Digital Learning and Student Success

A Research Report from the 2023 Student Life Survey

Center for the Study of Student Life

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THE OHIO STATE UNIVERSITY

OFFICE OF STUDENT LIFE

EXECUTIVE SUMMARY

This report examines Ohio State students' access to technology and preferred learning environments. Data for this report are from the 2023 Student Life Survey. In January 2023, 8,500 students on the Columbus campus were surveyed, out of which 1,282 responded, resulting in a response rate of 15.1%. A sample of 4,250 undergraduate students were surveyed; 13.7% responded (*n* = 582). A sample of 4,250 graduate and professional students were surveyed; 16.5% responded (*n* = 700). Data were weighted to be representative of the Ohio State Columbus campus population.

KEY FINDINGS

- Although most students reported having access to education-supporting technologies, on average, **1.9%** of students indicated that they did not have access to a reliable internet connection, **0.5%** of students indicated lack of access to a device allowing them to complete typed assignments, and **0.7%** of students indicated that they did not have access to a device with a working webcam and microphone.
- On average, a majority of students reported having access to a computer/laptop **(96.2%)** or to a smartphone **(91.4%)**.
- A significantly lower percentage of graduate students **(43.8%)** reported having access to an iPad or other tablet relative to undergraduate students **(84.6%)** and professional students **(76.6%)**.
- A significantly higher percentage of undergraduate students **(70.1%)** reported preferring face-to-face learning environments instead of online environments for collaborations or projects with peers relative to graduate **(55.2%)** or professional students **(58.8%)**.
- A significantly lower percentage of undergraduate students reported preferring an online environment for attending lectures **(11.5%)** relative to graduate **(23.1%)** or professional students **(20.4%)**.
- Overall, a majority of students **(95.0%)** indicated that the course from which they were learning the most offered opportunities for formal interactions and communication with their instructor.

INTRODUCTION

The current generation of college students are often referred to as "digital natives" (Prensky, 2001) or "the Net Generation" (Tapscott, 1997) because they grew up in an age where technology use has been increasingly prevalent. Students view technology as an important component of their college experience and use a variety of electronic devices in their curricular, co-curricular and personal endeavors. Approximately 97% of college students own a smartphone, 95% own a laptop and 57% own a tablet (Brooks & Pomerantz, 2017). Technology can serve as an especially beneficial resource for historically underserved or underrepresented populations, boosting levels of engagement, academic enrichment and efficacy for students who may feel less inclined to participate in traditional classroom settings (Brooks & Pomerantz, 2017). However, higher education is still learning about challenges and benefits associated with college students' use of digital technologies.

The purpose of this report is to examine students' access to technology, their preferred learning environments for different educational activities and course design elements present in the course from which they feel they are learning the most.

METHODOLOGY

The Student Life Survey is administered annually by the Center for the Study of Student Life to examine trends in student engagement, sense of belonging and satisfaction with the college experience. The 2023 Student Life Survey was administered to a stratified, random sample of 8,500 Ohio State students at the beginning of spring semester (January 2023). This sample comprised 4,250 undergraduate students, and 4,250 graduate and professional students, all on the Columbus campus. A total of 1,282 students responded to the survey, resulting in a response rate of 15.1%. See the Appendix for a summary of respondents' demographic and academic characteristics.

Data were broken down by students' educational level (undergraduate, graduate, and professional). Data from 582 undergraduate students, 577 graduate students, and 123 professional students are included in this report. To investigate whether differences between the different groups of students were significant, chi-square tests of independence were conducted. Percentages provided in the following tables are weighted. Demographics of the students included in the report did not substantially vary from the overall Student Life Survey sample.

WEIGHTING PROCEDURE

Responses were weighted to address differences between the demographic characteristics of the survey respondents compared to the general student population at Ohio State in the spring semester of 2023. Weights were adjusted so the survey data are representative of the student population at Ohio State. For example, 60.9% of the survey respondents in the Student Life Survey were female, but 52.6% of the total population at Ohio State was female. The rake weight procedure adjusts for the over-representation of female students in the data to make responses more reflective of the student population, thus making the data more generalizable to Ohio State students. The procedure adjusted the base weight to the demographic data available on the sampling frame using sex, race/ethnicity and student status (i.e., undergraduate, graduate student or professional student). Weighted and unweighted demographic data for survey respondents is available in the Appendix.

