College Student Technology Use and Academic Performance

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Abstract

As technology use continues to rise, especially among young individuals, there are concerns that excessive use of technology may impact academic performance. Researchers have started to investigate the possible negative effects of technology use on college academic performance, but results have been mixed. The following study seeks to expand upon previous studies by exploring the relationship among the use of a wide variety of technology forms and an objective measure of academic performance (GPA) using a 7-day time diary data collection method. The current study also seeks to examine both underclassmen and upperclassmen to see if these groups differ in how they use technology. Upperclassmen spent significantly more time using technology for academic and work-related purposes, whereas underclassmen spent significantly more time using cell phones, online chatting, and social networking sites. Significant negative correlations with GPA emerged for television, online gaming, adult site, and total technology use categories.

Keyword: Technology use, academic performance, post-secondary education.

1. Introduction

As technology use continues to rise, especially among young people (Rideout, Foehr, & Roberts, 2010), college and university administrators increasingly are feeling pressure to keep their institutions at the cutting edge in technology and urge faculty to utilize technology in their teaching to attract students and facilitate learning. At the same time, research on technology use and academic performance largely has yielded mixed results, with some studies finding that excessive technology use can compromise learning (e.g., Anand, 2007; Englander, Terregrossa, & Wang, 2010; Jacobsen & Forste, 2011; Kubey, Lavin, & Barrows, 2001; Ogletree & Drake, 2007) and others finding nonsignificant relations (e.g., Anderson, 2001; Nonis, Philhours, & Hudson, 2006; Pasek, More, & Hargittai, 2009). These mixed results, in part, may be due to several methodological limitations found in the current body of research, including use of retrospective time estimates of technology use, subjective measures of academic impact, examination of differing and limited forms of technology use, and narrow sampling of the student-body population.

The current study seeks to contribute to the literature by exploring the relationship between technology use and college academic performance by utilizing a 7-day time diary to assess a wide range of technology forms and an objective measure of academic performance (GPA). An additional goal of the current study is to consider potential differences in patterns of technology use and relations between technology use and academic performance separately for underclassmen and upperclassmen.

1.1 The importance of technology use to college students

College students likely use technology to accomplish several important developmental goals, such as identity development and establishment (and maintenance) of intimate relationships (Arnett, 2004; Walsh, Fielder, Carey, & Carey, 2013).

With the transition from high school to college, college students are exposed to new people, activities, and information, which may contribute to changing how they view themselves (or how they want to view themselves) and groups of peers with whom they identify. Technology may be used to learn about the college student culture, to have a sense of being connected to college culture, to express aspects of a "new" (or desired) identity, or to seek out information that is perceived as consistent with a particular identity. With regards to the goal of establishing (and maintaining) intimate relationships, college students may use technology to keep in touch with high school friends and family members, who they no longer see on a regular basis. College students additionally may utilize technology to help make new friends (Walsh et al., 2013), for example, chatting to get to know one another and setting up opportunities to get together.

In addition to using technology to achieve important developmental goals, today's college students expect that technology will be central in their higher education. Today's college students have used technology for a variety of reasons (i.e., entertainment, academics, communication with friends and family) starting from a very early age and believe that technology enhances their learning (McCabe & Meuter, 2011). In response to the changing student demographic, colleges continue to offer more and more online applications and software to their students to advance the integration of technology with the college experience. College administrators commonly develop technology programs for which all students are assigned a laptop computer and/or a tablet when they matriculate. Faculty are encouraged by college administrators to incorporate the use of technology into their courses, including online course management systems (e.g., Blackboard), video conferencing software to communicate with students outside of the classroom, clicker response and polling applications, and podcasts. Finally, textbook publishers, in an effort to stay competitive and sell their products, now offer a wide variety of online resources for students and professors alike.

