

Digital Experience Among Faculty and Students in One Midwest University

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Abstract: The coronavirus (COVID-19) pandemic shifted the daily operations of society from in-person to a digital environment. While connectivity has innumerable benefits, research is revealing the negative effects of hyperconnectivity on mental health. Digital burnout appears to be the cost for this advancement. Students and faculty members are mostly impacted with digital burnout. The purposes of this project were to 1) to compare digital device usage before and during the pandemic between faculty and students, 2) examine digital competencies, digital burnout, and digital resilience between faculty and students from one Midwest university. A descriptive, cross-sectional study design was conducted. A convenience sample of faculty and students from the all programs at our university were surveyed. A Digital Experience Scale was adapted by the researchers to evaluate digital usage, level of confidence, and level of digital resilience in adapting to digital technology. The 24-item Digital Burnout Scale (DBS) was also used to assess digital burnout. The DBS measures three subscales – digital aging, digital deprivation, and emotional exhaustion. The total score ranges from 24 to 120, with higher scores indicating higher levels of digital burnout. The survey was administered via RedCap. IRB was submitted and was granted exempt status. Data from 194 respondents were included in analysis. Cohort was comprised mostly of students (80%), 76% females, 83% whites and 72% were undergraduate students. The overall mean age was 33.8 (SD=14.7). There was a significant difference in age between faculty and students. Cohort reported above average and very high ability in use of technology. The overall mean DBS score of all participants was 64.7 (SD=19.2). The mean “digital aging”, “digital deprivation”, and “emotional exhaustion” subscale scores of 33.8 (SD=10.7), 16.1 (SD=5.7), and 15.0 (SD=5.6), respectively. There were significant differences in the total scores and three subscales between faculty and students. Both faculty and students were able to adapt the use of technology during the pandemic. The study showed that faculty and students at a Midwestern University have above-average digital burnout levels; however, they were able to adapt to the use of technology.

Keywords: Digital Burnout, Digital Aging, Emotional Exhaustion

1. Introduction

The coronavirus (COVID-19) pandemic has an unprecedented economic and social impact worldwide. To control COVID-19 spread, all social activities such as working, schooling, shopping, etc. have switched from in-person to online. This strategy resulted in the accelerated use of digital technology. Technology has allowed us easy access to massive data as well as increased social connectivity. Global Overview reported that in January 2022, the world population was 7.91 billion, of which the number of mobile

phone users was 5.31 billion (67%), the number of users with internet access was 4.95 billion (63%), and active social media users was 4.62 billion (58%) [1]. It was also reported that the average daily internet usage time was 6 hours 58 minutes, social media usage time is 2 hours 27 minutes [1]. This data represents how people are getting more connected every day.

While digital connectivity has innumerable benefits, research is revealing the negative effects of hyperconnectivity [2]. Overuse of technology can contribute to digital overload leading to digital burnout, thus impacting a person's quality of life [3, 4]. Goodman [5] in her webinar

identified two potential reasons as to why people experience digital burnout – 1) workdays that never end and 2) ways of working are incongruent with brain and body requirements. She explained that people have difficulty switching or disconnecting themselves from work. In addition, multi-tasking and incessant digital demands depletes glucose supply in the brain making a person feel tired. It then elevates cortisol level making retention of information difficult sending information to the wrong part of the brain [5]. Digital burnout has also impacted students and faculty members [6, 7]. Therefore, the purposes of this project were to 1) identify and compare digital device usage before and during the pandemic between faculty and students, 2) examine digital competencies, digital burnout, and digital resilience between faculty and students from one Midwest university.

2. Review of the Literature

Researchers have been studying burnout for decades and in 2019 it became an official medical diagnosis. According to the Institute for Quality and Efficiency in Health Care [8], the concept was coined by Herbert Freudenberger in the 1970s. Burnout refers to physical, mental, and emotional exhaustion state caused by chronic and excessive stress [9]. Digital burnout is a specific type of burnout that arose as a result of the pandemic. Interest in the concept of *digital burnout* is increasing as individuals continue to use digital technologies. Digital burnout is described as being related to prolonged or excessive digital engagement [10]. It is characterized in the literature as sleep deprivation, less efficiency at work, loss of interest, fatigue, stress, difficulty managing emotions as well as physical and mental problems [11]. There is ample evidence on general burnout with use of technology during the pandemic [12-14]; however, there is limited studies that focused specifically on digital burnout found in the literature. One study [11] looked at 361 nursing students from Turkey using their developed Digital Burnout Scale. The study showed that nursing students had above average digital burnout levels with students who spent more than five hours online had higher digital burnout level. They further identified three sub-concepts of digital burnout in their Digital Burnout Scale - digital aging, digital deprivation, and emotional exhaustion [11]. Digital aging refers to one's inability to strike balance between the real and virtual world due to spending too much time on a digital platform. Digital deprivation is the state when a person feels physically and psychologically bad when away from the digital platform. Lastly, emotional exhaustion is the draining of emotional resources [11]. Another study [15] on the relationship between digital burnout level and perceived stress among 925 students from one university in Malatya showed above average digital burnout and moderate perceived stress. In addition, digital burnout level was also noted to be higher among undergraduate students; as their internet usage increases, their digital burnout level and perceived stress increases [15]. The negative impact of excessive digital use