$*p < .05, **p < .01, ***p < .001$

FINDINGS

TECHNOLOGY ACCESS

The following tables compare students' responses to items assessing their access to different forms of technology. Table 1 shows that a majority of students have access to a reliable internet connection, a device that allows them to complete typed assignments, and technology to participate in online meetings. However, a small percentage of students indicated that they did not have access to some digital resources. Overall, 1.9% of students indicated that they did not have access to a reliable internet connection, 0.5% of students indicated that they did not have access to a device that allows them to type documents and use CarmenCanvas, and 0.7% of students indicated that they did not have access to a device with a working webcam and microphone.

Table 1. Percentage of students who responded 'yes' to the following questions:

Do you have access to…	Undergraduate Students	Graduate Students	Professional Students	Statistical Significance
…a reliable internet connection that allows you to stream videos and attend classes online?	96.6%	98.1%	97.8%	
…a computer, tablet or other device that allows you to type documents and use CarmenCanvas – the learning management tool at Ohio State?	98.7%	99.4%	97.5%	
…a device with a working webcam and microphone that allows you to participate in online meetings?	98.8%	98.4%	99.2%	

Note. Because different numbers of respondents answered each item, *n*s are presented in ranges. Undergraduate student *n* = 514; graduate student *n* = 533-534; professional student *n* = 115.

As seen in Table 2, most students indicated having access to a computer or laptop, and a majority of students indicated having access to a smartphone. A significantly lower percentage of graduate students (43.8%) reported having access to an iPad or other tablet relative to undergraduate students (84.6%) and professional students (76.6%).

Table 2. Percentage of students reporting access to the following devices:

	Undergraduate Students (*n* = 514)	Graduate Students (*n* = 532)	Professional Students (*n* = 115)	Statistical Significance
Computer or laptop	95.8%	97.8%	96.3%	
iPad or tablet	84.6%	43.8%	76.6%	***
Chromebook	1.5%	4.2%	0.0%	*
Smartphone	91.8%	89.5%	90.8%	

Note. Respondents could select more than one option.

*p < .05, **p < .01, ***p < .001

PREFERRED LEARNING ENVIRONMENTS

Table 3 compares students' preferred learning environments for different types of educational activities. Responses of "Completely face-to-face" and "Mostly face-to-face with some online components" were collapsed and are reported as "Face-to-face Preference" in the table below. Responses of "Completely online" and "Mostly online with some face-to-face components" were collapsed and are reported as "Online Preference."

For collaborations or projects with peers, a significantly higher percentage of undergraduate students (70.1%) reported preferring a face-to-face learning environment relative to graduate students (55.2%) or professional students (58.8%). A significantly lower percentage of undergraduate students reported preferring an online environment for attending lectures (11.5%) or asking questions (13.1%) relative to graduate (23.1%, 20.1%) or professional students (20.4%, 19.1%). A significantly higher percentage of graduate students (14.6%) indicated preferring an online environment for labs or demonstrations relative to undergraduate (7.1%) or professional students (7.8%).

Table 3. Percentage of students indicating preferred learning environments for educational activities:

	Undergraduate Students	Graduate Students	Professional Students	Statistical Significance
Homework or assignment submissions				
Face-to-face Preference	15.6%	13.9%	10.4%	
Equal Preference	15.0%	16.8%	18.3%	
Online Preference	69.4%	69.2%	71.3%	
Total	100.0%	100.0%	100.0%	
Collaborations or projects with peers				***
Face-to-face Preference	70.1%	55.2%	58.8%	
Equal Preference	19.8%	23.5%	27.0%	
Online Preference	10.1%	21.3%	14.2%	
Total	100.0%	100.0%	100.0%	
Peer reviewing or peer grading activities				
Face-to-face Preference	36.7%	34.1%	36.9%	
Equal Preference	19.6%	23.3%	20.2%	
Online Preference	43.8%	42.5%	42.9%	
Total	100.0%	100.0%	100.0%	
Family/student conferences				
Face-to-face Preference	61.6%	57.5%	57.4%	
Equal Preference	23.8%	22.4%	24.6%	
Online Preference	14.6%	20.1%	18.0%	
Total	100.0%	100.0%	100.0%	

