The New Digital Divide: How EdTech Self-Efficacy is Shaping the Online Student Learning Experience in Higher Ed

College Innovation Network
EdTech Student Survey

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Executive Summary

The 2020–21 academic year was a grand experiment in remote learning for both institutions of higher education and for the students enrolled. Understanding students’ experiences with online learning and use of EdTech is vital for both educators and administrators to ensure successful student experiences moving forward.

Whereas much of the survey research on the digital divide that has emerged during the pandemic has focused on differential access, the College Innovation Network (CIN) EdTech Student Survey was designed to also look at students’ usage experiences with EdTech and online learning. Together, by focusing on both access and usage, we propose a more comprehensive understanding of the factors that contribute to digital divide, and offer insights for creating meaningful tech-enabled learning experiences for students.

Of particular focus, the 2021 CIN EdTech Student Survey focused on how EdTech self-efficacy — a student’s confidence in their ability to learn and adapt to EdTech in the (virtual) classroom — and other subjective student experiences, have shaped the online learning experience. CIN surveyed 684 students across four higher education institutions to uncover (1) how EdTech self-efficacy impacted students’ learning experiences over the 2020-21 academic year, and (2) how students’ personal characteristics and characteristics of their college/university impacted their learning experiences with EdTech over the 2020-21 academic year.

The results of the inaugural CIN EdTech Student Survey reveal several key insights into the student online learning experience with EdTech across the previous academic year.

1. **Students’ EdTech self-efficacy is a robust predictor of students’ learning experience, and is associated with a more positive and impactful learning experience over the 2020-21 academic year.**

2. **Students at institutions with established online learning infrastructure reported significantly more positive and impactful learning experiences over the 2020-21 academic year.**

3. **Foundational EdTech hardware and software are driving the online learning transition in higher education; inequitable access to foundational EdTech can create tech dependencies for new products and exacerbate inequity.**

4. **The future is hybrid: Students are looking forward to returning to social activities on campus, but many still want online learning options next year.**

Drawing on these insights, the report concludes with actionable recommendations on how to improve the online student learning experience with EdTech moving forward.

Queries about this report can be addressed to cin@wgulabs.org
EdTech is Shaping a New Student Learning Experience

The 2020–21 academic year was a grand experiment in remote learning for both institutions of higher education and for the students enrolled. For many students, this academic year was the first in which they experienced education in a fully (or mostly) online format. Education technology, or EdTech, powered online learning and made it possible for students to engage and learn despite the drastic changes that occurred in higher education resulting from the pandemic.

Understanding students’ experiences with online learning and use of EdTech is vital for both educators and administrators to ensure successful student experiences moving forward. Whereas much of the survey research on the digital divide that has emerged during the pandemic has focused on differential access, the College Innovation Network (CIN) EdTech Student Survey was designed to dive deeper into students’ learning experience with EdTech and online learning.

Equal access to EdTech does not necessarily lead to an equal online learning experience. The CIN EdTech Student Survey was developed to assess more than just access. Rather, it identified how students are using EdTech and how EdTech has shaped their overall learning experience in an online environment.

CIN is in a unique position to evaluate students’ learning experience with EdTech. Our Network members comprise diverse types of educational institutions, including a primarily online university, public and private universities, and community colleges. These institutions also serve traditionally underrepresented and underserved students. These characteristics of CIN afford the opportunity to examine how students’ EdTech and online learning experiences compare across different educational settings that include many non-traditional students.

To achieve these aims, the CIN EdTech Student Survey was developed to answer the following driving questions:

- To what extent has EdTech self-efficacy impacted students’ learning experiences over the 2020–21 academic year?
- To what extent have students’ personal characteristics and characteristics of their college/university impacted their learning experiences with EdTech over the 2020–21 academic year?

The results of the inaugural CIN EdTech Student Survey reveal several key insights into the student online learning experience with EdTech across the previous academic year.

- Students’ EdTech self-efficacy is a robust predictor of students’ learning experience and is associated with a more positive and impactful learning experience over the 2020–21 academic year.
- Students at institutions with established online learning infrastructure reported significantly more positive and impactful learning experiences over the 2020–21 academic year.
- Foundational EdTech hardware and software are driving the online learning transition in higher education; inequitable access to foundational EdTech can create tech dependencies for new products and exacerbate inequity.
- The future is hybrid: Students are looking forward to returning to social activities on campus, but many still want online learning options next year.

