


Screen time, phone usage, and social media usage: Before and during the COVID-19 pandemic

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Abstract

Objective: Technology use has increased in the past several years, especially among younger generations. The COVID-19 pandemic drastically changed how people work, learn, and interact, with many utilizing technology for daily tasks and socializing.

Methods: The current study investigated a sample of college students using a cross-sectional design to determine whether there was a change in how much time students spent on screens, phones, and social media.

Results: Findings indicated that time on screens and phones was significantly higher during the pandemic; however, time spent on social media did not differ significantly.

Conclusion: These findings suggest that students are spending more time working and socializing on their screens and phones, yet social media may not be the platform in which students are doing this. Future studies should further explore technology usage and whether these trends during the COVID-19 pandemic will be lasting.

Keywords

COVID-19, technology, social media, mobile phone, smartphone, screen time, college students, pandemic

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Introduction

Technology usage and the internet

Technology has become prominent in people's daily lives. Computers and smart devices can now be found in an estimated 92% of homes across the U.S.,¹ jumping from 50% of U.S. households in 2000.² People use technology for a variety of reasons: keeping in touch with friends through social networking sites,^{3–6} information seeking and staying informed about current events,^{3,7} typing and editing documents,⁸ entertainment,^{9,10} shopping and business opportunities,^{11,12} and educational purposes.^{13,14}

Within the classroom, using laptops and taking notes online has been popular amongst college students during in-person classes for some time.^{15,16} In addition to the

increasing use of computers in the classroom, online or asynchronous learning has become more common in the past several years. One study¹⁷ reported that in 2006 almost 20% of college students in the U.S. were enrolled in at least one online class, and most universities predicted that the demand for online learning would continue to grow. A follow-up study in 2016 found 28% of higher education students were enrolled in at least one online course,¹⁸ which climbed to 37.2% in 2019.¹⁹

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Coronavirus impact

When the COVID-19 pandemic spread across the globe in 2020, people of all ages began to utilize technologies as a means of communication with peers and coworkers alike. Business meetings and conferences shifted to online platforms, and students and teachers of all ages began meeting on their screens. As previously mentioned, before the pandemic, around 37% of college students were enrolled in at least one online class.¹⁹ The pattern of online enrollment became significantly higher once educational institutions across the U.S. shut down campuses and proceeded to have students learn in a virtual setting.¹ Platforms such as Google Classroom and Zoom replaced physical classrooms, and other digital services such as edX and Coursera became the common platform for homework and asynchronous classwork.²⁰ In 2020, the United States Census Bureau reported that approximately 93% of school-age children were participating in some form of online learning.²¹

Aguilera-Hermida²² found there was an increase in overall technology use among college students since the transition to online learning during the pandemic. Outside of the virtual classroom, university students had utilized varying coping skills to cope with the effects of the pandemic.^{23–25} For example, seeking social support was common in a sample of Chinese students,²⁶ while others were interacting with one another on their phones and screens. Internet services reported that internet usage increased drastically during the COVID-19 lockdown, with in-home data usage of smartphones increasing by 34% and overall data usage rising 18%.²⁰ Laghate²⁷ reported that during the first week of COVID-19 lockdown, time spent on phones increased by 6.2%, time spent on social networking apps increased by 25%, and time spent watching TV increased by 8%. Boursier et al.²⁸ reported that before the pandemic 4.7% of people used social media more than 4 hours a day, which jumped to 21.2% during the pandemic.

Present study

The COVID-19 pandemic impacted people across the world as many were required to socially distance themselves and utilize the internet and technology as a primary form of communication, educational platform, and workspace. The current study aims to contribute to a growing body of literature about the implications of the COVID-19 pandemic on the use of technology, specifically among the younger generation and within the educational sector. Monitoring technology use among college students is important as it has been found to have some implications on mental health and, as such, higher educational institutions may be able to better implement tools and provide education on coping strategies during stressful times or

unforeseen circumstances, such as those that coincide with the COVID-19 pandemic.