has triggered a need to promote digital resilience among users. "Digital resilience is defined as the ability of learners to overcome technological difficulties and persist with online learning as they adapted to the changing trends in higher education due to COVID-19 [16]. The concept of digital resilience as a healthy mediator to the use of technology is evolving [4].

Maslach's [17] multidimensional theory of burnout uses emotional exhaustion, depersonalization, and a reduction in personal accomplishment to analyze burnout. The theory posits that burnout is an individual stress experience entrenched in the context of social relationship. Exhaustion is the central quality of burnout, which presupposes the state of overload [17]. Emotional exhaustion in burnout can be manifested in the following ways: depression, constant tension, confusion, indecisions, prolonged feelings of inadequacy, low self-perception, hopelessness, or inability to focus on work, inability to take accountability for actions [18]. It is therefore, imperative to identify risk factors to digital burnout and implement strategies to decrease digital burnout and increase digital resilience.

3. Methods

Design:

A descriptive, cross-sectional study design was conducted.

3.1. Ethical Consideration

The study received an exempt status by our university's Institutional Review Board.

3.2. Sample/Setting

A convenience sample of faculty and students from one Midwest university were recruited to participate in the survey. The survey was distributed to Health and Human Services, Education, Arts, and Game Above Engineering programs at the university with the help of administrative assistants identified from each program. The survey was also sent randomly to 1,800 students enrolled at the university and 200 faculty members.

3.3. Instruments

Digital Competencies

Digital competencies of faculty and students were measured using the [16] 8-item digital confidence scale in the use of technology before and during COVID-19. The scale asked the faculty and students to rate their level of confidence in using digital tool, communication tool, and social networking for study purposes. It also asked about how confident they were in digital sharing, using information management system, and searching and downloading information from online resources.

Digital Burnout

The 24-item Digital Burnout Scale (DBS) by Erten and Özdemir was also used to assess digital burnout [10]. The DBS measures three subscales – digital aging, digital

deprivation, and emotional exhaustion. The total score ranges from 24 to 120, with higher scores indicating higher levels of digital burnout [10]. The reliability of this instrument in this study was found to be 0.93, considered to be excellent.

Digital Resilience

The Digital Resilience Scale [16] which was adapted from BRS by Smith [9], was used to evaluate digital resilience among faculty and students in this study.

3.4. Data Collection

Data was collected using Research Electronic Data Capture (REDCap) hosted at our university. REDCap is a secure, web-based software platform developed by Vanderbilt University [19]. The survey was administered from 12/28/2021 to 5/24/2022. IRB was submitted and was granted exempt status.

3.5. Data Analysis

SPSS version 26 was the statistical software used in data analysis. Descriptive statistics – mean, raw scores and percentages, standard deviations - were used to analyze demographic data and scores in burnout scales. T-tests were

used to compare differences between faculty and students for continuous variables. Chi square was used to test differences with categorical variables. Wilcoxon signed-rank test was used to compare digital competence before and during COVID-19.

4. Results

Demographics

The survey was sent to about 2000 faculty and student from various programs at our university, with a response rate of 10%. One hundred ninety-six responded to the survey, and after cleaning the data, 194 were included in the analysis. Missing variables were assigned a 999. Cohort consisted of 80% students (n=155), 75% were from the College of Health and Human Services. The overall mean age was 33.8 (SD= 14.7, age ranges from 17 to 79) years old, 76% females, 82% whites. There is a significant difference in the age between faculty and students ($t(191) = 11.5, p < 0.001$, with students having younger age ($M=29.1, SD = 11.2$) compared to faculty ($M=52.4, SD= 11.7$). See Table 1 for the demographic characteristics.

Table 1. Demographic Characteristics.