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	Undergraduate Students	Graduate Students	Professional Students	Statistical Significance
Student presentations				
Face-to-face Preference	61.4%	55.6%	58.9%	
Equal Preference	18.4%	20.7%	19.8%	
Online Preference	20.2%	23.6%	21.3%	
Total	100.0%	100.0%	100.0%	
Course-related discussions				
Face-to-face Preference	54.1%	54.4%	62.4%	
Equal Preference	22.4%	22.3%	15.9%	
Online Preference	23.5%	23.3%	21.7%	
Total	100.0%	100.0%	100.0%	
Lectures				***
Face-to-face Preference	68.6%	60.1%	58.7%	
Equal Preference	19.8%	16.7%	20.9%	
Online Preference	11.5%	23.1%	20.4%	
Total	100.0%	100.0%	100.0%	
Labs or demonstrations				**
Face-to-face Preference	84.7%	77.4%	84.2%	
Equal Preference	8.2%	8.0%	8.0%	
Online Preference	7.1%	14.6%	7.8%	
Total	100.0%	100.0%	100.0%	
Exams, quizzes, or tests				
Face-to-face Preference	32.5%	36.3%	40.5%	
Equal Preference	21.9%	20.6%	25.3%	
Online Preference	45.6%	43.1%	34.2%	
Total	100.0%	100.0%	100.0%	
Asking questions				*
Face-to-face Preference	57.4%	51.2%	54.6%	
Equal Preference	29.5%	28.7%	26.2%	
Online Preference	13.1%	20.1%	19.1%	
Total	100.0%	100.0%	100.0%	

Note. Because different numbers of respondents answered each item, *n*s are presented in ranges. Undergraduate student *n* = 506-508; graduate student *n* = 522-526; professional student *n* = 113-114.

COURSE DESIGN

Students were also asked to think about the course they were currently taking from which they felt they were learning the most. Table 4 compares students' responses to different course design elements present in that specific course. Overall, a majority of students indicated that the course from which they were learning the most offered opportunities for formal interactions and communication with their instructor. A significantly higher percentage of professional students (98.5%) agreed that the course encouraged a variety of interactions with course content relative to undergraduate (91.7%) and professional students (92.8%).

*$p < .05$, **$p < .01$, ***$p < .001$

Table 4. Percentage of students who 'strongly agree' or 'agree' with the following statements about a current course they are taking:

	Undergraduate Students	Graduate Students	Professional Students	Statistical Significance
The course offers opportunities for me to interact and communicate with other students.	93.4%	93.7%	94.6%	
The course offers opportunities for formal interactions and communication with my instructor (e.g., course- or subject-related matters).	94.6%	95.2%	99.2%	
The course offers opportunities for informal interactions and communication with my instructor.	88.2%	90.4%	94.0%	
The course offers opportunities for my classmates to learn something from me or for me to learn something from them.	87.3%	91.7%	88.1%	
The course is well organized with a clear sequence of assignments.	95.5%	93.0%	92.1%	
The course encourages a variety of interactions with course content (e.g., reading, discussions, interactive lessons).	91.7%	92.8%	98.5%	*
The course addresses/accommodates accessibility issues (e.g., sight, hearing usability).	87.8%	89.8%	94.3%	
The content and activities in this course are offered in formats that fit my needs as a learner.	93.1%	93.3%	92.1%	

Note. Because different numbers of respondents answered each item, ns are presented in ranges. Undergraduate n = 503-506; graduate student n = 506-510; professional student n = 112-114.

CONCLUSION

This report explored students' access to technology and learning environment preferences. The findings suggest that most students at The Ohio State University have access to education-supporting technologies, but some students indicated that they did not have sufficient access. Specifically, 1.9% of students indicated lack of access to a reliable internet connection, 0.5% of students indicated lack of access to a device that would allow them to type assignments and access CarmenCanvas, and 0.7% of students indicated lack of access to a device with a working webcam and microphone. Most students reported having access to a computer/laptop (96.2%) or to a smartphone (91.4%). When asked about learning environment preferences, undergraduate students tended to prefer face-to-face learning environments instead of online environments for projects with peers, lectures and asking questions relative to graduate and professional students. When asked to reflect on the course from which they were learning the

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*$p < .05$, **$p < .01$, ***$p < .001$

most, a majority of students (95.0%) indicated that the course offered opportunities for formal interactions and communication with their instructor.

REFERENCES

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$*p < .05, **p < .01, ***p < .001$

APPENDIX A: PARTICIPANT DEMOGRAPHICS

Note: Participant demographics below represent all respondents in the 2023 Student Life Survey.