The current study used a cross-sectional design spanning several years from a large sample of college students to investigate the differences in overall screen time, time spent on a smartphone, and time spent on social media before and during the COVID-19 pandemic. It was hypothesized that participants would spend significantly more time on their screens, smartphone, and social media during the pandemic compared to before.

Material and methods

Participants

Data were collected from different students enrolled in a psychology class at San Diego State University between the spring semester of 2016 through the spring semester of 2022. Students were asked to complete an anonymous survey in exchange for extra credit. If students did not want to take part in the survey, other opportunities for extra credit were offered. Demographic data are consistent between the two groups, which are presented in Table 1.

Measures

Demographic questionnaire. As part of a larger study, demographic data were collected following informed consent. Depending on the semester in which the survey was conducted, varying demographic data were collected. The demographic data used in the current study were age, gender, and race/ethnicity.

Self-reported technology usage. A series of questions asked participants to self-report how much time they spend on different devices. The current study investigated the question that asked participants how much time they spend on their screens in total (phone, laptop/desktop, gaming console, and iPad/ tablet) per day; choices available were 1–2 hours, 2–3 hours, 3–4 hours, 4–5 hours, 5–6 hours, or 6+ hours. The current study also utilized the question that asked participants to report how much time they spend on their phones per day, and a separate question that asked how much time they spend on social media per day; choices available were 0–1 hours, 1–2 hours, 2–3 hours, 3–4 hours, 4–5 hours, 5–6 hours, or 6+ hours. The selection of answer choices given was a small range which might aid in students estimating time spent more accurately, similar studies have grouped time similarly.²⁹

Procedure

The design for this study was submitted to the San Diego State University Institutional Review Board (IRB). The

Table 1. Demographics.

| | Full sample | Pre pandemic | During pandemic |
|--------------------------------|--------------|--------------|-----------------|
| Age, mean (SD) | 21.57 (4.21) | 21.40 (3.74) | 21.69 (4.50) |
| Gender, n (%) | | | |
| Male | 569 (28.4%) | 185 (22.9%) | 384 (32.1%) |
| Female | 1415 (70.6%) | 622 (76.9%) | 793 (66.3%) |
| Transgender | 4 (0.2%) | 2 (0.2%) | 2 (0.2%) |
| Other | 14 (0.7%) | 0 (0.0%) | 14 (1.2%) |
| Prefer not to say | 3 (0.1%) | 0 (0.0%) | 3 (0.3%) |
| Race/Ethnicity, n (%) | | | |
| Multiethnic | 284 (14.2%) | 84 (10.4%) | 200 (16.8%) |
| Black/African | 79 (4.0%) | 35 (4.3%) | 44 (3.7%) |
| American Indian/Alaskan Native | 9 (0.5%) | 2 (0.2%) | 7 (0.6%) |
| Asian/Pacific Islander | 371 (18.6%) | 204 (25.3%) | 167 (14.1%) |
| White | 708 (35.5%) | 270 (33.5%) | 438 (36.8%) |
| Hispanic/Latinx | 493 (24.7%) | 189 (23.4%) | 304 (25.6%) |
| Middle Eastern | 15 (0.8%) | 0 (0.0%) | 15 (1.3%) |
| Other | 37 (1.9%) | 23 (2.9%) | 14 (1.2%) |

IRB-approved surveys were delivered either in the classroom or input into Qualtrics via a separate link depending on the semester in which the survey was collected. As part of a larger study, demographic data and a series of questions were collected following informed consent.

The semester the survey was taken and/or time and date were recorded. The surveys were placed into two groups: dates before March 10, 2020, were grouped into “pre-pandemic,” and dates after March 10, 2020, were grouped into “during the pandemic,” as San Diego State University announced it would transition classes to fully online and the COVID-19 was declared a worldwide pandemic on March 11, 2020.

