

INTERNET ACCESS AND USAGE PATTERNS OF COLLEGE-BOUND HIGH SCHOOL STUDENTS IN SOUTHEAST GEORGIA

E. Sonny Butler, Georgia Southern University, esbutler@georgiasouthern.edu
Cheryl Aasheim, Georgia Southern University, caasheim@georgiasouthern.edu
Susan Rebstock Williams, Georgia Southern University, rebstock@georgiasouthern.edu

ABSTRACT

Potential differences in Internet access and usage among high school students underscores the fact that while Internet access and computer ownership are rising rapidly for many groups, at present a digital divide remains. The authors designed a study to examine the Internet usage and access patterns of college-bound high school students in southeast Georgia. An analysis of the data collected from the survey suggests that differences exist based on gender, ethnicity, and grade level. The results also suggest that there is a distinct lack of monitoring of students' Internet access outside of school.

Keywords: IT and education, digital divide, digital inclusion, Internet access, Internet usage, monitoring Internet usage.

INTRODUCTION

Few technologies have spread as rapidly or become so extensively used as computers and the Internet. These information technologies are providing opportunities and new avenues for many Americans, becoming necessities of modern social and economic life. The use of new information technologies is rapidly growing across all demographic groups and geographic regions [1].

More Americans are using the Internet to conduct day-to-day activities such as business transactions, personal correspondence, research and information gathering, and shopping. Having the ability to connect to the Internet becomes ever more critical to economic, educational, and social advancement each year. People who lack access to the Internet are at a growing disadvantage [3]. Therefore, increasing the level of digital inclusion is a critical goal of our educational institutions [3].

According to a recent report from the Pew Internet & American Life Project, high school students in the United States would like for the Internet to play a more extensive role in their education. Specifically, students would like their use of the Internet to better coordinate with classroom activities. Students would also like the quality of Internet access in schools to improve [9]. This is particularly true in rural and inner-city schools that commonly lack the computing and technology resources available in more affluent socio-economic neighborhoods.

Potential differences in Internet access and usage among high school students underscores the fact that while Internet access and computer ownership are rising rapidly for many groups, at present a digital divide remains. In order to better understand Internet usage and access patterns of high school students, the authors designed a study to examine Internet usage by college-bound

high school students in southeast Georgia. The results suggest that differences exist based on gender, ethnicity, and grade level. The results also suggest that there is a distinct lack of monitoring of students' Internet access outside of school.

BACKGROUND

As information technology becomes increasingly important in the workplace and in everyday life, the need for our educational system to produce an IT-educated workforce cannot be disputed. Evidence of the increasing importance of IT in the classroom is reflected by the number of new schools that are being designed to incorporate technology throughout the building and across the curriculum [4]. At the same time, many schools across the nation are struggling to make advanced technologies available to students. Lack of funding and the rapid rate of change in the IT industry make it difficult for even the most technologically advanced schools to maintain current standards. For schools without an existing technological infrastructure, the costs of implementation can be exorbitant. The disparity in technology between new, state-of-the-art schools and those in inner city and rural communities emphasizes the educational dilemma of the digital divide.

Although it is becoming more challenging for schools to keep up to date and deliver quality technology education [2], the need to do so is paramount. To succeed in today's workplace, high school graduates must be more than "computer literate". High school graduates who go on to pursue college degrees are expected to be familiar with a variety of software applications and possess the ability to conduct research via the Internet. These outcomes are equally important to those who enter the workforce with nothing more than a high school diploma.

One could argue that a necessary step in creating an IT-educated workforce is the development of Internet-savvy high school students. According to the Pew study cited earlier, three in five children under the age of 18 and more than 78% of adolescents between 12 and 17 rely on the Internet to help them complete their schoolwork. They see value in using the Internet for research and for collaboration with other students. However, because schools have differing standards for student technology literacy, Internet-based assignments vary widely and are often times "poor and uninspiring" [9].

The Pew study also suggests that students use the Internet differently in the classroom than they do outside of school. The disconnect stems partially from the fact that school systems often restrict levels of Internet access. Although students recognize the need to prohibit exposure to inappropriate material, they feel that software-based filters make it difficult at times for them to access educational materials. The effects of such monitoring and filtering upon access and usage patterns needs to be more clearly understood [9].

Beyond producing computer literate high school graduates, information technology also plays a critical role in the learning process. This is witnessed in at least two ways: (1) by improved academic performance, and (2) by decreased disruptive behaviors. For example, a longitudinal study by Honey and Henriquez [5] found evidence that computer use improved academic achievement. Similarly, a recent study of 5th graders by Laffey, Espinosa, Moore, and Lodree [6] showed that interactive computer technology can effect achievement in mathematics. Just as

importantly, the use of computers has been shown to have a positive effect on older students and adolescents by decreasing disruptive behavior and increasing time on task [8]. Students attending schools where information technologies are not available do not stand to benefit from these improvements.