1.2 Technology use and academic performance

Reliance on technology, however, has the potential to hinder academic performance. Researchers have suggested that using technology for non-academic purposes (e.g., leisure, entertainment, socializing) displaces time that could be used for academics (Huston, Wright, Marquis, & Green, 1999). In other words, watching a movie or chatting with friends over social media may be more entertaining and less mentally tasking for college students and therefore chosen as an activity in place of academics. As a result, assignments are not completed on time or at all, exams are not prepared for, and grades drop. Alternatively, the many forms of technology and ease of access make it possible to switch between activities, for example, texting with a friend and typing a paper. While the individual may believe that they are unaffected by switching their attention from one task to another, research demonstrates that this multitasking significantly compromises learning and quality of work (Bowman, Levine, Waite, & Dendron, 2010; Junco & Cotten, 2011).

Within the accumulating body of research on technology use and its possible effects, much attention in particular has been given to Internet use. However, few studies have examined the relationship between Internet use and academic performance among college students. Some studies have used various self-reported, subjective ratings to assess how Internet use impacts academic performance. Kubey, Lavin, and Barrows (2001) found that 14% of college students reported their schoolwork had been hurt occasionally, frequently, or very frequently as a result of Internet use. Using a similar methodology, Rotunda, Kass, Sutton, and Leon (2003) reported that 6.4% of their student sample felt they used the Internet so much that it interfered with their job or schoolwork sometimes, often, or very often. In the third study, Anderson (2001) split his sample into high Internet users (more than 400 minutes/day) and low Internet users and failed to find a significant difference between these groups in terms of their perceived academic interference from time spent using the Internet. The use of self-reported, subjective ratings of academic impact in the above studies, however, limits these findings due to social desirability. The Anderson (2001) study also relied on retrospective estimates of Internet time use, which according to research often can be inaccurate (Bernard, Killworth, Kronenfeld, & Sailer, 1984; Jordan, Trentacoste, Henderson, Manganello, & Fishbein, 2007).

In contrast to using self-reported perceptions of academic impact mentioned above, others have used more objective measures, such as exam grades or GPA, to operationalize academic performance. For example, Englander, Terregrossa, and Wang (2010) found that the number of hours spent using the Internet was significantly and negatively related to exam grades in an introductory microeconomics course. Although this study went beyond students' perceptions of the impact of Internet use on their academic performance, the participants still were asked to retrospectively estimate their average weekly Internet use.

A particular platform of the Internet, social networking sites (e.g., Facebook, Instagram), has become of increasing interest to researchers over the past decade, especially use among college-aged individuals, who comprise a large percentage of social networking site users (Brenner & Smith, 2013; Lenhart, Purcell, Smith, & Zickuhr, 2010). Studies examining the relation between use of social networking sites and academic performance have revealed contradictory findings, although the majority has demonstrated negative relations. For example, Kirschner and Karpinski (2010) found that Facebook users, on average, self-reported significantly lower GPAs compared to non-users. In two more recent studies, Junco (2012a, 2012b) asked participants to estimate the amount of time spent on Facebook and how often they checked Facebook on a 5-point Likert-type scale. The findings, similar to those of Kirschner and Karpinski (2010), showed that the amount of time spent on Facebook and checking Facebook more frequently were negative and significant predictors of time spent preparing for class and GPA (Junco 2012a, 2012b). In contrast, Pasek, More, and Hargittai (2009) reported contradictory findings. Using three separate samples, they identified participants as user or non-users of Facebook and examined differences in self-reported grades between the groups. Two of the samples revealed no differences in grades, although the remaining sample revealed that Facebook users had higher grades compared to non-users. Two more recent studies yielded nonsignificant relations between time spent on social networking sites and self-reported GPA among college students (Turner & Croucher, 2014; Wentworth & Middleton, 2014).