Data analysis

Analyses were conducted using IBM SPSS version 27. This study used a repeated cross-sectional design since a new sample of students was collected each semester. Repeated cross-sectional data can be used to consider patterns of change at the aggregate level.³⁰ To explore differences

before and during the pandemic on overall screen time, time spent on phones, and time spent on social media, a chi-square was conducted. Given that data collection was conducted on similar groups of students based on demographics (see Table 1), it was appropriate to compare groups as previous studies using college students during the COVID-19 pandemic have used similar methods.^{28,31}

Results

Regarding the COVID-19 Pandemic, 40.3% ($n = 809$) of the surveys were completed before the COVID-19 Pandemic [before March 10, 2020], and 59.7% ($n = 1196$) were completed during the COVID-19 Pandemic [after March 10, 2020].

Participants

Participants ($n = 2005$) had a mean age of 21.57 ($SD = 4.21$). A majority of the sample identified as female (70.6%, $n = 1415$) or male (28.4%, $n = 569$), a majority of

participants identified as White (35.3%, $n = 708$), Hispanic/Latino (24.7%, $n = 493$), Asian/Pacific Islander (18.6%, $n = 371$), multiethnic (14.2%, $n = 284$), and Black/African (4.0%, $n = 79$). Demographic data are similar between the two groups studied. More specific demographic data are presented in Table 1.

Screen time and COVID-19

A larger percentage of students spent more time on screens (phone, laptop/desktop, gaming console, and iPad/tablet) during the pandemic than before. A chi-square test revealed to be a statistically significant difference in time spent on screens before and during the pandemic: $\chi^2 (5, n = 2004) = 35.48, p < .001, phi = .13$. Figure 1 demonstrates these differences.

Phone time and COVID-19

Participants were spending more time on their phones during the pandemic compared to before the pandemic. A chi-square revealed there to be a significant difference in time spent on phones before the pandemic compared to during the pandemic: $\chi^2 (6, n = 2004) = 68.77, p < .001, phi = .19$. Figure 2 demonstrates these differences.

Time on social media and COVID-19

There was not a statistically significant difference in time spent on social media before and during the pandemic: $\chi^2 (6, n = 2005) = 9.51, p = .147$. The majority of participants spent between 1 and 3 hours on social media across both time periods (see Figure 3).

Discussion

The purpose of this study was to examine the differences in time spent using technology and social media among college students before and during the COVID-19 pandemic. We hypothesized that students would spend significantly more time on technology and social media during the pandemic compared to before the pandemic. Results confirmed that participants spent significantly more time on screens (phone, laptop/desktop, gaming console, and iPad/tablet) and phones during the COVID-19 pandemic compared to before, but participants did not report spending significantly more time on social media.

The shift to online learning that occurred in response to the onset of the pandemic may have contributed to the increase in screen time¹; however, university students reported difficulty adjusting to and completing online courses during the pandemic due to the increased time