These and other studies suggest that the potential of technology to improve academic performance and mediate behaviors that place our youth at risk clearly exists, but remains poorly understood. Disparities in the accessibility to advanced technologies across our schools only serves to underscore the need to better understand these effects. One of the most ubiquitous and highly used technologies in the world today is the Internet. The purpose of this study is to gain insight into Internet accessibility and Internet usage patterns among college-bound high school students in southeast Georgia.

RESEARCH FRAMEWORK AND METHODOLOGY

To better understand Internet accessibility and usage patterns of college-bound high school students, three research questions were identified:

1. Does the amount of time spent using the Internet differ across gender, ethnicity, income, and high school class (freshman, sophomore, junior, senior)?
2. Do the reasons cited for using the Internet differ across gender, ethnicity, income, and high school class?
3. What is the influence, if any, of monitoring and/or filtering on Internet access and use?

A survey instrument addressing these questions was developed. The survey consisted of 24 questions in four categories: general Internet usage, Internet access at school, Internet access at home, and demographic characteristics. The survey was administered to 124 high school students enrolled in college preparatory programs in several rural Georgia communities. Two students chose not to complete the survey and five indicated that they did not use the Internet, leaving 117 valid responses. Of the 117 valid surveys, 105 were complete enough to use in the data analysis.

Males represented 55.2% of the respondents. The majority of respondents were African-American (55.8%) or Caucasian (33.7%). The highest percentage of respondents by class was juniors (29.4%) with seniors comprising the second highest percentage (21.6%). An overwhelming majority of the respondents planned on attending college (96.1%). This is a direct result of restricting the sample to students enrolled in the college preparatory program. The median household income was in the range \$50,000 - \$74,999. However, only 57.3% of the students knew their household income. Due to this uncertainty, income could not be used to differentiate access and usage patterns.

DATA ANALYSIS AND RESULTS

An analysis of the data revealed that the median time spent using the Internet was 5-10 hours per week. Research, hobbies, and email were the most common uses of the Internet. Yahoo.com

was the most frequently visited web site. Ninety-four percent of the students reported they have email access. Access to the Internet both in and out of school, as well as monitoring of and/or restrictions imposed upon that access were examined. In addition, Internet usage was examined for differences across gender, ethnicity, and high school class to answer the research questions proposed in the previous section.

Internet Access and the Influence of Monitoring

The majority of students (95.2%) had Internet access at school. Of those, 78.0% of the students claimed their Internet access was monitored with 38.5% monitored by software, 19.2% by a teacher, and 32.1% by both. Ninety-two percent of the students with access at school claimed that there were restrictions placed on their Internet usage. The activities most commonly restricted at school were playing games, social activities (email/chat), and shopping. Forty-nine percent of students in this study reported that they access the Internet most often from the classroom, 27% from the computer lab, and 23% from the library. When students were asked when they had access to the Internet on school grounds, 49% claimed to have access to the Internet during regular class hours, 47% had access before and after school in addition to regular classroom hours, while 7% claimed to only have access before and after school.

When asked about their access off of school grounds, 94.3% of the students said they had Internet access outside of school. Of those, 69.7% said that they had Internet access at home. An overwhelming majority of students with access outside of school are not monitored (81.8%). Some students do not know if they are monitored (6.1%). Only 30.3% of the students with access to the Internet outside of school claimed that there were restrictions placed on their Internet access. Of the students with Internet access at home, 88.4% were not monitored and 23.2% had restrictions placed on their Internet usage.

Internet Usage Patterns

The data in Table 1 address the question of differences in the amount of time spent using the Internet based on gender, ethnicity, and high school class. In this study, males spent more time using the Internet than females and seniors spent more time on the Internet than members of other classes. Differences in time spent on the Internet based on ethnicity were not apparent.

Reasons for using the Internet are addressed in Table 2. Females tended to use the Internet more for research, while males used it more for recreation. In comparison to other ethnic groups, a higher percentage of African-Americans cited research as the primary use of the Internet, while a higher percentage of Caucasians cited recreation as the primary use.

Tables 3 and 4 address the influence of monitoring on (a) the amount of time students spent using the Internet, and (b) the primary reason cited for using the Internet. As might be expected, Table 3 shows that students who were not monitored outside of school used the Internet more than those who were. Surprisingly, Table 4 indicates that students who were not monitored in school used the Internet more for research than those who were monitored.