Another area of technology receiving considerable attention for possible interference with academic performance is television. Although the literature is extensive, most studies have involved child or adolescent samples and yielded mixed results (see Thompson & Austin, 2003 for a review). Likewise, the few studies using college student samples yielded mixed results. For example, Porter and Sapp (1996) found that time spent watching television was significantly and negatively associated with GPA, whereas Nonis, Philhours, and Hudson (2006) failed to find any significant relationship. While both of these studies used GPA as an objective measure of academic performance, the researchers utilized different procedures to measure television use. The first study asked students to estimate daily television use, whereas the latter study used a 1-week time diary to measure time spent watching television.

As with television, much of the research examining the potential impact of gaming on academic performance has been conducted with children and adolescents. This line of research has yielded fairly consistent results that gaming has a negative impact on the academic performance of children and adolescents (e.g., Gentile, Lynch, Linder, & Walsh, 2004; Harris & Williams, 2001; Jackson, von Eye, Fitzgerald, Witt, & Zhao, 2011; Jackson et al., 2008), although a few studies have failed to find this relationship (e.g., Creasey & Myers, 1986; van Schie & Wiegman, 1997). With regards to college students, the little research available reveals unclear results. Some studies reported a significant and negative relationship between time spent playing video games and GPA (Anand, 2007; Anderson & Dill, 2000), whereas others failed to find such a relationship (Ventura, Shute, & Kim, 2012; Wack & Tantleff-Dunn, 2009). All of these studies relied on retrospective time estimates of gaming.

Surprisingly, the relation between cell phone use and academic performance among college students has received less attention. Using subjective ratings, Braguglia (2008) found that 23.7% of business undergraduates self-reported that they felt their cell phone interfered with classroom learning sometimes, often, or always. Further, 78.1% of the sample indicated that cell phone use distracted them from study time sometimes, often, or always. Using self-reported GPAs, Wentworth and Middleton (2014), in contrast, reported a nonsignificant relation between cell phone usage and academic performance.

A number of studies have examined one or two forms of technology in relation to academic performance, but very few researchers have attempted to assess college students' use of multiple types of technologies in a single study. Using a 3-day time diary, Jacobsen and Forste (2011) included time spent on social networking sites, e-mailing, online chatting, talking on cell phone or texting, gaming, watching television or movies, and engaging in other online activities. Their results yielded several significant negative relations with self-reported GPA for time spent on social networking sites, using a cell phone (talking or texting), gaming, and watching television or movies.

However, this study only included first-year students, limiting the generalizability of the findings. The only other study assessing a wide range of technologies (Walsh et al., 2013) collected time use estimates with regards to television, music, movies, Internet (not including social networking sites), social networking sites, cell phone talking, texting, and gaming. In relation to GPA, more time spent talking on the cell phone and texting were associated with lower grades. Once again, however, these findings may not be generalizable to all college students since only female first-year students participated in the study.

In summary, the body of research on technology use and academic performance among college students has revealed contradictory findings. Moreover, many of these studies have been limited by one or more of the following: 1) retrospective time estimates of technology, (2) subjective rating of academic impact, and/or 3) narrow sampling of the student body population. To fill gaps in the literature and expand upon previous studies, the current research explores the use of a wide variety of technology forms with a 7-day time diary data collection method in relation to an objective measure of academic performance (GPA). The current study additionally involves a broader age range of individuals, including both underclassmen and upperclassmen. Research has shown that underclassmen and upperclassmen differ in many areas, including critical thinking skills (e.g., Mines, King, Hood, & Wood, 1990), exposure to skill-building learning activities (e.g., Kruger & Zechmeister, 2001), vocational purpose (e.g., Flowers, 2002), and stress reactions (e.g., Misra, McKean, West, & Russo, 2000). As such, it is possible that underclassmen and upperclassmen also differ with regards to their technology use, as well as whether relations exist between technology use and academic performance.