Categories	Overall	Faculty	Students
Age (Mean)	33.8 (SD = 14.7) (n=193)	52.4 (SD= 11.7) (n=39)	29.1 (SD=11.2) (n=152)
Gender	% (n)	% (n)	% (n)
Male	23% (44)	36% (14)	20% (30)
Female	76% (148)	64% (25)	79% (123)
Prefer not to answer	1% (2)	0	1% (2)
Race/Ethnicity	% (n)	% (n)	% (n)
Asian	7% (14)	5% (2)	8% (12)
American Indian	0.5% (1)	3% (1)	0
Black/African American	9% (18)	3% (1)	11% (17)
Hawaiian/Pacific Islander	0.5% (1)	0	1% (1)
White	83% (160)	90% (35)	80% (125)
Hispanic	4% (7)	3% (1)	4% (6)
Marital Status	% (n)	% (n)	% (n)
Single	30% (59)	10% (4)	35% (55)
In a relationship	27% (53)	13% (5)	31% (48)
Married	40% (78)	72% (28)	32% (50)
Separated	1% (1)	0	1% (1)
Divorced	2% (3)	5% (2)	1% (1)
Department/Program	% (n)	% (n)	% (n)
College of Arts & Sciences	7% (14)	18% (7)	5% (7)
College of Business	3% (6)	5% (2)	3% (4)
College of Education	7% (14)	8% (3)	7% (11)
College of Health & Human Services	75% (145)	56% (22)	79% (123)
GameAbove College of Engineering & Technology	1.5% (3)	5% (2)	0.5% (1)
Honors College	1% (2)	0	1% (3)
Others	4% (8)	5% (2)	4% (6)
Missing data	1% (2)	3% (1)	0.5% (1)
Program Enrolled (students only)	% (n)		% (n)
Undergraduate	72% (111)		71% (111)
Graduate	25% (39)		25% (39)
Doctoral	2% (4)		3 (4)
Missing	1% (1)		1% (1)

4.1. Digital Usage

Table 2 presents the various digital devices used among

faculty and students before and during the pandemic. It also compares the digital usage for school and personal. Table 3 reports the average time spent for school and personal use with digital devices before the pandemic.

Table 2. Comparison of Digital Device Usage Before and During Pandemic.

Criterion	Item	Overall % (n)	Faculty % (n)		Students % (n)	
			Before pandemic	During pandemic	Before pandemic	During pandemic
Digital device used for personal purpose before COVID-19	Phone	95% (189)	100% (39)	100% (39)	97% (150)	96% (149)
	Tablet	31% (60)	64% (25)	59% (23)	23% (35)	27% (41)
	Laptop	89% (173)	95% (37)	100% (39)	88% (136)	88% (137)
	Personal desktop	25% (49)	54% (21)	54% (21)	18% (28)	21% (32)
	Others	5% (10)	15% (6)	15% (21)	3% (4)	3% (4)
Digital device used for study purpose before pandemic	Phone	56% (109)	51% (19)	51% (21)	57% (89)	72% (111)
	Tablet	17% (33)	23% (9)	28% (11)	16% (24)	25% (38)
	Laptop	93% (181)	89 (35)	95% (37)	94% (146)	97% (150)
	Personal desktop	25% (49)	56 (22)	46% (18)	17% (27)	23% (35%)
	Others	2% (3)	3% (1)	3 (1)	1% (2)	0.6% (1)

Table 3. Average time spent with digital devices before the pandemic.

Criterion	Item	Personal Use % (n)	Study Use % (n)
Average time spent with your devices before COVID-19	Less than 1 hour	2% (4)	4% (7)
	1-2 hours	26% (51)	15% (29)
	3-4 hours	35% (68)	35% (68)
	hours	17% (32)	18% (34)
	>6 hours	12% (24)	22% (43)
	Not sure/Missing	8% (15)	7% (13)

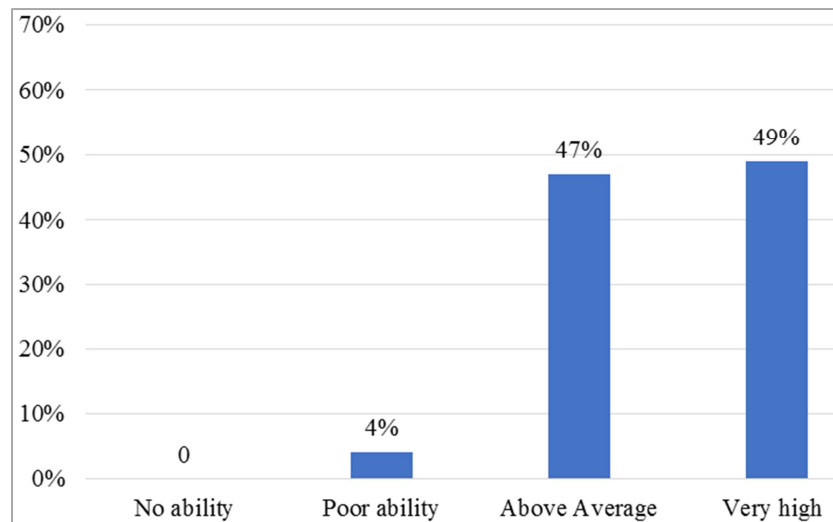
**Figure 1.** Ability to use digital devices.