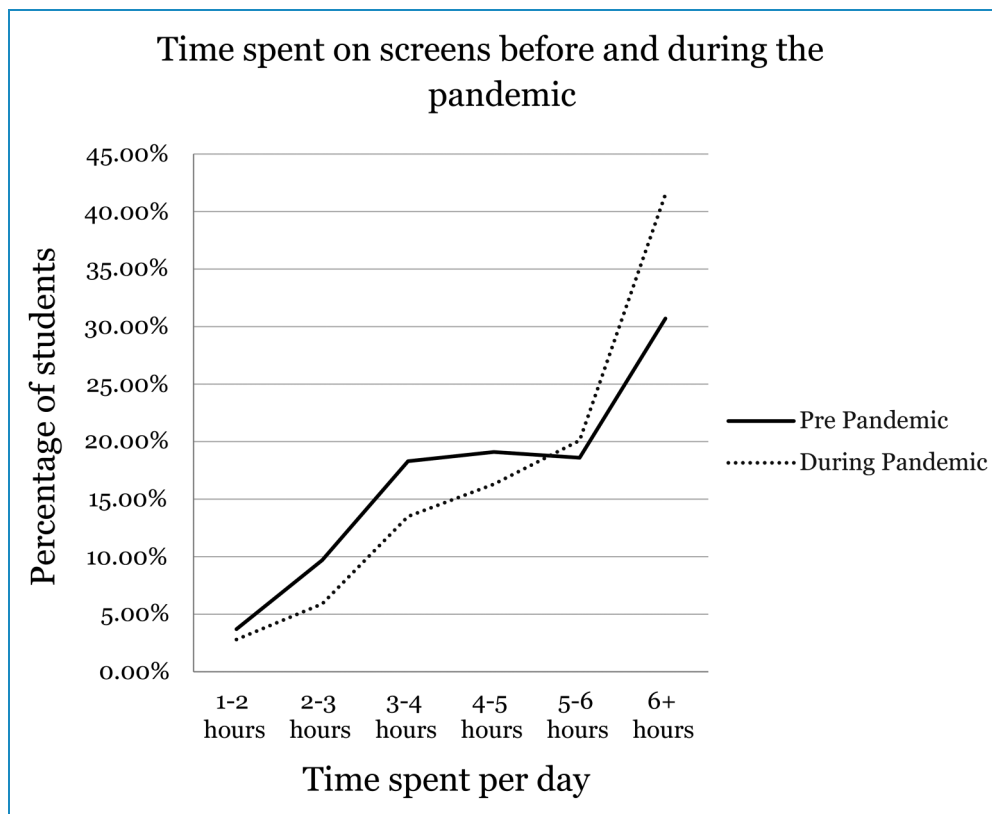


Figure 1. The differences in screen time before the pandemic and during the pandemic.

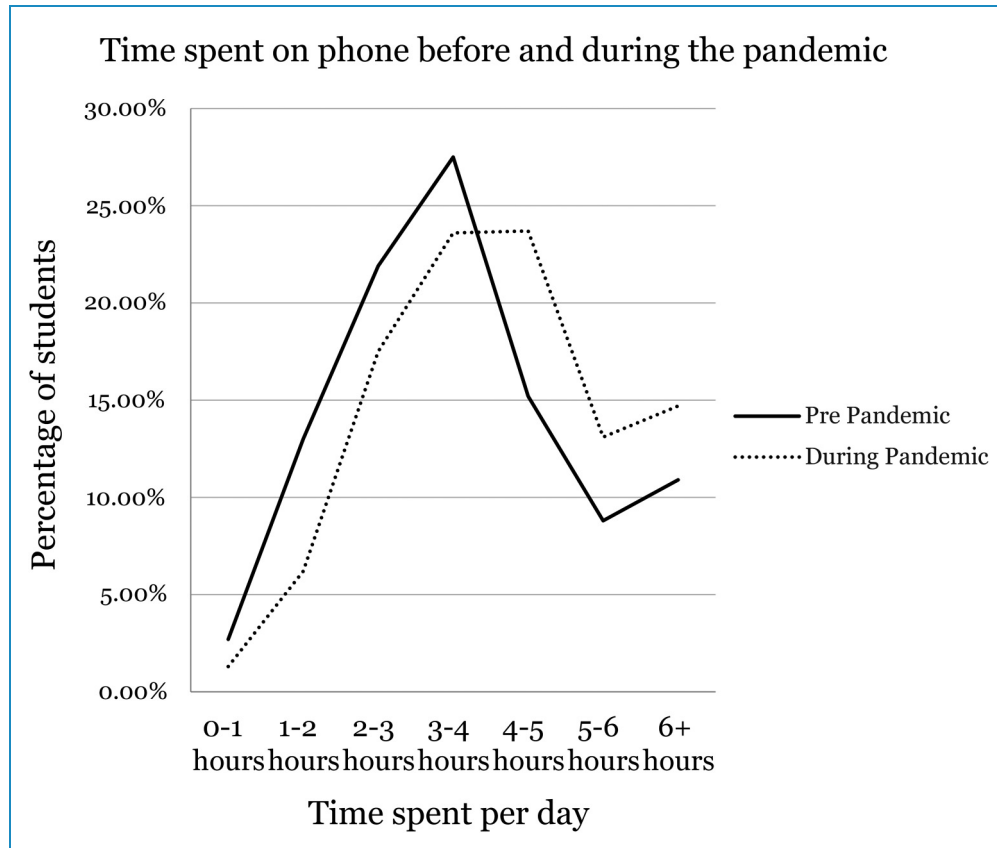


Figure 2. The differences in time spent on phone before and during the pandemic.