2. Method

2.1 Participants

The sample consisted of 93 undergraduate students enrolled in a small, private, 4-year institution. Participants were recruited via in-class announcements from selected courses offering extra credit for participation. As an additional incentive, all participants were entered in a raffle to win a $500.00 gift certificate to the university bookstore. A total of 72 (77.4%) females and 21 (22.6%) males participated in the study. The mean age of the sample was 21.0 years (*SD* = 3.72). The sample consisted of 13 (14.0%) freshmen, 28 (30.1%) sophomores, 24 (25.8%) juniors, and 28 (30.1%) seniors. In terms of program of study, the sample consisted of 35 (37.6%) math and science majors, 32 (34.4%) humanities majors, 11 (11.8%) business majors, 11 (11.8%) music majors, and 4 (4.3%) education majors. The mean GPA for the sample was 3.27 (*SD* = 0.50). A large majority of the sample was Caucasian (82.8%), with a small number of other ethnicities represented in the sample. This ethnic composition is representative of the population from which the sample was drawn.

2.2 Measures

2.2.1 Demographics form

The demographics form included questions about the participant's age, major, GPA, year in college, race, gender, marital status, and living arrangements.

2.2.2 Data recording sheet

The data recording sheet was created for the purposes of the present study to assist participants in recording their technology usage for each 24-hour period. Each data recording sheet included instructions and time slots to help individuals keep track of their daily technology use in the following categories: television, cell phone, gaming, computer work, online computer use, and offline computer use. The television category included time spent watching television and movies. The cell phone category included any use of the cell phone, even if the reason for using the cell phone fit into another category (i.e., time spent playing a game on the cell phone was counted under the cell phone category and not the gaming category). The gaming category included any electronic game play (both online and offline) other than games played on the cell phone. The computer work category included any time spent using a computer for work or school related activities (both online and offline). Online use of the computer was broken down into the following 5 sub-categories: chatting, social networking, e-mailing, adult site use, and general surfing. Finally, an offline use category included any time spent using the computer offline that did not fit into either the gaming or computer work categories.

2.3 Procedure

Researchers visited select courses offering extra credit for participation and read an announcement of the study. Contact information was obtained from willing students, who were then scheduled to meet with a researcher within 3 days. After obtaining informed consent, researchers administered the demographics form and reviewed the instructions for recording daily technology use. Participants were given 7 data recording sheets and instructed to record all technology use as it occurred during each day for 7 consecutive days. Participants reported their daily use data at the end of each day via an online data collection service. A daily reminder to report data was e-mailed to each participant. Participants were assigned a 3-digit identification number that was used for all data to help protect confidentiality. A university Institutional Review Board (IRB) approved all procedures.

3. Results

Prior to analyses, data were examined for outliers. Three data points were determined to be outliers (one for cell phone use, one for online chatting, and one for other offline use) because their values were more than twice the next highest values. Given that these data points were not the result of researcher or participant error, they were not eliminated. Instead, and following the recommendation of Tabachnick and Fidell (2013), each extreme score was assigned a value that was one unit larger than the next highest score in the data for that variable. This decision was made in efforts to retain the deviant scores but also to reduce their impact.

Table 1 shows how many minutes per week students used each of the technology categories. The mean total technology use for the entire sample was 2,570.6 minutes per week. Students spent the most time watching television and using the computer for work, with means of 869.4 and 583.8 minutes per week, respectively. Compared to the 583.8 minutes per week students used technology to complete work, 1,986.8 minutes per week were spent using technology for a variety of other reasons. Males spent more time using technology than females with approximate means of 2,825.9 (SD = 1558.4) and 2,496.1 (SD = 1233.4) minutes per week, respectively, although this difference was nonsignificant, $t(91) = 1.01$, ns.

Table 1 also shows technology use comparisons for underclassmen (freshmen and sophomore students) and upperclassmen (junior and senior students). No significant difference was found between underclassmen and upperclassmen in terms of total technology use, $t(91) = .89$, ns. However, upperclassmen spent significantly more time using technology for work purposes than underclassmen, $t(91) = -3.07$, $p < .01$. In addition, underclassmen spent significantly more time using their cell phone, $t(91) = 3.18$, $p < .01$, chatting, $t(91) = 2.51$, $p < .05$, and using social networking sites, $t(91) = 2.86$, $p < .05$, compared to upperclassmen.