Figure 1 depicts the ability to use digital devices among the cohort. This shows that respondents have above average to very high ability to use digital devices. Using Chi-square statistics to compare ability to use digital devices noted that 20% of faculty and 77% students reported having above average to very high ability. The test indicated no statistical difference in the ability to use

digital devices between faculty and students [$X^2 (2, 193) = 2.1, p = .35$].

4.2. Digital Competence

Table 4 presents a comparison of the confidence level among students and faculty before and during COVID-19.

Table 4. Comparison on Confidence Level.

Criteria (5)	Extremely Confident	Confident	Limited Confidence	No confidence	Neutral	p value
Using digital tools for assignment						
Pre-COVID-19	39%	45%	11%	1%	3%	p<0.001
During COVID-19	50%	41%	8%	0	1%	
Using communication tools for study purposes						
Pre-COVID-19	38%	42%	15%	3%	3%	p<0.001
During COVID-19	45%	45%	6%	1%	3%	
Using social networking sites, such as You Tube, TikTok, FB, Tweeter, for learning						
Pre-COVID-19	31%	40%	19%	3%	7%	

Criteria (5)	Extremely Confident	Confident	Limited Confidence	No confidence	Neutral	p value
During COVID-19	36%	42%	13%	4%	6%	p = 0.04
Using digital sharing information						
Pre-COVID-19	33%	42%	19%	2%	6%	
During COVID-19	41%	44%	8%	2%	5%	p<0.001
Using university information management system						
Pre-COVID-19	26%	38%	25%	5%	6%	
During COVID-19	32%	42%	19%	3%	4%	p<0.001
Downloading and saving information, references, and resources						
Pre-COVID-19	45%	41%	11%	1%	2%	
During COVID-19	50%	39%	10%	0	1%	p<0.001
Searching for information using any online databases						
Pre-COVID-19	37%	39%	18%	3%	3%	
During COVID-19	41%	45%	12%	1%	1%	p<0.001
Searching for information using any online search engines						
Pre-COVID-19	49%	41%	8%	1%	1%	
During COVID-19	50%	44%	5%	0	1%	p<0.001

4.3. Digital Burnout

The overall total digital burnout score was 64.7 (SD=19.2, range 24-104). The mean scores in digital aging, digital deprivation, and emotional exhaustion were 33.8 (SD=10.7), 16.1 (SD=5.7), and 15.0 (SD=5.6), respectively. Using

independent t-test to compare the digital burnout scores between faculty and students, there were significant differences in the total digital burnout score between faculty and students ($t(192)=-4.0$, $p < 0.001$) and the three subscales between faculty and students noted. Table 5 presents the scores.

Table 5. Digital Burnout Scores Between Faculty and Students.

Category	Overall Score (Mean)	Faculty (n=39)	Students (n=155)	p value*
Total DBS (24-120)	64.7 (SD=19.2)	54.3 (SD =16.7)	67.4 (SD =14.0)	<0.001
Digital Aging (12-60)	33.8 (SD= 10.7)	28.0 (SD = 9.6)	35.2 (SD = 10.4)	<0.001
Digital Deprivation (6-30)	16.1 (SD=5.7)	14.0 (SD = 5.6)	16.7 (SD = 5.7)	<0.008
Emotional Exhaustion (6-30)	15.0 (SD= 5.6)	12.2 (SD = 4.6)	15.7 (SD = 5.6)	<0.001

*p value between faculty and students

4.4. Digital Resilience

Table 6 describes the digital resilience of the cohort. More than half of the participants believe their previous knowledge of digital helpful was helpful during COVID-19 pandemic.

Table 6. Digital Resilience.