	Undergraduate Students			Graduate Students			Professional Students		
	n	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent
Total	**582**			**577**			**123**		
Academic Level	**582**			—			—		
First-year undergraduate	172	29.6%	29.5%	—	—	—	—	—	—
Second-year undergraduate	124	21.3%	21.5%	—	—	—	—	—	—
Third-year undergraduate	157	27.0%	26.8%	—	—	—	—	—	—
Fourth-year undergraduate	100	17.2%	17.5%	—	—	—	—	—	—
Fifth-year or beyond undergraduate	29	5.0%	4.7%	—	—	—	—	—	—
Gender Identity	**582**			**577**			**123**		
Man	205	35.2%	43.3%	206	35.7%	42.3%	36	29.3%	37.8%
Non-binary	5	0.9%	0.8%	7	1.2%	1.3%	1	0.8%	1.1%
Woman	339	58.3%	50.2%	330	57.2%	50.1%	78	63.4%	54.4%
Another identity not listed	9	1.6%	1.6%	6	1.0%	1.0%	2	1.6%	1.4%
Multiple identities selected	10	1.7%	1.5%	14	2.4%	2.7%	3	2.4%	2.5%
Prefer not to answer	14	2.4%	2.5%	14	2.4%	2.6%	3	2.4%	2.7%
Transgender Identity	**577**			**570**			**123**		
Transgender	13	2.3%	1.8%	17	3.0%	2.8%	1	0.8%	1.1%
Cisgender	549	95.2%	95.5%	537	94.2%	94.2%	115	93.5%	93.3%
Prefer not to answer	15	2.6%	2.6%	16	2.8%	3.0%	7	5.7%	5.6%

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	Undergraduate Students			Graduate Students			Professional Students		
	n	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent
Race/Ethnicity	**581**			**576**			**123**		
Black and/or African American	25	4.3%	6.4%	38	6.6%	9.4%	4	3.3%	5.0%
Asian/Asian American, Pacific Islander, Desi American, and/or Native Hawai'ian	90	15.5%	13.0%	156	27.1%	21.7%	22	17.9%	15.9%
Latine and/or Hispanic	17	2.9%	3.0%	27	4.7%	4.1%	4	3.3%	3.4%
Middle Eastern and/or North African (MENA)	9	1.6%	1.6%	15	2.6%	2.4%	4	3.3%	4.1%
White and/or European American	371	63.9%	63.9%	278	48.3%	51.5%	71	57.7%	58.0%
Multiracial and/or Biracial	53	9.1%	9.1%	37	6.4%	6.1%	11	8.9%	7.2%
Another identity not listed	3	0.5%	0.5%	1	0.2%	0.2%	0	0.0%	0.0%
Prefer not to answer	13	2.2%	2.5%	24	4.2%	4.6%	7	5.7%	6.5%
Sexual Orientation	**580**			**572**			**123**		
LGBQ+	131	22.6%	21.1%	145	25.4%	25.0%	24	19.5%	19.8%
Heterosexual/straight	426	73.5%	75.0%	397	69.4%	69.4%	94	76.4%	75.9%
Prefer not to answer	23	4.0%	3.9%	30	5.2%	5.6%	5	4.1%	4.3%
Generational Status	**582**			**577**			**123**		
First-generation student	120	20.6%	20.8%	114	19.8%	19.6%	12	9.8%	10.1%
Continuing-generation student	462	79.4%	79.2%	463	80.2%	80.4%	111	90.2%	89.9%
Disability	**578**			**572**			**123**		
Has a disability	66	11.4%	11.3%	56	9.8%	10.7%	16	13.0%	13.0%
Does not have a disability	488	84.4%	84.2%	497	86.9%	85.8%	104	84.6%	84.3%
Prefer not to answer	24	4.2%	4.5%	19	3.3%	3.5%	3	2.4%	2.7%

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	Undergraduate Students			Graduate Students			Professional Students		
	n	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent	*n*	Un-weighted Percent	Weighted Percent
Education Route	**581**			—			—		
Campus change	40	6.9%	7.2%	—	—	—	—	—	—
Transfer student	95	16.4%	15.9%	—	—	—	—	—	—
Continuing Ohio State student	446	76.8%	76.9%	—	—	—	—	—	—
Residence	**582**			**576**			**123**		
On-campus	254	43.6%	43.7%	32	5.6%	5.1%	2	1.6%	1.8%
Off-campus	322	55.3%	55.1%	543	94.3%	94.7%	121	98.4%	98.2%
Sorority or fraternity housing	6	1.0%	1.2%	1	0.2%	0.2%	0	0.0%	0.0%