Table 2 shows the correlations between GPA and the technology use categories for the entire sample and separately by class status. For the entire sample, the following four technology use categories yielded significant negative correlations with GPA: television, online gaming, online adult sites, and total technology use. Time spent watching television yielded the strongest relation to GPA. In terms of correlations by class status, television use was significantly and negatively related to GPA for both under- and upperclassmen. Cell phone use and total technology use were significantly and negatively related to GPA for upperclassmen only. Negative significant correlations of GPA with gaming and online adult site use emerged for underclassmen. Additionally, the correlations for offline and total technology use for underclassmen were marginally negatively significant, with p values of .06.

4. Discussion

The current study sought to expand upon the literature examining the possible negative impact of technology use on college academic performance. Unlike previous research, the current study employed a 7-day time diary data collection method to obtain less biased time use estimates on a wide variety of technology forms. Upperclassmen and underclassmen also were compared to see if these student groups differed in meaningful ways with regards to their technology use or relations with academic performance.

Several notable findings emerged from the current study. First, the results suggested that students spent an average of 2,570.6 minutes (42.8 hours) per week engaged with some form of technology. Of this total amount, students spent the most time watching television (869.4 minutes per week), followed by using the computer to complete school or work-related activities (583.8 minutes per week). Despite the fact that computer work comprised the second highest usage category, the data indicated that more than 75% of college student technology use could be attributed to leisure purposes.

This finding seems of particular interest given that college administrators, faculty, parents, college students, and others assert the advantages of technology in higher education, but in reality, this technology often is being used for non-academic purposes.

Of further concern is that total technology use was found to be significantly and negatively correlated with GPA for the whole sample and for upperclassmen (the correlation was marginally significant for underclassmen). This finding might be expected given the large amounts of time spent on technology for leisure activities, and therefore, presumably less time using technology for academic- and work-related tasks (Huston, Wright, Marquis, & Green, 1999).While academic and work-related activities may not always require technology (e.g., making note cards, meeting for a study group), this finding suggests that technology may serve as more of a distraction to completing academic work.

Consider next the specific finding that time spent using the computer for academic and work-related activities was nonsignificantly related to GPA. In other words, students who spent more time using their computers for academic and work-related purposes were no more likely to receive better grades compared to their peers. This nonsignificant relation is consistent with some previous research (e.g., Pemberton, Borrego, & Cohen, 2006), but it is curious that time spent using technology for academics is not associated with GPA, especially given that total time spent on academics (with or without technology) is positively related to GPA (Jacobsen & Forste, 2011). This finding raises an important question as to whether technology really does improve learning outcomes among students.

In terms of other significant correlations between technology use and GPA, television, online gaming, and online adult sites were negatively related to GPA. These results are similar to findings from some previous research (Jacobsen & Forste, 2011; Porter and Sapp, 1996). One explanation, as mentioned previously, for these relations is that using technology for leisure displaces time that could be used for academics. Alternatively, it could be that college students are completing academic work while simultaneously engaging in these other leisure activities. If they are switching attention between activities, then their ability to focus effectively on their academic work may be impaired (Bowman et al., 2010). Maintaining this strategy for completing academic work over time eventually may result in poorer grades.

A nonsignificant finding deserving attention concerns the current study's failure to replicate the previously cited significant negative relation between use of social networking sites and academic performance (e.g., Junco, 2012a; Junco 2012b; Kirschner & Karpinski, 2010). One possibility for the nonsignificant finding relates to the method employed in the current study. Specifically, participants were instructed to record the amount of time spent on different types of technology. If participants were using multiple types of technology simultaneously, they were told to record the time spent on the technology that was of primary focus. For example, if participants were typing a class paper but had Facebook open behind the paper, they recorded only the time spent on the class paper. As a result, it is possible the amount of time recorded using social networking sites was less than the actual amount of time.

