had fallen victim to the same activity. Another participant mentioned that due to shopping online she rarely goes to the mall anymore. Others agreed that this was the case for them as well. In an ending comment, one

participant noted, “When I had Internet on my phone…I would do online shopping in class.”

Social Networking

When engaging with social networking for non-academic purposes, Facebook seemed to be on the forefront of all websites used. When asked what was the one activity on the computer that interferes most with their academics, the overwhelming response was Facebook. Many of the participants in both focus groups mentioned that when doing academic related work, they often have Facebook up on another screen checking it every so often to see if they have any new messages, status updates, messages or pictures. One participant stated that because she had spent so much time on social networking sites, she often wondered, “Do you control it…or does it control you?” Other programs mentioned were MySpace and Twitter, and how in general all of these social networking programs have become a part of participants’ everyday lives.

Conclusion

The quantitative results of the present study showed a positive correlation between using the computer for social networking for academic purposes and academic achievement, however, showed no correlation between computer use for non-academic purposes. Further qualitative data collection discussed how computer use has influenced the lives of the participants, as well as how the activities on their computers support and interfere with their academic achievement. In the following chapter, the results of this study will be discussed. By establishing how these results connect, support or delineate to prior research done on communities of practice and the digital divide, the researcher will be able to establish the importance of this study and how it connects to the larger body of

literature on this topic. Furthermore, the researcher will reflect on his experiences throughout this research study, as well as provide recommendations for future research and studies.

Discussion

Overview of Study

The purpose of this study was to examine the correlates of computer use and academic achievement among low-income college students. The participants in this study were 42 sophomore, junior and senior students participating in James Madison University's Centennial Scholars Program. The scholarship program was an initiative created by James Madison University in 2004 to give high school students from low-income backgrounds the opportunity to attend college on full-tuition/room and board scholarships. In order to receive continued benefits of the scholarship all members must obtain and maintain a 3.0 grade point average, as well as complete community service hours, and attend weekly professional development sessions. In addition to this, upon gaining acceptance to the program all students receive a brand-new lap top computer equipped with Microsoft Office Suite (Centennial Scholars Program, 2009).

This research study sought to examine how sophomore, junior and senior students participating in this scholarship program engage with their computers for academic and nonacademic purposes and identify if nature (academic and nonacademic) and frequency of use had any significant correlations to academic achievement, defined in this case as a 3.0.

According to research on the digital divide (Attewell, 2001), individuals coming from low-income backgrounds have been identified as lacking the skills and digital literacy needed to survive in our technologically driven society. Referring to research on the digital divide, and framing this study with situated cognition theory (Brown et. al,

1989) and the concept of communities of practice (Wenger, 1998), the research helped establish the impact of the digital divide on this community of learners.

The researcher used a mixed methods approach to construct and conduct data collection. The researcher used quantitative measures to identify if nature and frequency of computer use correlated to academic achievementl; and qualitative methods were employed to dive deeper into how this "community" engaged with their computers for academic and nonacademic purposes. A linear regression analysis was used to test if nature and frequency of computer use correlated to academic achievement (GPA), and coding and in depth in analysis of focus group data was used for qualitative research.

The findings from the survey found only one significant correlation between nature and frequency of computer use and academic achievement. The use of social networking for academic purposes correlated positively to academic achievement. Qualitative data provided more in-depth results with regard to the research questions. There were several limitations that could have influenced the findings for this study including low sample size, survey design, and length of study.

Limitations & Reflection

Quantitative Research

When conducting this study, the first factor that served as a limitation was the sample size. Although the number of sophomore, junior and senior students participating in the Centennial Scholars Program is approximately 120, less than 35 percent (n=42) of that number responded to the survey. While the participants were contacted in several ways (e-mail, personal contact, presentation at weekly professional developments) and

were given more than two weeks to complete the survey, their participation in this survey was completely voluntary, allowing students to opt-out of taking the survey.

The initial intent of the researcher when choosing a sample for the qualitative portion of the study was to use a random sample generator and have a minimum of four and maximum of six participants in each focus group. While a random sample generator was used to enlist participation from twelve participants from the forty two survey respondents the researcher received no responses. To gain the participation needed for the focus groups the researcher had to e-mail all survey respondents, using the first twelve respondents to the request as participants in the focus group. While twelve participants responded, only eight (four per focus group) attended the actual focus group meeting. This posed two possible problems. First, by choosing the first twelve respondents to a mass e-mail, the focus group did not have a true random sample. Second, maximum participation did not occur in the focus groups. Both of these factors could have potential to skew results.

Survey instrumentation, created limitations in this study. The primary survey scale was taken from a previous study of a much larger population of students who were not yet college age (Jackson et. Al, 2008). The mismatch in population size and age in that study versus this one, rendered the scale inappropriate for the study of Centennial Scholars students. The 9-point scale offered too many categories for frequency of computer use to effectively correlate data to factors such as academic use, and socioeconomic background. The scale made it very difficult to show significant correlates between academic achievement and computer use. Even combining scale categories for data purposes proved to show insignificant results. If survey research was

to be conducted again on this topic, the researcher suggests a much larger sample size, or if working with a small sample size, constructing a much smaller range of choices to choose from, to gauge frequency.

Further issues that could have influenced data are wording and make-up of the demographic questions on the survey. In question three of the survey, the researcher asked participants about their geographic location prior to college, listing as options Urban (Metropolitan Area – more than 200,000 people), Suburban (No more than 30 miles outside of a Metropolitan Area), Rural (More than 30 miles outside of Metropolitan Area). These options are somewhat vague and provide some room for overlap or confusion. If this study was to be done again the researcher would instead have participants enter the five-digit zip code and use past demographic and census data to identify what type of areas (urban, suburban, rural) participants come from. This would ensure more accuracy in the identification of students' geographic location prior to college.

On survey questions five and six, the researcher asks students to identify the highest level of education their mother and father have completed. In the first two options the researcher lists *less than high school diploma* and *post-high school certification/technical training*, however, does not include an option that identifies whether parents had received just a high school diploma. In an attempt to resolve this issue, the researcher created a new category *post-high school certification/technical training or less* to address those participants who may have selected either of the two categories with the option of *high school diploma* not being present. While this may have fixed the mistake in wording for this question, combining the categories cannot ensure

that all data collected for this question is accurate; as such, it is important to note that this issue could have influenced the outcome of the data.

Another factor possibly hindering the study dealt with the physical make-up of the population. Because upperclassman students were used as participants in this study, freshman, who had been at the institution for less than a year were excluded from the participant population. As research progressed, the researcher found that freshman students could have provided additional perspectives that were important to the end results. Research studies and reports on the digital divide (Jackson et. Al, 2008; Jackson et. Al, 2009; NTIA, 2001) have been closely tied to students in grades K-12. Freshman college students have the most recent experience with being in this age group and as such the effects of the digital divide could have had more of an impact on their lives, than sophomore, junior and senior college students who have had the opportunity to acclimate themselves to the various technologies on the college campus. Additionally, qualitative data showed that upperclassman students have acclimated to using computers within their collegiate environment, having proficiency in the use of the variety of technological resources and programs provided to them on campus. If conducted again research and data collection would have began at the closing of the fall semester. At this point freshman would have had an established cumulative GPA, and as such their voice could have been heard in the research results.

Qualitative Research

Due to the mixed methods approach of this research study, quantitative data yielded statistical data, while qualitative data sought to explore specific research questions. During qualitative data collection there were several limitations imposed by

the researcher on the study due to bias, experience and past research on the topic. These factors contributed greatly to the overall conduction and analysis of the qualitative research. As a member of the Centennial Scholars Program the researcher held many experiences that led him to have a strong base of knowledge about the participant groups. Through these experiences he had his own inner biases and deeply held views about how these low-income students engaged with computers that proved to help in formulating the research questions. However, this could have affected his objectivism as he tackled the qualitative portion of this study.

While conducting research on communities of practice (Wenger, 1998) and the digital divide (Attewell, 2001), the researcher began to connect his personal experiences with the participants to foundational research that had been conducted in the field. This allowed him to use research to make sense of why some of these low-income students have poor academic achievement, and contributing to factors such as lack of access prior to college, areas in which they grew up as well as other ideas pertaining to them becoming acclimated in their college community.

As research progressed, the researcher found himself focusing on specific areas of interest in the topic. While research questions were not constructed to explore use of computers prior to college, other survey results (Jackson et. Al, 2008, Attewell, 2001;Tien & Fu, 2008; NTIA, 2003) did investigate this notion. This became a personal area of interest of the researcher. At times, due to the nature of discussion, the researcher felt that facilitation on his part may have been leading. For that reason, he asked follow up questions to allow participants to give their perspectives on all sides of the topic at hand.

In the end, the research process proved to be a very fulfilling experience for the researcher. Biases and ideas were challenged greatly as the researcher witnessed participants speaking about their own individual experiences with computers and how this may or may not support what was reported in the literature. In the next section, the results of both portions of this study will be discussed and interpreted as they relate to the theoretical framework.

Interpretation of Data

Findings addressing the researcher's hypotheses and three research questions indicate that (1) using the computer for social networking for academic purposes positively correlates to academic achievement; (2) there is no significant negative correlation between the use of computers for nonacademic purposes and academic achievement; and (3) there is a shared repertoire among this community of practice (Wenger, 1998) when it comes to their engagement with computers for academic and nonacademic purposes .

Digital divide and prior use of computers

In support of research and statistical findings on the digital divide (Attewell, 2001, Warschauer, 2008) results of this study showed that a digital divide in terms of computer access has closed or is virtually nonexistent. When posed a question about having access to computers prior to college, 95% of the participants stated that they did have access. Of those who had access, 88% (35) had access in their homes. This is a dramatic departure from earlier reported (NTIA, 2000; NCES,2003) that showed access to computers among individuals from low-income backgrounds was much more limited than access available to those of middle and upper class backgrounds.