Table 1: Demographic breakdown of number of hours/week spent on the Internet

No. of Hours per Week	Gender %		Ethnicity %			High School Class %		
	Female	Male	African American	Caucasian	Other	Senior	Junior	Other
Under 5	39.1	31.0	36.2	37.1	27.3	27.3	50.0	30.0
5-10	39.1	22.4	36.2	22.8	18.2	27.3	23.3	32.0
10-15	13.0	31.0	12.1	17.1	0.0	18.2	6.7	16.0
Over 15	8.7	32.8	15.5	22.8	54.5	27.3	20.0	22.0

Table 2: Demographic breakdown of primary reason for using the Internet

Reason	Gender %		Ethnicity %			High School Class %		
	Female	Male	African American	Caucasian	Other	Senior	Junior	Other
Recreation	30.4	60.7	38.6	57.1	50.0	54.5	41.4	44.9
Research	56.5	26.8	50.9	31.4	20.0	36.4	37.9	44.9
Hobbies	10.9	10.7	7.0	11.4	30.0	9.1	17.2	8.2
Work	0.0	1.8	1.8	0.0	0.0	0.0	3.4	0.0
Social	2.2	0.0	1.8	0.0	0.0	0.0	0.0	2.0

Table 3: Influence of monitoring on number of hours/week spent on the Internet

No. of Hours per Week	At School %		Outside School %	
	Monitored	Not Monitored	Monitored	Not Monitored
Under 5	36.6	31.6	55.5	29.8
5-10	26.8	31.6	16.7	32.1
10-15	14.6	10.5	16.7	13.1
Over 15	22.0	26.3	11.1	25.0

Table 4: Influence of monitoring on primary reason for using the Internet

Reason	At School %		Outside School %	
	Monitored	Not Monitored	Monitored	Not Monitored
Recreation	49.4	36.8	47.1	48.2
Research	38.3	52.6	35.3	41.0
Hobbies	9.9	10.5	17.6	9.6
Work	1.2	0.0	0.0	0.0
Social	1.2	0.0	0.0	1.2

DISCUSSION AND CONCLUSION

The data in this study suggest that there are some differences in Internet usage (both in terms of time spent on the Internet and primary reason for using the Internet) based on gender, ethnicity, and high school class. Only ethnicity-based differences in the time spent on the Internet were not clearly discernable. More research is needed to clarify this question. Similarly, the inability to use income as a differentiating factor in this study suggests that additional research is needed to better understand the effect on income on usage patterns.

This study suggests that monitoring and filtering has an effect on Internet access and use. The most surprising outcome of the analysis thus far is the lack of monitoring of students' Internet access outside of school. The Internet provides a wealth of information for students to use for educational purposes, as well as an opportunity to communicate through avenues not previously available. However, the Internet does have many potentially dangerous downsides such as chat rooms and web sites that are not suitable for children. The only way to insure that children are not visiting these sites is to monitor their Internet usage. Inexpensive products are available to help parents monitor their children's Internet usage. For example, Actiontec's Kid Defender (\$39.95/year) provides real time remote monitoring as well as the commonly used method of blocking access to offensive web sites, downloads, chat rooms and news groups [7].

The results of this study are limited by the fact that the sample consisted only of students enrolled in college preparatory programs. This may have mitigated differences in access and usage patterns that would be found in the general population. More data needs to be collected and examined to determine whether the existence of a digital divide is supported.

REFERENCES

1. *A Nation Online: How Americans Are Expanding Their Use of the Internet*. (February 2002). Retrieved November 20, 2003 from National Telecommunications and Information Administration web site: <http://www.ntia.doc.gov/ntiahome/dn/>.
2. Butler, E.S. and Hargis, B. The Digital Divide: A Precursor for Students at Risk. *Proceedings of the 2002 National Youth at Risk Conference*.
3. *Falling through the Net: Toward Digital Inclusion*. (October 2000). Retrieved November 17, 2003 from National Telecommunications and Information Administration web site: <http://www.ntia.doc.gov/ntiahome/fttn00/contents00.html>.
4. Goral, T. (2001). So You Want to Build a High-Tech School.... *Curriculum Administrator*, 37(1), 54.
5. Honey, M. and Henriquez, A. (1996). Union City Interactive Multimedia Education Trial: 1993-95 Summary Report (CCT Reports, Issue No. 3). Retrieved November 20, 2003 from www.edc.org/CCT/ccthome/tech_rept/CCTR3.
6. Laffey, J.M., Espinosa, L., Moore, J. and Lodree, A. (2003). Supporting Learning and Behavior of At-Risk Young Children: Computers in Urban Education. *Journal of Research on Technology in Education*, 35(4), 423-440.
7. Munro, Jay. (September 2, 2003). Keep Tabs on Kids with Real-time Monitor. *PC Magazine*. Retrieved November 20, 2003 from <http://www.pcmag.com/article2/0,4149,1217157,00.asp>.

8. Reith, H.J. and Semel, M.I. (1991). Use of Computer-Assisted Instruction in the Regular Classroom. In G. Stoner, M.K. Shinn, & H.M. Walker (Eds.), *Interventions for Achievement and Behavior Problems* (pp. 215-234). Washington, D.C.: National Association for School Psychologists Monograph.
9. Woods, B. (August 2002). A Digital Divide between Students and Educators. Retrieved February 25, 2003 from <http://www.instantmessagingplanet.com/public/article.php/1447791>.