Interesting differences between underclassmen and upperclassmen with regards to technology use, as well as relations with GPA, also emerged. Underclassmen spent more time on their cell phones, online chatting, and social networking sites compared to upperclassmen, whereas upperclassmen spent more time using their computers for academic and work-related activities. It is noteworthy to reiterate that overall technology use did not differ between underclassmen and upperclassmen. Given that underclassmen may be adjusting to the transition from high school to college, it seems reasonable to expect that they would use online chatting, social networking sites, and cell phones more perhaps to cope with missing their high school relationships and family members. They also may use these technologies more often because their parents no longer may be involved in the monitoring of their technology use or they may have difficulties adjusting to the larger amounts of unstructured time (Kandell, 1998; Young, 2004). On the other hand, upperclassmen would likely use their computers more often for academic and work-related activities since their course- and workloads may be more demanding as they further delve into their majors. Examination of correlations between GPA and each of the technology use categories by class status indicated one similarity for the two groups. Time spent watching television was negatively associated with GPA for both underclassmen and upperclassmen. As mentioned previously, watching television in larger quantities obviously decreases the amount of time that can be spent on academic- and work-related activities. Moreover, today's technology offers unparalleled on-demand access to television shows and movies that potentially can lure students into extended periods of use.

For underclassmen, more time spent gaming and using online adult sites was significantly related to lower GPAs. Recall, however, that underclassmen and upperclassmen did not differ with regards to overall time spent on these technologies. One plausible explanation for this significant correlation concerns a self-selection process that occurs for those persisting beyond the initial years of college. According to one report published by American College Testing (ACT, 2013), the retention rate of students at small, private 4-year institutions (like the research site of the current study) from their first to second year is approximately 70%. In other words, about 30% of students leave (transfer to another institution or return home) after their first year of college. Although there are many reasons for student attrition, one mechanism at work may be that those underclassmen unable to balance their gaming and online adult site use with academic demands are lost. As a result, the relations found for underclassmen are not similarly present for upperclassmen due to the loss of these students. One final difference in correlations between technology use and GPA for underclassmen and upperclassmen is particularly puzzling. Cell phone use was significantly and negatively related to GPA for upperclassmen only. In general, it would be expected that cell phone use, like watching television, would draw students away from their academic work. One thought is that students may use their cell phones to complete their academic work, whether they are comparing answers or seeking assistance via their cell phones. Combined with mixed findings of previous research in this area (Braguglia, 2008; Wentworth & Middleton, 2014), there is clear need to further investigate how cell phone use is impacting academic performance. Today's cell phones certainly serve a wide variety of functions, which complicate how they are examined and how results across different studies are interpreted.

Several future directions for research are needed in light of the current study's findings. First, the current study examined simply the amount of time using a particular aspect of technology. It seems that the efficiency of technology use (i.e., how well an individual can maximize the outcomes with less time use) also could be interesting to consider in relation to academic performance. Also, some individuals may believe they are adept at completing a single task, even though they are dividing attention among multiple technologies to complete that task. A second future direction involves creating a standardized assessment of technology use. This task undoubtedly is complicated by the fact that technology is ever-evolving and becoming involved in many more daily activities. However, creating a way to document this information would be helpful to researchers in terms of comparing findings.

Added to the findings from previous research, the current study suggests that college administrators and faculty should strongly reconsider the emphasis placed on technology at their institutions. Faculty may employ different teaching approaches that do not rely on technology to model learning without technology. As a result, students will be forced to spend time away from their technology, which may contribute to them developing more effectual monitoring of their technology use. Further, not relying on technology to complete most of their schoolwork may present opportunities for students to add new academic skills to their toolbox. At the very least, given the connection between technology use and academic performance, it seems that colleges have a responsibility to create educational programs to inform students about the risks associated with high technology use and to provide resources for interventions with students who are unable to control their technology use. College administrators and faculty would be wise to use these findings to teach their students about effective use of their technology for academics during orientation or even consider assessing their students to identify individuals "at risk" for excessive technology use for entertainment purposes. "At risk" students then could receive targeted assistance to potentially assuage the detrimental impact on academic success.