While all participants in this study were identified as coming from low-income backgrounds, further demographic data such as parental education background, geographic location prior to college and ethnicity helped to describe this population. Prior research studies and reports (Tien & Fu, Jackson et. Al,, 2008, Jackson et. Al, 2009) have found that demographic traits similar to these are contributing factors in access to computers. The majority of participants identified as having grown up in areas, coming from ethnic backgrounds and/or parental educational statuses that has correlated in past research with having lack of access to computers.

In this study it was shown that these demographic factors do not necessarily correlate with lack of access. Unlike other studies that correlated factors such as demographics to academic achievement (Tien & Fu, Jackson et. Al,, 2008, Jackson et. Al, 2009) this study used these factors to generate descriptive statistical data to further frame the socioeconomic background of participants. The study only examined correlations between computer use and academic achievement. Although, there were not any statistical tests to show a relationship between demographic data and computer use, further exploration of quantitative and qualitative data yielded results that pertained to these ideas.

Use of Computer for Social Networking

In other research studies (Jackson et. Al, 2008;Tien Fu, 2008) conducted on academic achievement it was found that factors such as social networking and other Internet use for nonacademic purposes and computer games have correlated negatively to academic achievement. Through linear regression analysis, a significant positive correlation was shown to exist between social networking for academic purposes and

academic achievement of these participants. Through focus group discussion several topics arose to support how participants defined social networking, and the uses it had for both academic and nonacademic purposes.

In both focus groups there was a wide array of shared experiences when it came to social networking for academic purposes. While the survey supplied participants with multiple examples of social-networking (blogging, Facebook, MySpace, online journals) the one most commonly mentioned was Facebook. In the first focus group, the topic of professors using Facebook to contact students for assignments was discussed. While one participant had not had this experience, the other three had, and found that their use had become more frequent as they progressed in their academic careers at James Madison University. This is one way in which social networking for academic purposes was defined for this group.

In quite the opposite take, according to the participants in both groups, Facebook was defined as their largest distraction when it came to completing academic tasks. Many of the participants stated that they found themselves engaged in Facebook activities while they "should" have been studying or doing academic work. As one person mentioned, "I find myself checking every five minutes to see if I have any new status updates or messages." However, as conversation progressed, the discussion centered around how social-networking tools such as Facebook helped them to learn skills in multitasking.

As one participant put it, "I'll say to myself, I only can be on Facebook or online for 20 minutes, then I have to get back to work, it helps me stay on task…" While Facebook was deemed as both a major distraction and supporter of academic

achievement, other activities online showed they affected student academics in similar ways.

Engagement with computers for academic purposes

This study sought to explore how low-income college students engage with computers for academic purposes. It was found that student engagement with computers for academic purposes was most closely tied to academic major, curriculum and stage in school. Through focus group discussion it was shown that academic major as well as year in school influenced how students engaged with computers for academic purposes.

When posed the question in focus groups about how frequently students used computers for academic and nonacademic purposes, the majority of students gave responses that tied into how their courses affect how much time they spend on the computer for academic related purposes. Those participants who were in technology related or research-intensive majors stated that they were required to use online research databases, Blackboard, and the James Madison University Library services much more than participants whose studies required coursework without computers. In addition, sophomores and juniors who were still enrolled in general education classes discussed that the curriculum in those classes required more use of Blackboard for class discussion, posts and assignments. While there have been some research studies on specific majors and technology use, this finding was one of the most interesting ones, as academic major is not too often used as a factor in correlation to computer use.

Engagement with computers for nonacademic purposes

With respect to engagement with computers for nonacademic purposes, several ideas were brought forth in discussion that related to past research. In past research,

social-networking, e-mail, computer games, and Internet have shown negative correlations to academic achievement (Tien & Fu, 2008; Jackson et. al, 2008). Contrary to these studies, research on this topic showed no significant correlation between using the computer for these activities, and academic achievement. However, this research did provide research data that will help further define how these students are using the Internet for nonacademic purposes.

Many of the shared experiences among this group of participants included gaming, online video streaming, e-mail, Google and online shopping. One of the major themes that came up in both focus groups was use of services such as online video streaming sites such as Hulu and YouTube that gave them access to millions of free movies and videos. As one participant in the first focus group stated, "I think I spent a whole semester on YouTube." Another participant in the second focus group added, "I've watched movies in study hall..." and "I've done online shopping in class." Much like video streaming, online-shopping was another topic that was addressed by the group as one of the major ways they engage with computers for nonacademic purposes.

One interesting idea that came up in discussion was the idea that the Internet has become a major distraction. Notably, many participants discussed how Gmail has caused interferences to their academic work. As one participant stated, "While I was not on Facebook, most people can contact me on Gmail chat." Participants agreed that having access to a chat client in their e-mail program has often pulled them away from academic work.

The most discussed aspect of nonacademic use in reference to Internet use was Google. Especially in the second focus group, the word "Google" was used

interchangeably with the word Internet. When asked what was the one thing that has contributed the most to their college experience, there was a general consensus around the use of Google to find things, both for academic and nonacademic purposes. While there are many other websites, this one seemed to be the one that participants connected with the most. This was due to their use of Gmail as well as the Google-owned video streaming site, YouTube.

Research implications and recommendations were constructed given the research findings and in-depth discussion. The following section will discuss the researcher's recommendations for future research on this topic.

Implications & Recommendations for Future Research

Future research on the digital divide and how computer use affects the academic achievement of low-income college students should consider sample size, background of the sample, and particular aspects one wishes to examine that may influence the design of research instruments. In addition, researchers should conduct in-depth review of past research studies. All of these factors have played a role in delivering valid and reliable results.

Had this study had a larger sample size, and a better tailored survey instrument, results may have varied drastically and better aligned with findings of previous research on the topic. While quantitative results in this research study only revealed one significant correlation between computer use and academic achievement, qualitative data coupled with this finding, have helped the researcher to establish these future recommendations.

Recommendation one: Academic major and computer use

One of the most interesting findings in this study was the idea that academic major had a large impact on how students engage with computers for academic purposes. As such, it would be interesting to see how specific academic majors correlate to computer use, or if academic major can be a determinant in how one uses a computer. In addition to this, it would be interesting to see if this also correlated to GPA.

Recommendation two: Socioeconomic background and social networking

Due to the fact that participants identified social networking as a way they are engaging with computers for both academic and nonacademic purposes, it may be interesting to conduct future research on how social networking plays a role in the lives of college students. It would also be interesting to see how students from low socioeconomic backgrounds compare to students from upper and middle-class backgrounds.

Recommendation three: Defining Internet use among low-income college students

Because the definition of Internet varied so widely in this study for this population, the researcher finds it would be worthwhile to conduct a qualitative research study helping to further define Internet use among this population of students. This could provide several implications for further research on the topic, as it seemed that the term Internet was too broadly defined among participants.

Conclusion

The present study explored whether a relationship existed between computer use and the academic achievement of forty-two college students coming from low-income

backgrounds. By using situated cognition theory (Brown et. Al, 1989) and the concept of communities of practice (Wenger, 1998) the researcher was able to identify how culture and experiences influence student learning - more specifically, how being or not being situated in activities that promote digital literacy (The Partnership for 21st Century Skills, 2004) could impact a student's academic achievement. Furthermore the researcher used research on the digital divide (Attewell, 2001) to analyze how income had an effect on how participants used a computer, and how these affects posed issues for the students in their academic careers (Jackson et. Al, 2008; Jackson et. Al, 2009; Hosek, 2008).

Mixed methods were used for data collection. The researcher used a survey to gather quantitative results, and focus groups to collect qualitative results. The findings of this study showed that a positive correlation exists between using social networking sites for academic purposes and academic achievement. This supported the research hypothesis that time spent using computers for academic purposes would correlate positively to academic achievement (defined in this study as the student's cumulative G.P.A). Further data analysis showed that computer use is closely tied to academic major as well as identified social networking as a major component that supports and interferes with the academic achievement of low-income college students. Data also showed that on a broader spectrum computer use is not heavily correlated to the academic achievement of this population.

From another perspective, this research study was designed to explore how computer use influences the lives of low-income college students. As we move into the future, becoming a digitally literate human being will be essential for success in life and education. Research on this topic must continue if we want to provide the equal

opportunity to become digitally literate for all people. As our former president John F. Kennedy so stated, “All of us do not have equal talent, but all of us should have an equal opportunity to develop our talent.” This study is among those that will contribute to understanding the fight in creating equal opportunity for all.

Appendices

Appendix A: Survey Instrument

☐ The following survey research is being conducted to examine if a relationship exists between computer use and academic achievement among college students. The survey should take approximately 20 minutes of your time to complete. Thank you, in advance, for your participation.

Q1. Please identify your gender:

○ Male

○ Female

Q2. What is your ethnic background?

○ White/Caucasian

○ Black/African American

○ Hispanic (Non-White)

○ Asian/Pacific Islander

○ Other (Please specify)

Q3. Which of the following would best describe your geographic location prior to college (home)?

○ Urban (Metropolitan Area - more than 200,000 people)

- Suburban (No more than 30 miles outside Metropolitan Area)
- Rural (More than 30 miles outside of Metropolitan Area)

Q4. What year (by credits) are you currently in college year?

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student

Q5. What is the highest level of education your mother completed?

- Less than high school diploma/GED
- Post-high school certification/technical training
- Associates Degree
- Bachelor's Degree
- Master's Degree or higher (Ph.D, J.D., etc.)

Q6. What is the highest level of education your father completed?

- Less than high school diploma/GED
- Post-high school certification/technical training

- Associates Degree
- Bachelor's Degree
- Master's Degree or higher (Ph.D, J.D., etc.)

Q7. How long have you been attending James Madison University?

- Less than a year
- Between 1 and 2 years
- Between 2 and 3 years
- Between 3 and 4 years
- 4 or more years

Q8. What is your current GPA (grade point average)?