burden and added assignments which could have impacted time spent on social media.^{32,33}

Only about 31% of participants were on their screens more than 6 hours a day before the pandemic, compared to about 46% of participants who were on their screens more than 6 hours a day during the pandemic. These findings support our hypothesis and align with the previous literature that there was an increase in time spent on screens during the pandemic.^{26–28,34,35} Time spent on phones also increased significantly during the pandemic. There was a higher percentage of participants on phones for 4 or more hours a day: 51.7% during the pandemic versus 34.9% before. One possible explanation for this is that restrictions, such as social distancing, kept people apart, and to stay connected people did so virtually and on their phones via video chat or text. Another explanation could be that individuals are using their phones to engage in online shopping to avoid entering stores or other public spheres.^{11,12} Yet, even with social distancing measures during the pandemic, people still experienced fear of missing out even with limited in-person events,³⁶ suggesting that the yearning to stay connected was still present. In place of in-person events, people attended online events such as virtual concerts or group video chats,³⁶ which

also explains where people may have seen an increase in their overall technology usage, but not necessarily in social media.

Previous studies indicated an increase in social media usage during the pandemic,^{20,27,28,34} but the current study found no significant change in social media usage in our sample. One possible explanation for this is since people were staying at home, they had less content to post on their social media accounts, and with less content to post and view on social media, there was no change to their reported time on social media, even though they were on their phones more. Another possible explanation for social media usage not increasing could be that a majority of younger people get news from and gather information from social media³⁷; yet during the pandemic, the overwhelming amount of negative information about COVID-19 may have led to an avoidance of social media.³⁸ People tend to avoid things that bring negative emotions,³⁹ and studies have found that young adults have felt overwhelmed with the amount of information on social media and avoid social media altogether.⁴⁰ Even prior to the COVID-19 pandemic, studies indicated that “news overload” on social media correlated with social media avoidance.⁴¹