Overall, the results of the current study add to the concerns that technology use may actually negatively impact academic outcomes. Colleges and universities are urged to educate students about the possible negative impact of high rates of recreational technology on academic success. Given the finding that underclassmen spent significantly less time using technology for work purposes than upperclassmen, freshmen orientation programs may provide particularly fruitful grounds for such educational outreach programs. There are several limitations of the current study worthy of note. First, the cross-sectional nature of this study did not allow for examination of the direction of effect for the significant correlations. Second, the relatively small sample taken from a single private university limits the generalizability of the results. Third, the procedure for the current study focused on providing an accurate assessment of technology time use estimates at the expense of measuring other variables that have been linked to college academic success, such as employment during college, hours spent studying, individual differences in ability, and personality (Englander, Terregrossa, & Wang, 2010; Jacobsen & Forste, 2011; Walsh et al., 2013).

Understanding the ways in which various forms of technology use impact college academic performance remains an important and challenging issue, particularly with technology devices and access changing at such a rapid pace. College administrators and faculty are in a vexing dilemma – the need for their institutions to be viewed as an innovative leader in technology versus the concern that technology integration may have unwanted consequences. As research advances in this area, it is hoped that a clear picture will emerge as to how the benefits of technology can be maximized while minimizing the negative impacts.

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Table 1

Means and Standard Deviations for Total Minutes Per Week of Technology Use and t Tests Examining Class Status Differences

	Entire Sample		Underclassmen		Upperclassmen		
	M	*SD*	*M*	*SD*	*M*	*SD*	*t*
Television	869.4	582.6	940.9	639.5	813.0	533.0	1.05
Cell Phone	478.0	393.9	617.4	406.0	368.0	350.3	3.18**
Gaming	113.9	215.9	107.0	221.1	119.3	213.7	-.27
Computer Work	583.8	564.2	390.4	359.0	736.3	647.6	-3.07**
Online Chatting	95.7	177.7	146.3	238.6	55.8	92.7	2.51*
Online Social Networking	157.2	190.1	218.4	227.4	108.9	138.8	2.86**
Online E-mailing	96.1	74.8	93.8	77.1	97.9	73.8	-.26
Online Adult Site Use	8.1	24.3	8.8	25.8	7.6	23.3	.23
Online Surfing	101.3	107.3	100.3	120.7	102.1	96.7	-.08
Other Offline Use	67.1	142.3	83.7	177.2	54.0	107.1	1.00
Total Technology Use	2570.6	1311.9	2706.9	1323.1	2463.1	1305.8	.89

Notes. * $p < .05$. ** $p < .01$.

Table 2

Correlations Between Total Minutes Per Week of Technology Use and GPA for Entire Sample and by Class Status

	Entire Sample ($N = 93$)	Underclassmen ($n = 41$)	Upperclassmen ($n = 52$)
TV	-.42***	-.35*	-.50***
Cell Phone	-.17	-.06	-.28*
Gaming	-.28**	-.34*	-.24
Computer Work	.02	-.13	.08
Online Chatting	-.01	.07	-.11
Online Social Networking	-.05	.07	-.19
Online E-mailing	.11	.18	.06
Online Adult Site Use	-.28**	-.46**	-.14
Online Surfing	.04	-.07	.13
Other Offline Use	-.15	-.30†	.01
Total Technology Use	-.30**	-.30†	-.30*

Notes. * $p < .05$. ** $p < .01$. *** $p < .001$. † $p = .06$.