- below a 2.0
- 2.01 - 2.25
- 2.26 - 2.5
- 2.51- 2.75
- 2.76 - 3.0
- 3.01 - 3.25
- 3.26 - 3.5
- 3.51 - 3.75

- 3.76 - 4.0

The following questions will be related to your current and past computer use. Please answer honestly. Every question must be answered in order to proceed.

.

Q9. Prior to college, did you have access to a computer?

- Yes
- No

If No Is Selected, Then Skip To Q12.

Q10. If you answered, yes, where was this access? (Select all that apply)

- At home
- School
- Friend/Family Member's Home
- Public Library/Other Public Venue
- Other (please specify):

Q11. Prior to college, what types of activities did you use your computer for?

Q12. How often do you use Blackboard to find, post or submit information related to a course you are currently taking?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q13. How often do you use the JMU Online Library Catalog to study?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month

- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q14. How often do you play games on your computer?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q15. In the last week, approximately how many hours did you spend using your computer for academic purposes?

Please move slider to the right to indicate hours

010 20 30 40 50 60 70 80 90 100

Hours of Computer Use

Q16. In the last week, approximately how many hours did you spend using your computer for purposes NOT related to academics?

Please move slider to the right to indicate number of hours

010 20 30 40 50 60 70 80 90 100

Hours of Computer Use

Q17. How often do you use your computer to contact someone for academic-related purposes?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour

- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q18. How often do you use your computer to contact someone for purposes NOT related to academics?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q19. How often do you use Microsoft Office Applications (Word, Excel, PowerPoint, Publisher) to make things for academic-related purposes?

- Never
- Less than Once a Month
- Once a Month

- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q20. How often do you use Microsoft Office Applications to make things NOT related to academics?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q.21 How often do you use computers to social-network (Facebook, MySpace, ning, blogging, online journals, or anything similar) for academic-related purposes?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q22. How often do you use computers to social-network (Facebook, MySpace, ning or any site similar to these) for purposes NOT related to academics?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour

- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q23. How often do you use the Internet for academic-related purposes?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week
- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Q24. How often do you use the Internet for purposes NOT related to academics?

- Never
- Less than Once a Month
- Once a Month
- A Few Times a Month
- Once a Week

- A Few Times a Week
- Everyday for less than an hour
- Everyday for 1-3 hours
- Everyday for more than 3 hours

Appendix B: Semi-Structured Focus-Group Questions

1. How do you think having access to a computer has affected your life?
2. How do you feel your activities on the computer affect your academics?
3. What types of activities on your computer support your academic achievement?
4. What types of activities on your computer interfere with your academic achievement?

Focus Group One – Follow-up Questions

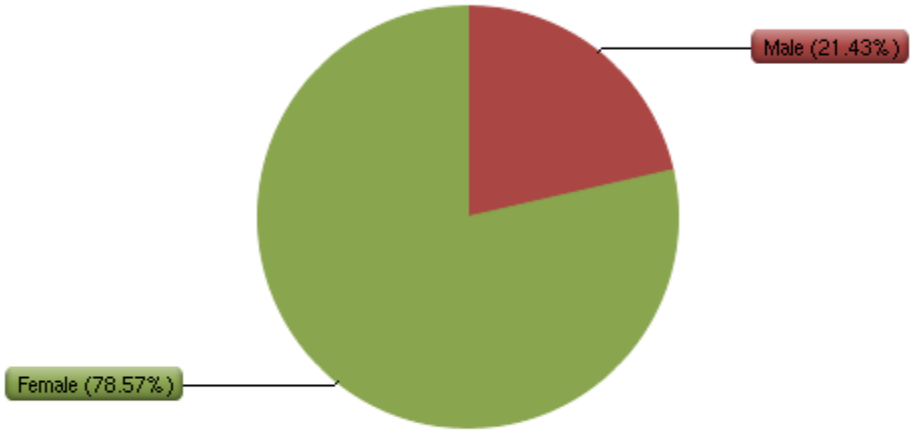
1. Did you attend the high school that gave their students laptops?
2. Are there a lot of programs like that (high school students getting laptops) where you come from?
3. Everyone has a computer, does everyone have access to Internet at home?
4. Jow many professors or how many courses have you taken in your career at James Madison University, that did not rely heavily on technology?
5. Have any other people had professors contact them via Facebook?
6. On the survey the results said the time you spend doing academic related things to the time you spend doing non-academic related things is 60% to 40% meaning you spend 60% of your time doing academic related things on your computer and 40% of your time doing non-academic related things…would you find that accurate?
7. Do you feel like prior to college you had enough experience with computers for when you came to college? And why or why not? Did you feel lost or feel capable when you came to JMU?
8. Prior to college did you have access to a computer in your home and were they your computers…,meaning were they for family use?
9. If you could say what is the single-most thing that has affected your academics at James Madison University – what would it be?

Focus Group Two - Follow-up Questions

1. In what ways do you have access to Internet?
2. Prior to college what experience did you have with computers? How do you feel these experiences helped you when you got to college?
3. Where there any difficulties that you experienced when it came to using your computers at James Madison University?
4. If you have trouble with your computer, who would you go to?
5. Have you found that your professors require you to do a lot of work that involves technology? How and what ways?
6. If you had not had experience with Blackboard prior to college, how do you feel you would have acclimated yourself to the software?
7. Did you find that your gen.ed courses required a lot less work on the computer then your major course or vice versa?

Appendix C: Graphs & Tables

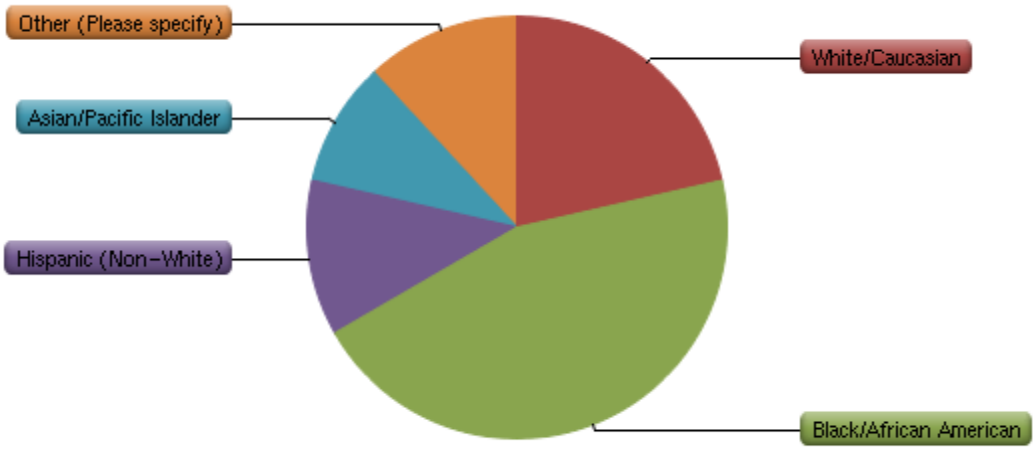
Q1. Please identify your gender:



#	Answer		Response	%
1	Male		9	21%
2	Female		33	79%
	Total		42	100%

Statistic	Value
Mean	1.79
Variance	0.17
Standard Deviation	0.42
Total Responses	42

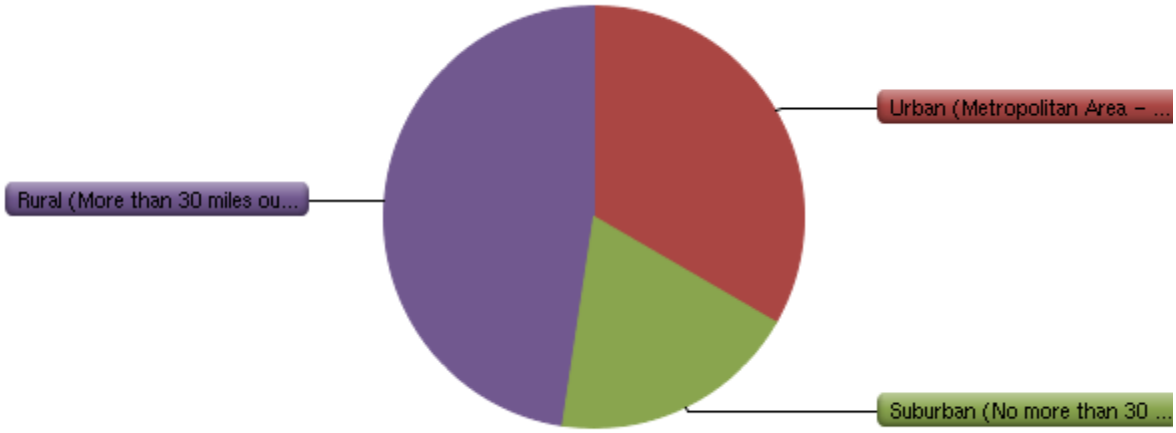
Q2. What is your ethnic background?



#	Answer		Response	%
1	White/Caucasian		9	21%
2	Black/African American		19	45%
3	Hispanic (Non-White)		5	12%
4	Asian/Pacific Islander		4	10%
5	Other (Please specify)		5	12%
	Total		42	100%

Other (Please specify)
White/Native American
Biracial
Biracial
black and white
caucasian/african american

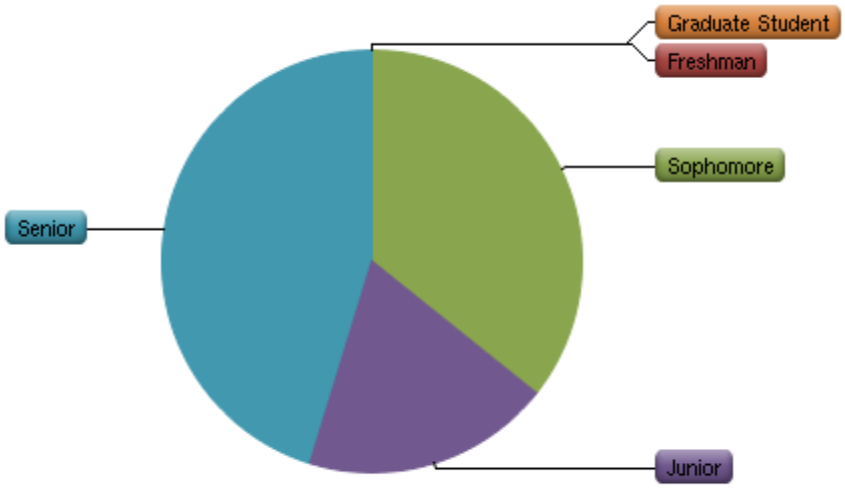
Q3. Which of the following would best describe your geographic location prior to college (home)?