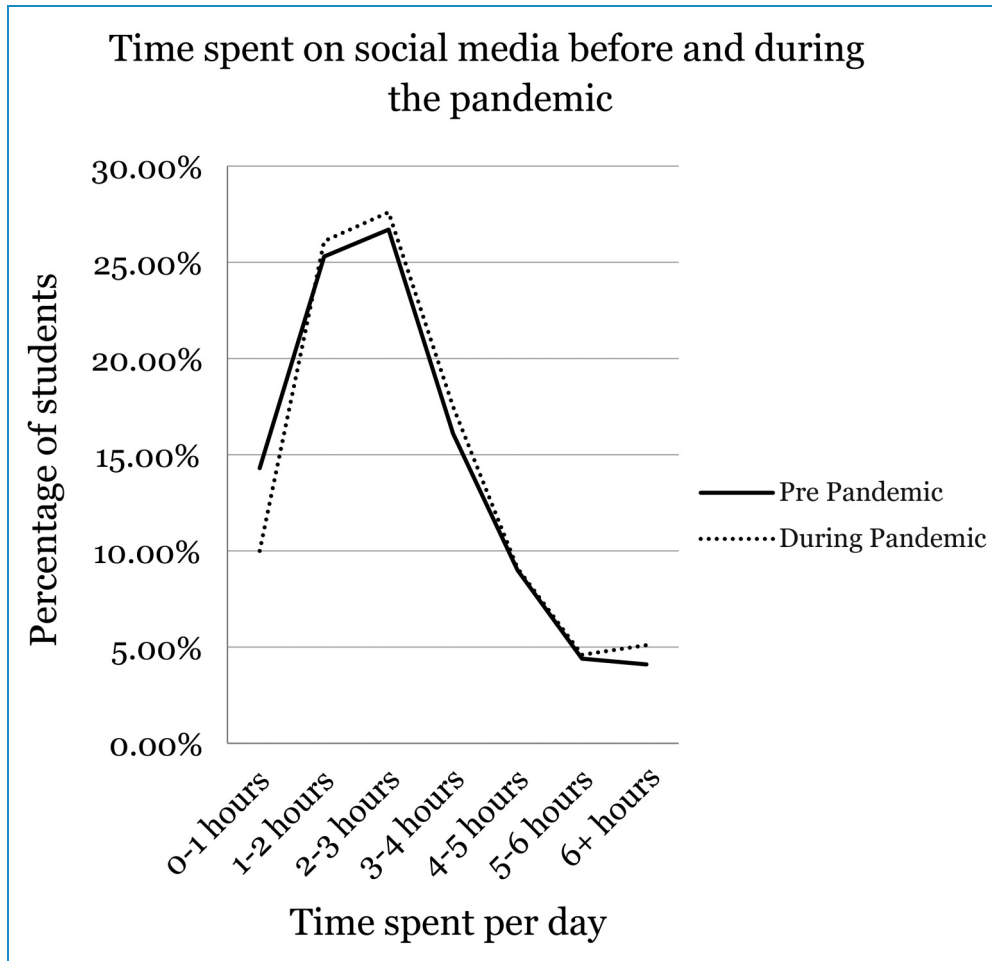


Figure 3. The differences in time spent on social media before and during the pandemic.

The impact of social media on mental health has been a topic of much discussion in recent years, and findings have been mixed on whether social media has had a positive impact on people during the COVID-19 pandemic. Social media usage has been found to decrease anxiety and stress during the pandemic, and interacting with others on social media was used as a coping strategy for many.⁴² Other studies have found that during the pandemic young adults' social media (where many gather news information) contained an abundance of negative information about COVID-19 which may have caused a decrease in social media use as people wanted to avoid the negativity surrounding the pandemic.³⁸ As Kamaludin et al.²⁴ and Nurunnabi et al.⁴³ suggest, it is important to monitor levels of anxiety and coping strategies used among university students. Monitoring screen time, social media usage, and levels of stress and anxiety among university students are important as education institutions can better implement tools for university students to cope with life stressors, manage their time in front of technology, and as Hossain et al.⁴⁴ suggest, create a more sustainable academic trajectory for students in higher education.

Limitations and future directions

Study limitations should be noted. First, by limiting the selection of hours spent on screens to only “6+ hours,” the true numeric difference may be higher than the results of this study reflects. Similarly, the question that asked participants how much time they spend on their screens (phone, laptop/desktop, gaming console, and iPad/ tablet) per day did not give a choice of 0–1 h per day which is inconsistent with the other two questions investigated in this study. This has since been updated in current surveys to a sliding scale ranging from 0 to 12 to allow for more accurate data collection.

The sample of this study is another possible limitation as the sample is inclusive of undergraduate psychology students, of which may not be generalizable to the general public.⁴⁵ Samples of undergraduate students are often less diverse, younger, and have less relevant work experience than participants surveyed using other measures such as crowdsourcing.⁴⁶ The sample in this study was predominantly female (70%). Women (78%) are more likely to have social media (66%) profiles than men⁴⁷ and during the

COVID-19 pandemic, women had higher rates of anxiety across several studies.^{48,49} It was also found that females often utilize more social support during the pandemic compared to men.²³ Further, this study did not use the same group of students across time, rather a repeated cross-sectional design was used.³⁰

Participants were asked to self-report time spent on their screens, phones, and social media. Despite some evidence that accuracy in self-reports is enhanced by anonymity, low-no fear of reprisal, and a clear understanding of the questions, there is evidence that self-reporting inaccuracies go up when self-report questions require introspection.⁵⁰ Prior research also notes that participants tend to underestimate time spent on their screens or may not understand the definition of screen time.^{51,52}

It is difficult to predict whether screen time will diminish following the COVID-19 pandemic, making it important to monitor prolonged screen time as it can have harmful effects such as depression^{53,54} and anxiety.^{53,55}

Conclusions

In this study, it was shown that screen time and time spent on phones increased during the COVID-19 pandemic compared to before the pandemic; however, there was no change in time spent on social media. Given that technology is utilized in place of many different facets of life, such as education and social life, it is important to continue to investigate and analyze the lasting effects that COVID-19 has had on technology usage.

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