Items (%)	Always	Often	Sometimes	Rarely	Never
How stressful is it for you to adapt to digital technology?					
I tend to take a long time to get over setbacks in digital technology/learning.	2% (4)	6% (11)	28% (55)	47% (91)	17% (33)
It is hard for me to continue when I have a bad experience with digital technology/learning.	3% (5)	9% (18)	24% (47)	44% (85)	20% (39)
It does not take me long to recover from a stressful digital technology/learning event.	16% (31)	41% (79)	26% (51)	14% (26)	3% (6)
I have a hard time making it through stressful digital technology/learning events.	6% (12)	16% (30)	27% (52)	36% (70)	15% (29)
I tend to bounce back quickly after hard times in digital technology/learning. (reverse code)	17% (32)	41% (79)	29% (57)	11% (22)	2% (4)
I usually come through difficult times with digital technology/learning with little trouble. (reverse code)	15% (29)	38% (73)	32% (62)	13% (25)	3% (5)

	Very helpful	Somewhat helpful	Neutral	Somewhat unhelpful	Very unhelpful
Helpfulness of prior digital technology knowledge during COVID-19 pandemic.	54% (105)	28% (55)	13% (25)	4% (7)	1% (2)
Helpfulness of workshops held by your university to improve your digital skills.	12% (23)	18% (34)	56% (108)	9% (18)	5% (10)

	Self help	Peers	Others
If your university did not provide or you did not attend a digital learning workshop, where did you seek help to adjust to the use of digital tools for your studies?	59% (111)	34% (64)	6% (12)

5. Discussion

This study aimed to examine the digital experience between

faculty and students from one Midwest university. Digital experience was operationally defined in this study as usage of digital devices, digital competencies, digital burnout, and digital resilience. The study showed that phones and laptop were the

top two devices used by faculty and students for personal and study use before and during the pandemic. This is not surprising as the functionality of cell phones has evolved dramatically over the past decades. Smartphones are also more accessible and cheaper. Similarly, laptops are more convenient as well as becoming more affordable. Technology has also been integrated into most schools. Additionally, the majority of students either bring their own laptops or use computers in the classroom.

5.1. Digital Usage and Competence

The shift towards digitalized society necessitates knowledge, attitudes, and skills in digital competence [11]. Digital competence is a person's capacity to use digital technology in personal, work, school or other-related activities. The present study showed that before the pandemic, majority of faculty and students use their phone followed by laptop for personal use. On the other hand, for study purposes, most faculty utilized laptop whereas students used both their laptop and phone. The average time spent with devices was 3-4 hours by both faculty and students. These findings were expected as the use of technology has been increasing before the pandemic mainly for personal use. Similarly, the use of laptop by faculty is high since most academic institutions provide laptops or computers to faculty members. In addition, it is easier to prepare school contents using a laptop rather than their smartphone.

In addition, 96% of faculty and students showed they have above average to high average ability to use digital device.

5.2. Digital Burnout

The study showed that students and faculty have above average digital burnout. This result is similar with other studies and not surprising as people had increased digital use in personal, professional, and educational settings. The mean age difference between faculty and students (52.4 and 29.1). Total digital burnout was higher in students 67.4 than in faculty who had a total digital burnout of 54.3. This could possibly be attributed to older people spending less cumulative time utilizing digital technology [20].

5.3. Digital Resilience

Study participants reported rarely becoming stressed adapting to digital technology. This is seen in participants disclosing that they rarely or never struggle to recover from digital setbacks, bad experiences, or stressful technology or learning events. Majority of respondents identified being flexible in recovering, bouncing back, and with little trouble adapting to stressful digital technology and learning events.

6. Limitations

This study acknowledges several limitations. The study was performed in a single Midwest university. Researchers received only a 10% response rate to distributed surveys. Respondents were disproportionately female (76%) and Caucasian (83%). Study would benefit from a more diverse inclusive sampling.

7. Implications to Higher Education

Today's students and faculty are exhibiting signs of increased burnout and increased emotional exhaustion. Technology and digital engagement are an increasing part of everyday life. Higher education institutions need to be more supportive in student and faculty well-being. This includes offering expanded mental health services and educational programs on increased digital use and burnout should be developed and explored. Mitigation strategies such as limiting device use, setting limits on personal digital use, looking for alternatives for digital use, and spending time outdoors to increase physical well-being.

8. Conclusion

The present study showed that faculty and students at a Midwestern University have above-average digital burnout levels; however, they were able to adapt to the use of technology. Most participants (96.4%) report above average digital device ability. Digital Burnout is caused by prolonged digital device use. A Mean Digital Burnout Scale score of 67.2 for study participants indicates high digital burnout. Almost 2/3 of participants average more than 6 hours of digital device use.

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