#	Answer		Response	%
1	Urban (Metropolitan Area - more than 200,000 people)		14	33%
2	Suburban (No more than 30 miles outside Metropolitan Area)		8	19%
3	Rural (More than 30 miles outside of Metropolitan Area)		20	48%
	Total		42	100%

Statistic	Value
Mean	2.14
Variance	0.81
Standard Deviation	0.90
Total Responses	42

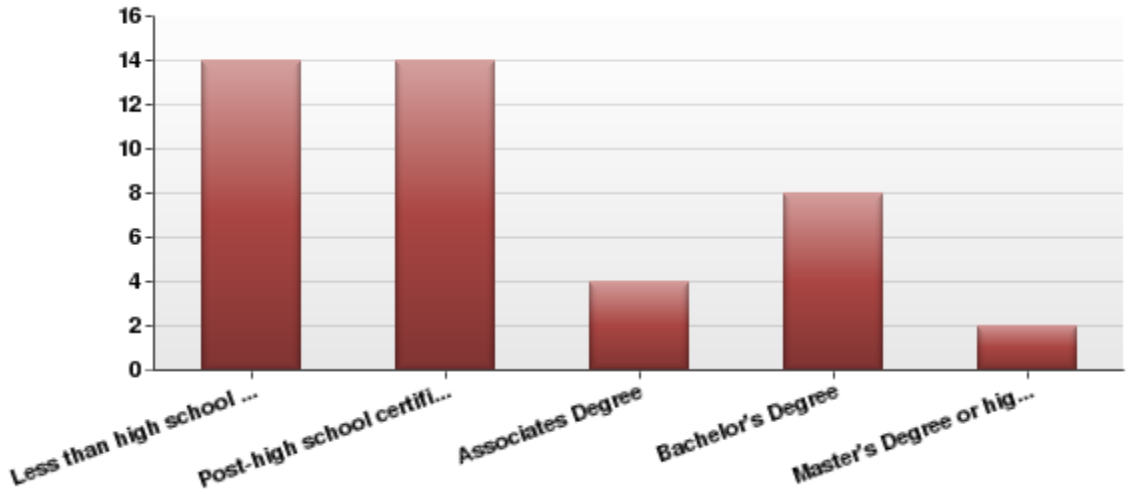
Q4. What year (by credits) are you currently in college year?



#	Answer		Response	%
1	Freshman		0	0%
2	Sophomore		15	36%
3	Junior		8	19%
4	Senior		19	45%
5	Graduate Student		0	0%
	Total		42	100%

Statistic	Value
Mean	3.10
Variance	0.82
Standard Deviation	0.91
Total Responses	42

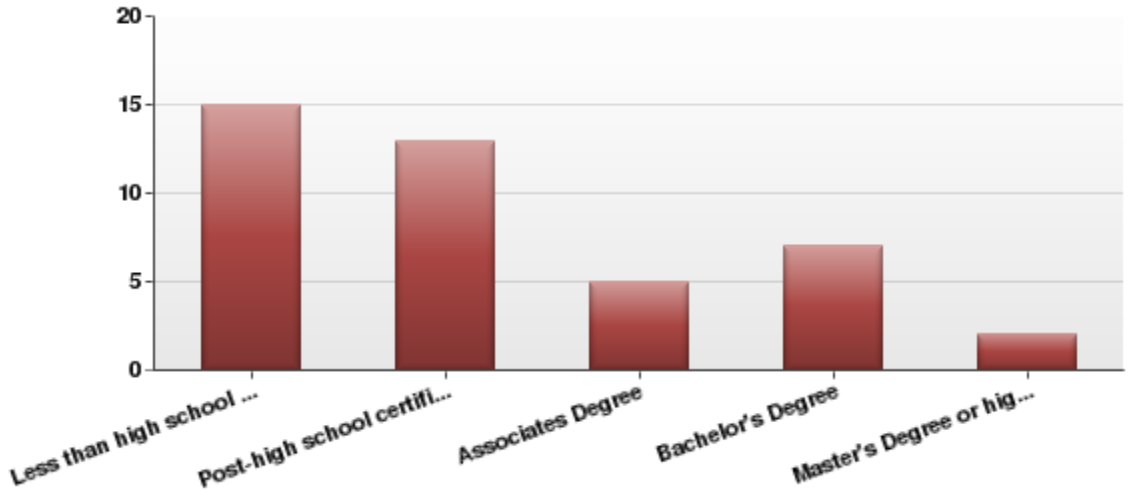
Q5. What is the highest level of education your mother completed?



#	Answer		Response	%
1	Less than high school diploma/GED		14	33%
2	Post-high school certification/technical training		14	33%
3	Associates Degree		4	10%
4	Bachelor's Degree		8	19%
5	Master's Degree or higher (PhD.D, J.D., etc.)		2	5%
	Total		42	100%

Statistic	Value
Mean	2.29
Variance	1.57
Standard Deviation	1.25
Total Responses	42

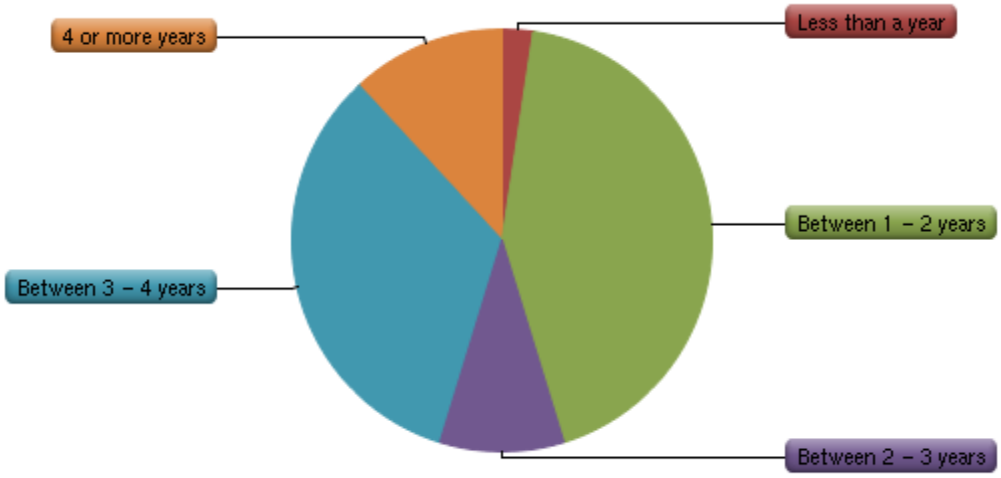
Q6. What is the highest level of education your father completed?



#	Answer		Response	%
1	Less than high school diploma/GED		15	36%
2	Post-high school certification/technical training		13	31%
3	Associates Degree		5	12%
4	Bachelor's Degree		7	17%
5	Master's Degree or higher (PhD.D, J.D., etc.)		2	5%
	Total		42	100%

Statistic	Value
Mean	2.24
Variance	1.55
Standard Deviation	1.25
Total Responses	42

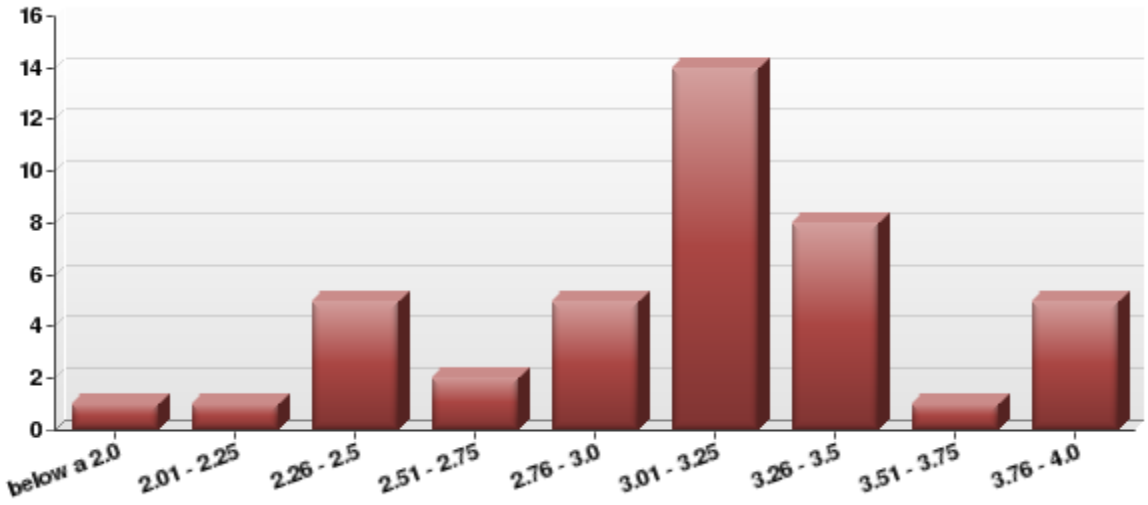
Q7. How long have you been attending James Madison University?



#	Answer		Response	%
1	Less than a year		1	2%
2	Between 1 - 2 years		18	43%
3	Between 2 - 3 years		4	10%
4	Between 3 - 4 years		14	33%
5	4 or more years		5	12%
	Total		42	100%

Statistic	Value
Mean	3.10
Variance	1.36
Standard Deviation	1.16
Total Responses	42

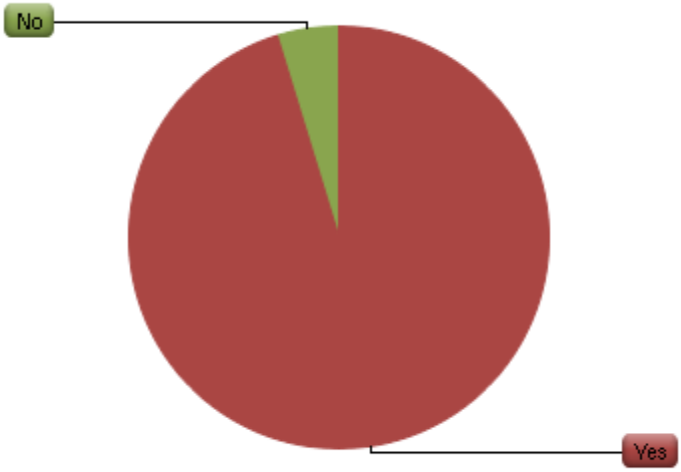
Q8. What is your current GPA (grade point average)?



#	Answer		Response	%
1	below a 2.0		1	2%
2	2.01 - 2.25		1	2%
3	2.26 - 2.5		5	12%
4	2.51 - 2.75		2	5%
5	2.76 - 3.0		5	12%
6	3.01 - 3.25		14	33%
7	3.26 - 3.5		8	19%
8	3.51 - 3.75		1	2%
9	3.76 - 4.0		5	12%
	Total		42	100%

Statistic	Value
Mean	5.81
Variance	3.77
Standard Deviation	1.94
Total Responses	42

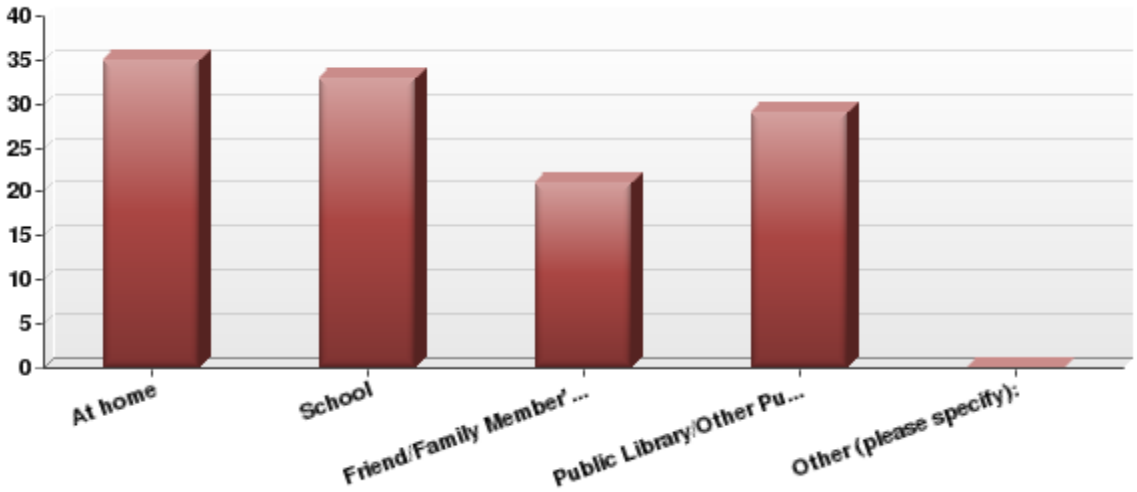
Q9. Prior to college, did you have access to a computer?



#	Answer		Response	%
1	Yes		40	95%
2	No		2	5%
	Total		42	100%

Statistic	Value
Mean	1.05
Variance	0.05
Standard Deviation	0.22
Total Responses	42

Q10. If you answered, yes, where was this access? (Select all that apply)



#	Answer		Response	%
1	At home		35	88%
2	School		33	83%
3	Friend/Family Member's Home		21	53%
4	Public Library/Other Public Venue		29	73%
5	Other (please specify):		0	0%

Other (please specify):

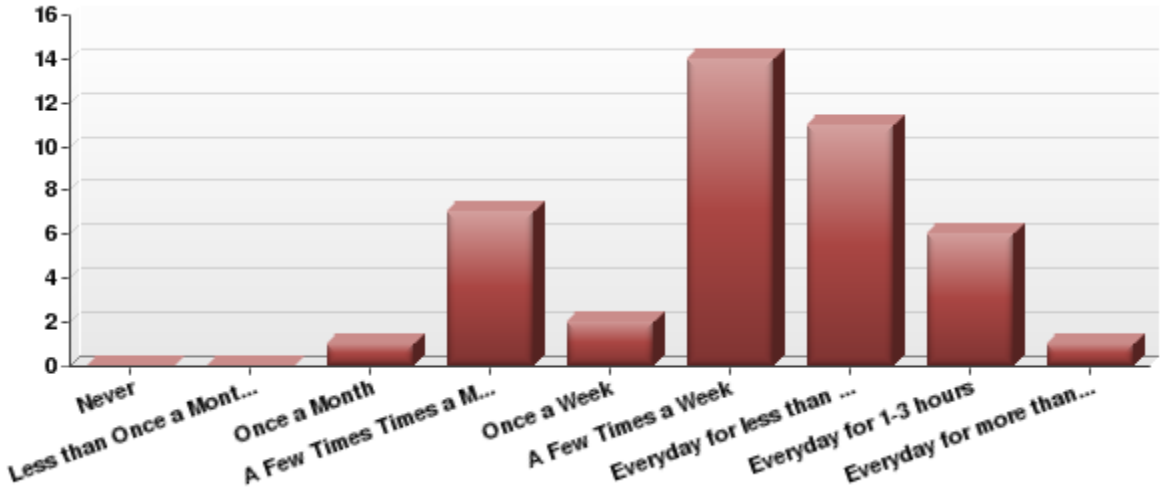
Statistic	Value
Total Responses	40

Q11. Prior to college, what types of activities did you use your computer for?

Text Response
Homework
writing papers, research, college applications, myspace
school stuff
College searching, games, news
games, facebook, myspace, homework, e-mail
homework
educational purposes,entertainment, etc.
typing papers for school, iming friends, listening to music
Myspace
shopping, school assignments, playing games, music, pictures, social networking
school, personal use.
internet, games
Homework/research, networking sites, helping Mom with an online course she was taking, instant messaging people.
Academic purposes such as writing papers, doing research. Personal use checking email and bank accounts.
games, papers
Studying and making powerpoint presentations for class, web surfing- you tube, bossip.com, etc, networking-facebook and bebo, listening to music and downloading pictures
school and for fun
Email, school assignments, myspace, blackboard
School work, communicate with friends
school work, social netowrk
School work, games, social networking
school work, facebook
Homework (papers or research), music, AIM
Homework, Chatting with friends and playing games
homework, social networking, research, pictures, music, writing, printing, email
research, homwork, email and communication
For research papers and projects, facebook, myspace, im chat,etc.
college search
To find out news, do homework, and online communication
School work, emails

homework and surfing the internet
Emails, surfing, learning languages, music, movies
homework and social activities
homework and social networking
Email; Social Networking; Schoolwork; Research
writing essays and internet
Working on school projects, social networking, surfing the web.
email, typing papers, games, information finding
AIM chat & typing papers
School assignments, email, games...

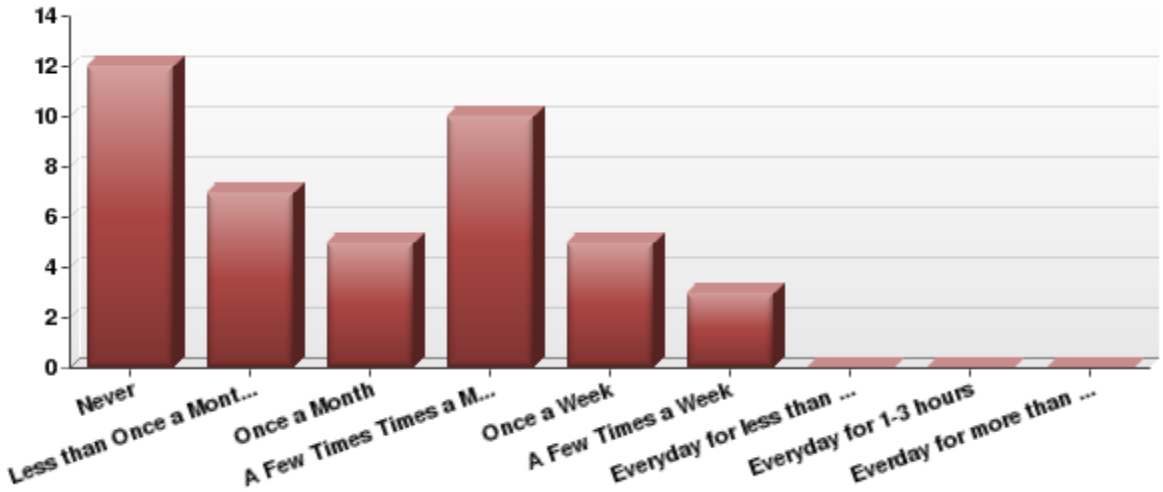
Q12. How often do you use blackboard to find, post or submit information related to a course you are currently taking?



#	Answer		Response	%
1	Never		0	0%
2	Less than Once a Month		0	0%
3	Once a Month		1	2%
4	A Few Times Times a Month		7	17%
5	Once a Week		2	5%
6	A Few Times a Week		14	33%
7	Everyday for less than an hour		11	26%
8	Everyday for 1-3 hours		6	14%
9	Everyday for more than 3 hours		1	2%
	Total		42	100%

Statistic	Value
Mean	6.17
Variance	2.00
Standard Deviation	1.41
Total Responses	42

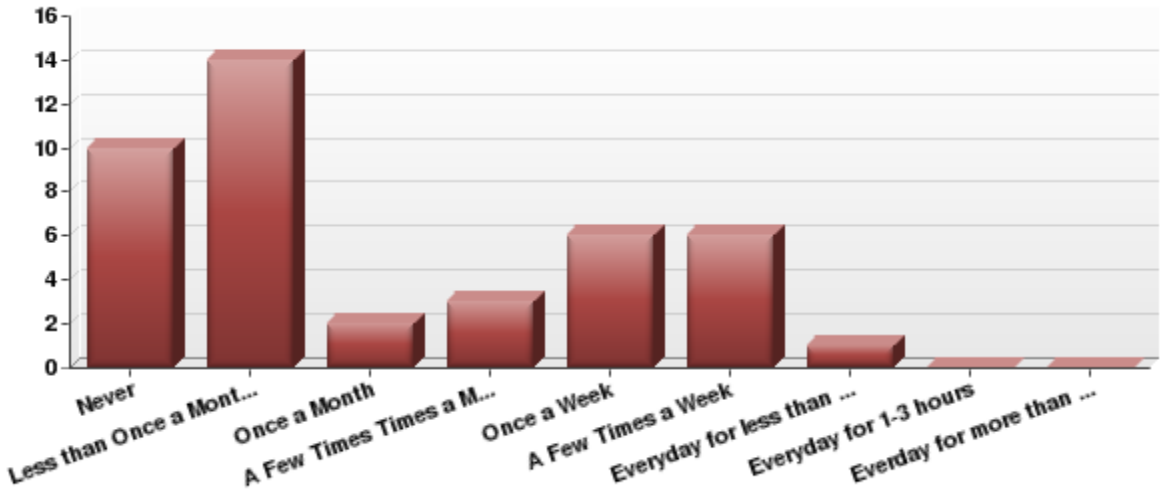
Q13. How often do you use the JMU Online Library Catalog to study?



#	Answer		Response	%
1	Never		12	29%
2	Less than Once a Month		7	17%
3	Once a Month		5	12%
4	A Few Times Times a Month		10	24%
5	Once a Week		5	12%
6	A Few Times a Week		3	7%
7	Everyday for less than an hour		0	0%
8	Everyday for 1-3 hours		0	0%
9	Everday for more than 3 hours		0	0%
	Total		42	100%

Statistic	Value
Mean	2.95
Variance	2.73
Standard Deviation	1.65
Total Responses	42

Q14. How often do you play games on your computer?



#	Answer		Response	%
1	Never		10	24%
2	Less than Once a Month		14	33%
3	Once a Month		2	5%
4	A Few Times Times a Month		3	7%
5	Once a Week		6	14%
6	A Few Times a Week		6	14%
7	Everyday for less than an hour		1	2%
8	Everyday for 1-3 hours		0	0%
9	Everday for more than 3 hours		0	0%
	Total		42	100%

Statistic	Value
Mean	3.07
Variance	3.68
Standard Deviation	1.92
Total Responses	42

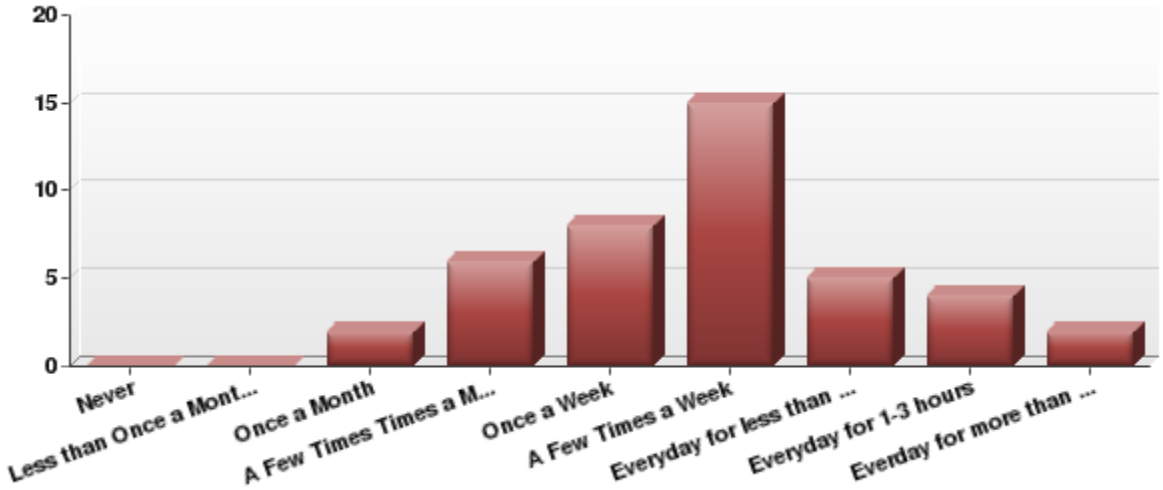
Q15. In the last week, approximately how many hours did you spend using your computer for academic purposes?

#	Answer	Average Value	Standard Deviation	Responses
1	Hours of Computer Use	26.17	22.29	42

Q16. In the last week, approximately how many hours did you spend using your computer for purposes NOT related to academics?

#	Answer	Average Value	Standard Deviation	Responses
1	Hours of Computer Use	16.31	17.07	42

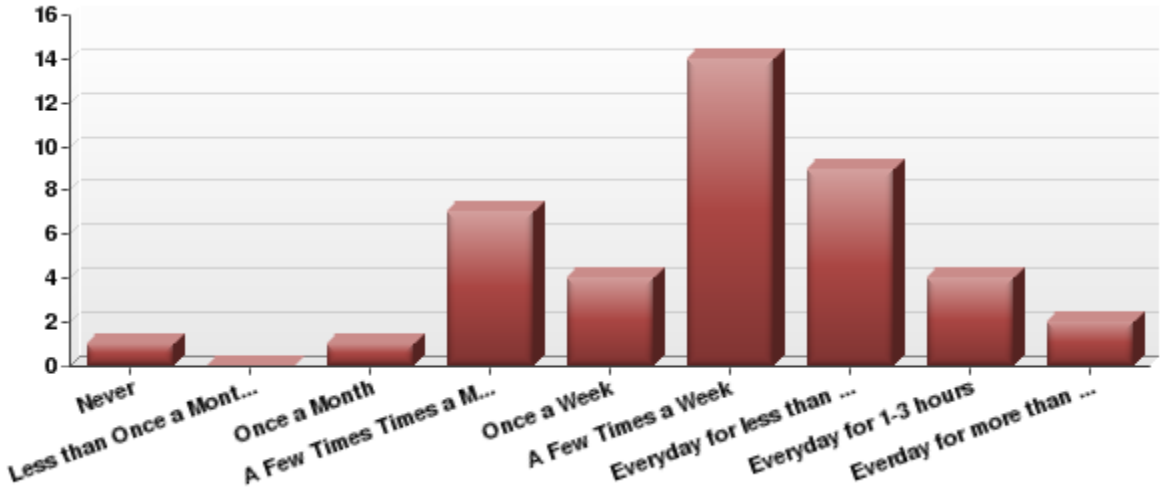
Q17. How often do you use your computer to contact someone for academic-related purposes?



#	Answer		Response	%
1	Never		0	0%
2	Less than Once a Month		0	0%
3	Once a Month		2	5%
4	A Few Times Times a Month		6	14%
5	Once a Week		8	19%
6	A Few Times a Week		15	36%
7	Everyday for less than an hour		5	12%
8	Everyday for 1-3 hours		4	10%
9	Everday for more than 3 hours		2	5%
	Total		42	100%

Statistic	Value
Mean	5.83
Variance	2.14
Standard Deviation	1.46
Total Responses	42

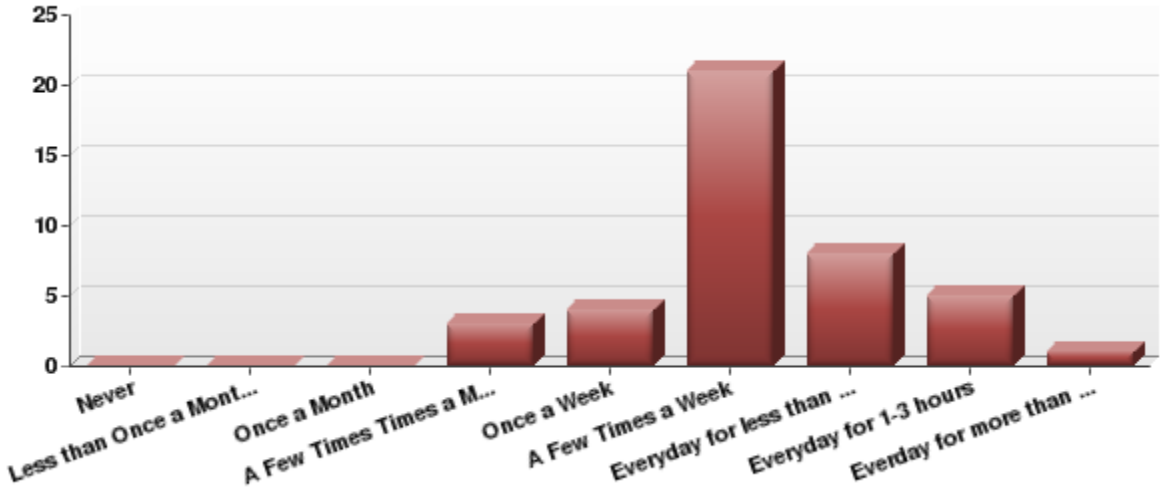
Q18. How often do you use your computer to contact someone for purposes NOT related to academics?



#	Answer		Response	%
1	Never		1	2%
2	Less than Once a Month		0	0%
3	Once a Month		1	2%
4	A Few Times Times a Month		7	17%
5	Once a Week		4	10%
6	A Few Times a Week		14	33%
7	Everyday for less than an hour		9	21%
8	Everyday for 1-3 hours		4	10%
9	Everday for more than 3 hours		2	5%
	Total		42	100%

Statistic	Value
Mean	5.93
Variance	2.65
Standard Deviation	1.63
Total Responses	42

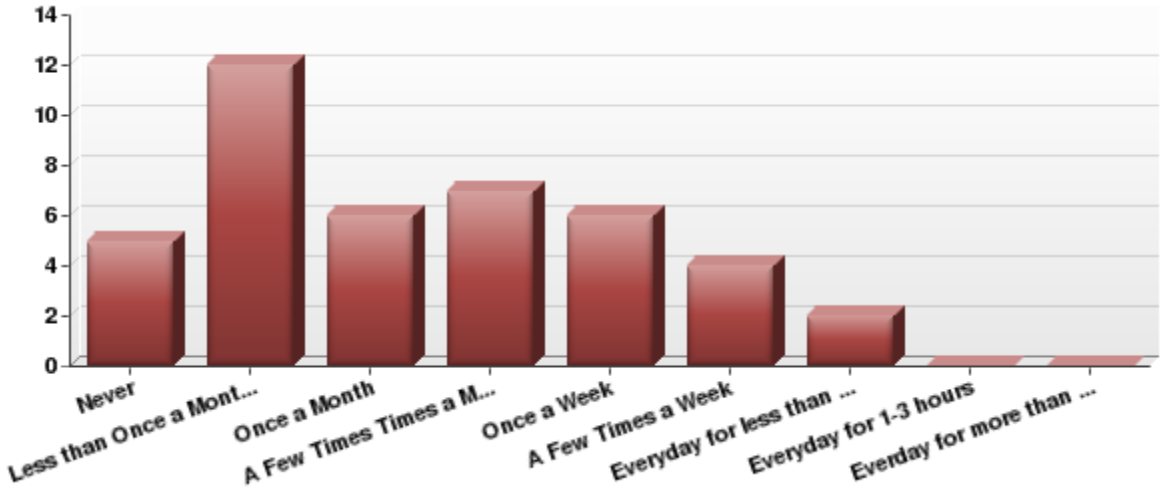
Q19. How often do you use Microsoft Office Applications (Word, Excel, PowerPoint, Publisher) to make things for academic-related purposes?



#	Answer		Response	%
1	Never		0	0%
2	Less than Once a Month		0	0%
3	Once a Month		0	0%
4	A Few Times Times a Month		3	7%
5	Once a Week		4	10%
6	A Few Times a Week		21	50%
7	Everyday for less than an hour		8	19%
8	Everyday for 1-3 hours		5	12%
9	Everday for more than 3 hours		1	2%
	Total		42	100%

Statistic	Value
Mean	6.26
Variance	1.22
Standard Deviation	1.11
Total Responses	42

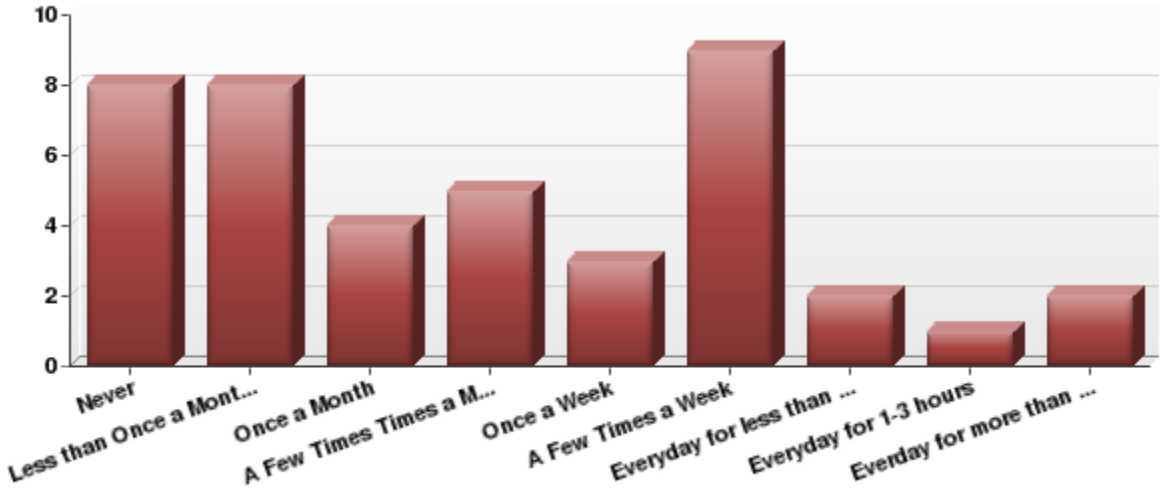
Q20. How often do you use Microsoft Office Applications to make things NOT related to academics?



#	Answer		Response	%
1	Never		5	12%
2	Less than Once a Month		12	29%
3	Once a Month		6	14%
4	A Few Times Times a Month		7	17%
5	Once a Week		6	14%
6	A Few Times a Week		4	10%
7	Everyday for less than an hour		2	5%
8	Everyday for 1-3 hours		0	0%
9	Everday for more than 3 hours		0	0%
	Total		42	100%

Statistic	Value
Mean	3.40
Variance	3.03
Standard Deviation	1.74
Total Responses	42

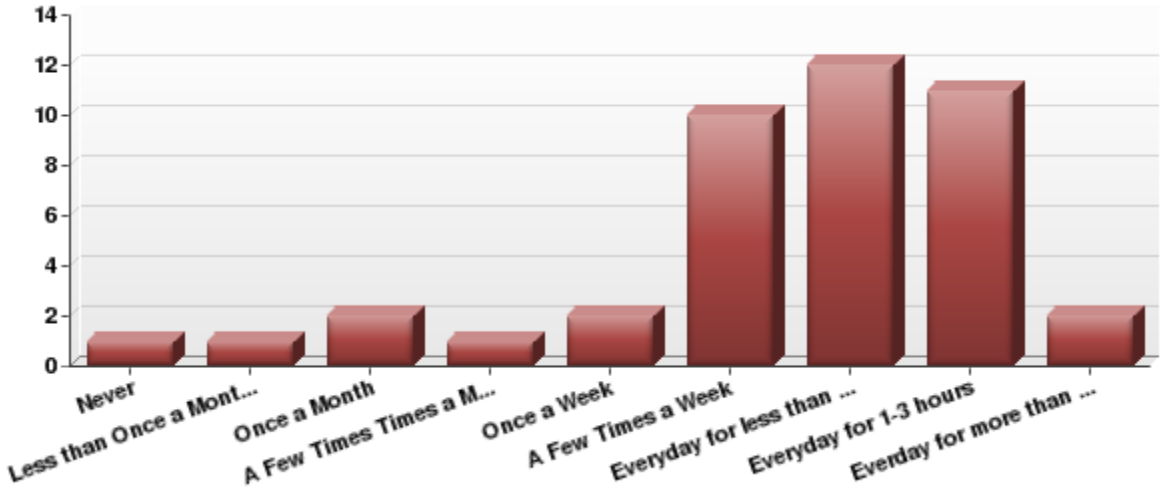
Q.21 How often do you use computers to social-network (facebook, myspace, ning, blogging, online journals, or anything similar) for academic-related purposes?



#	Answer		Response	%
1	Never		8	19%
2	Less than Once a Month		8	19%
3	Once a Month		4	10%
4	A Few Times Times a Month		5	12%
5	Once a Week		3	7%
6	A Few Times a Week		9	21%
7	Everyday for less than an hour		2	5%
8	Everyday for 1-3 hours		1	2%
9	Everday for more than 3 hours		2	5%
	Total		42	100%

Statistic	Value
Mean	3.93
Variance	5.63
Standard Deviation	2.37
Total Responses	42

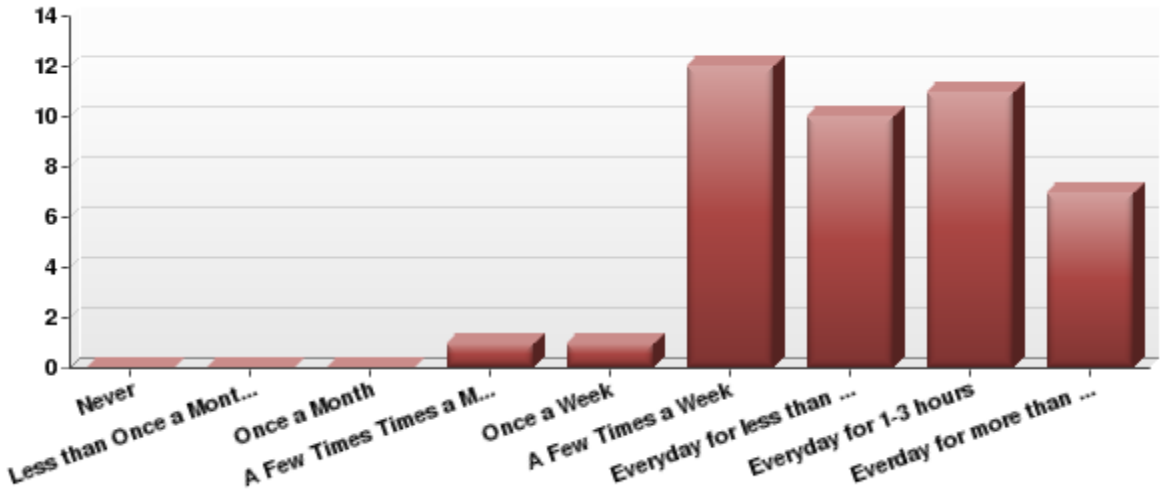
Q22. How often do you use computers to social-network (facebook, myspace, ning or any site similar to these) for purposes NOT related to academics?



#	Answer		Response	%
1	Never		1	2%
2	Less than Once a Month		1	2%
3	Once a Month		2	5%
4	A Few Times Times a Month		1	2%
5	Once a Week		2	5%
6	A Few Times a Week		10	24%
7	Everyday for less than an hour		12	29%
8	Everyday for 1-3 hours		11	26%
9	Everday for more than 3 hours		2	5%
	Total		42	100%

Statistic	Value
Mean	6.50
Variance	3.13
Standard Deviation	1.77
Total Responses	42

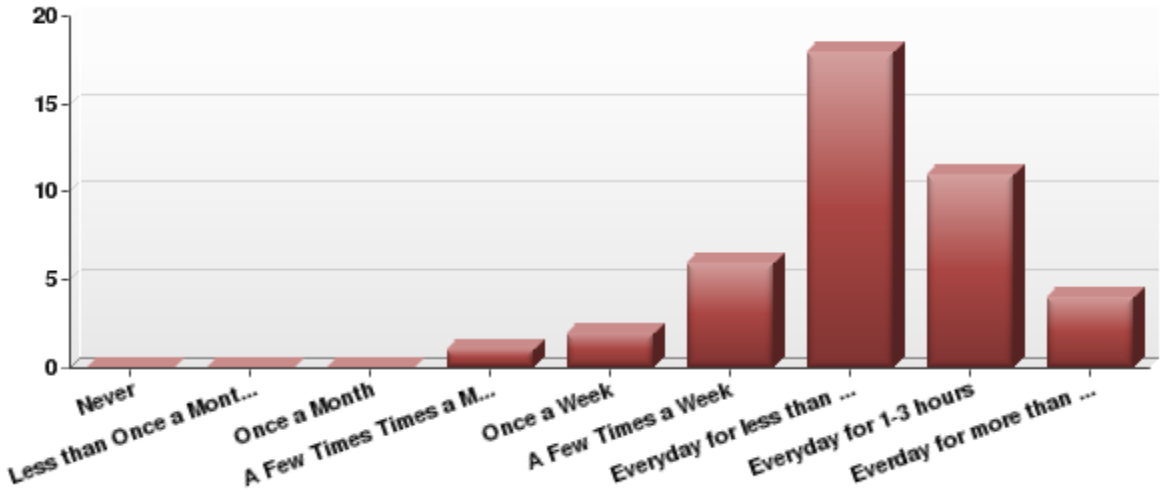
Q23. How often do you use the internet for academic-related purposes?



#	Answer		Response	%
1	Never		0	0%
2	Less than Once a Month		0	0%
3	Once a Month		0	0%
4	A Few Times Times a Month		1	2%
5	Once a Week		1	2%
6	A Few Times a Week		12	29%
7	Everyday for less than an hour		10	24%
8	Everyday for 1-3 hours		11	26%
9	Everday for more than 3 hours		7	17%
	Total		42	100%

Statistic	Value
Mean	7.19
Variance	1.52
Standard Deviation	1.23
Total Responses	42

Q24. How often do you use the internet for purposes NOT related to academics?



#	Answer		Response	%
1	Never		0	0%
2	Less than Once a Month		0	0%
3	Once a Month		0	0%
4	A Few Times Times a Month		1	2%
5	Once a Week		2	5%
6	A Few Times a Week		6	14%
7	Everyday for less than an hour		18	43%
8	Everyday for 1-3 hours		11	26%
9	Everday for more than 3 hours		4	10%
	Total		42	100%

Statistic	Value
Mean	7.14
Variance	1.20
Standard Deviation	1.09
Total Responses	42

References

Adams, S. (2006). Mission possible. *Crisis, 113* (3). 28.

Ahmed, A. (2007). Open access towards bridging the digital divide–policies and strategies for developing countries. *Information Technology for Development*, *13*(4), 337-361.

Attewell, P. (2001). The first and second digital divides. *Sociology of Education*, *74*(3), 252-259.

Behrman, E. (2002). Community-based literacy learning. *Reading, 36*(1), 26.

Behrman, E. (2006). Teaching about language, power, and text: A review of classroom practices that support critical literacy. *Journal of Adolescent & Adult Literacy*, *49(*6), 490-498.

Breeden, C. (2009). *Centennial scholars program: guidelines for continued eligibility*. Retrieved from http://www.jmu.edu/centscholars/eligibilty.html

Brown, J, Collins & Dugid. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18* (1). 32-42.

Brown, J, & Duguid, P. (2001). Knowledge and Organization: a social perspective. *Organization Science, 12*(2), 198-213.

Collins, A., Brown, J.S. & T, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator*. 6-11, 38-46.

Collins, A., Brown, J. S., & Newman,S . E. (1989). *Cognitive apprenticeship: Teaching the crafts of reading,writing, and mathematics. In L. B. Resnick(Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ: Lawrence ErlbaumA ssociates, Inc.

Coulter, B. (2008). Bridging the gap with technology. *Connect Magazine, 22*(2), 14-15.

Coulter, B. (2000). *Network science, a decade later: The internet and classroom learning*. NJ: Lawrence Erlbaum Associates.

Driscoll, M. (2005). *Psychology of learning for instruction*. Allyn & Bacon.

Enoch, Y., & Soker, Z. (2006). Age, gender, ethnicity and the digital divide. *Open Learning, 21*(2), 99-110.

Fiske, S. *Journal of Personality and Social Psychology*. Vol 63(6) 877-889.

Freire, P. (2004). *The Pedagogy of Hope*. Continuum Intl Pub Group.

Hara, N., & Kling, R. (2002). Communities of practice with and without information technology. *Proceedings of the 65th annual meeting of the American Society for Information Science and Technology, 39,* 338-349.

Hosek, J. (2008). Access to digitized knowledge: Education, consolidation, maintenance. *Women in German Yearbook* (24), 142-164.

Gibson, J. J. (1979), *The Ecological Approach to Visual Perception*. Boston, MA: Houghton-Mifflin.

Hawkins, R. (1995). Development, acceptance, and use patterns of a computer-based education and social support system for people living with aids/hiv infection. *Computers in Human Behavior, 11*(2), 289-311.

Jackson, L., Yong, Z., Kolenic III, A., Fitzgerald, H., Harold, R., & Von Eye, A. (2008). Race, gender, and information technology use: The new digital divide. *CyberPsychology & Behavior, 11*(4), 437-442.

Jackson, L., Yong, Z., Witt, E., Fitzgerald, H., von Eye, A., & Harold, R. (2009). Self-concept, self-esteem, gender, race, and information technology use. *CyberPsychology & Behavior*, *12*(4), 437-440.

Jawitz, J. (2007). New academics negotiating communities of practice: learning to swim with the big fish. *Teaching in Higher Education*, *12(*2), 185-197.

Lave, J. (1988). *Cognition in practice*. Cambridge, MA: Cambridge University Press.

Lave, J, & Wenger, E. (1991). *Situated learning*. MA: Cambridge University Press.

Lemke, J. (2000). Across the Scales of Time: Artifacts, Activities, and Meanings in Ecosocial Systems. *Mind, Culture & Activity*, *7*(4), 273-290.

Lewis, J, Coursol, D & Khan, L. (2001). College students@tech. edu: a study of comfort and the use of technology. *Journal of College Student Development 42*(6), 625–631.

Lewis, F. (1999). NAACP and AT&T partner to create tech centers tech centers: Black university students' use of web-based instruction. *Open Learning*, *21*(2), 99-110.

Light, J. (2001). Rethinking the digital divide. *Harvard Educational Review*, *71*(4), 709–735.

Long, C. (2008). Mind the gap. *NEA Today, 26*(6), 24-31.

National Telecommunications and Information Administration (2000). *Falling through the net: Toward digital inclusion*. Washington, D.C.: U.S. Department of Commerce. Retrieved from http://search.ntia.doc.gov/pdf/fttn00.pdf

National Center for Education Statistics (2003). Computer and Internet use by students in 2003. Washington, D.C. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006065.

Organization for Economic Co-operation and Development International. (2001). *Learning to bridge the digital divides*. OECD Publishing.

The Partnership for 21st century skills: Framework for 21st century learning (2004). Retrieved from http://www.p21.org/index.htp.

Orr, J, Branch, International, & Bureau, International. (1997). *International labour documentation*. Ilr Pr. Working with Machines.

Pascarella, E. T. (2006). How college affects students: Ten directions for future research. *Journal of College Student Development, 47*(5), 508

Papastergiou & Solomonidou. (2005). Gender issues in internet access and favourite Internet activities among Greek high school pupils inside and outside school. *Computers & Education, 44*(4), 377-393.

Rogoff, B, & Lave, J. (1984). *Everyday cognition: its development in social context*. Cambridge, MA: Harvard University Press.

Rowe, M. (2002). Digital archive dates too . *The Times Higher Education Supplement*, 8.

Salpeter, J. (2003). 21st century skills: Will our students be prepared? *Techlearning.* Retrieved from http://www.techlearning.com/story/showArticle.php?articleID=15202090

Smith & Semin. (2004). *Advances in Experimental Social Psychology*, 41, 4.

Stein, S. (2000). *Equipped for the future content standards: What adults need to know and be able to do in the 21st century*. Washington, D.C.: National Institute For Literacy.

Taylor, A., & Harper, R. (2003). The gift of the gab? : A design oriented sociology of young people's use of mobiles. *Computer Supported Cooperative Work: The Journal of Collaborative Computing, 12*(3), 267-296.

Tien, F & Fu, T. (2008). The correlates of the digital divide and their impact on college student learning. *Computers and Education, 50*(1), 421-436

Varma, R. (2009). Gender differences in factors influencing students towards computing. *Computer Science Education, 19*(1), 37-49. doi:10.1080/08993400902819006.

Vygotsky, L. (1978) *Mind in Society*. MA: Cambridge University Press.

Warschauer, M. (2003). Demystifying the digital divide. *Scientific American, 289*(2), 34.

Warschauer, M. (2003b). Dissecting the "digital divide": A case study in egypt. *Information Society, 19*(4), 297.

Wenger, E. (1998). Communities of practice: learning as a social system. *Systems Thinker*. Retrieved from http://www.co-il.com/coil/knowledgegarden/cop/lss.shtml.