This report showcases the results from students about their online learning and EdTech experiences, offering novel insights from higher education’s grand online learning experiment to benefit the broader higher education sector. The report concludes with actionable recommendations for how institutions can improve the online student learning experience with EdTech moving forward.
About the Data and Methods

In April 2021, the CIN research team emailed surveys to over 10,000 students at four colleges and universities that are part of CIN: California University of Pennsylvania, Loyola University New Orleans, Piedmont Community College, and Rio Salado College. The analytic sample comprised 684 students who completed at least one question on the survey. These students come from diverse backgrounds, attend diverse school types, and are at various stages of their higher education journey.

The CIN EdTech Student Survey contained 24 questions about students' experiences with EdTech and online learning over the 2020–21 academic year, and 11 demographic questions (see Appendix 1 for the survey items). Students who completed the survey were compensated $10 for their time.

![PERCENT OF TOTAL RESPONDENTS FROM EACH CIN INSTITUTION](image)

**Figure 1.**

**THE CIN STUDENT SAMPLE BY THE NUMBERS:**

- The average age of students in the sample: 26
- The average self-reported income percentile of students: 33
- The percent of students who are first-generation college students: 56
- The percent of students who identified as female: 76
- The percent of students who experienced the 2020–21 academic year mostly or fully online: 92

- 0.6% Pacific Islander
- 2.8% American Indian or Native American
- 4.1% Asian or Asian American
- 12.1% Black or African American
- 15.5% Hispanic or Latino/a
- 69.9% White or European American

*Note. Percentages add to more than 100% because students could select more than one race/ethnicity.*
EdTech Self-Efficacy Matters for the Online Student Experience

Educational technology, or EdTech, powered universal online learning across the 2020–21 academic year. EdTech, defined here (and to students in the survey) includes any hardware (e.g., computers, webcams, tablets, microphones, etc) and software (e.g., learning management systems, video conferencing software, computer applications and software, etc.) that students have used in the context of their courses and online learning at their institution. EdTech is the foundation of online learning, affording students and professors to connect, learn, and continue courses as close to “normal” as possible.

In the pandemic-era of higher education, the focus of most discussions around EdTech has centered on inequitable access to necessary EdTech tools such as computers and reliable wifi. But equity is more than just access — it’s also about how students are using EdTech.

The CIN EdTech Student Survey had as a central focus to assess a novel construct aimed at understanding variation of the online student learning experience: EdTech self-efficacy. EdTech self-efficacy is defined as a student’s confidence in their abilities to learn and adapt to EdTech in the classroom. The survey results show that more than 80% of students agreed that they were confident in their abilities to adapt to new EdTech, but nearly 20% of students reported struggling to learn how to use EdTech (see Figure 2).

**STUDENT’S AGREEMENT WITH STATEMENTS ABOUT EDTECH SELF-EFFICACY**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel confident in my ability to adapt to new technologies in my courses</td>
<td>30</td>
<td>5.8</td>
<td>8.5</td>
<td>35.8</td>
<td>47.0</td>
</tr>
<tr>
<td>I have struggled to learn how to use educational technologies in my online courses</td>
<td>36.9</td>
<td>31.2</td>
<td>12.0</td>
<td>16.2</td>
<td>37</td>
</tr>
<tr>
<td>Keeping up with having to learn how to use new educational technologies throughout the year has been hard</td>
<td>22.6</td>
<td>27.3</td>
<td>17.1</td>
<td>22.3</td>
<td>10.7</td>
</tr>
<tr>
<td>Most of the education technologies I’ve used over this school year have been new to me (I had not used them previously)</td>
<td>23.9</td>
<td>29.0</td>
<td>13.2</td>
<td>20.8</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Key: Strongly Disagree, Somewhat Disagree, Neutral, Somewhat Agree, Strongly Agree

Note: numbers in bars are percentage of respondents

Figure 2
The results of the survey further show the impact of EdTech self-efficacy on the student learning experience. Students’ reports of their EdTech self-efficacy was the most robust predictor of how they reported on a variety of aspects of their online learning experience this past year, including whether they felt they were learning effectively in an online environment, and how academically prepared they felt for next year. Table 1 shows correlations between measures of EdTech self-efficacy and a variety of learning experience outcomes for students.

<table>
<thead>
<tr>
<th>EdTech Self-Efficacy as a Robust Predictor or Students' Online Learning Experiences.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Students Who Report Greater Confidence in Their Ability to Adapt to New Technologies in Their Courses Are Also</strong>...</td>
</tr>
<tr>
<td>. . . less likely to report difficulty keeping up with learning how to use new education technologies in their courses. ( (r = -.34) )</td>
</tr>
<tr>
<td>. . . more likely to report that educational technologies enhanced their learning experience during the academic year. ( (r = .35) )</td>
</tr>
<tr>
<td>. . . more likely to report that they are learning the course material effectively in an online learning environment. ( (r = .35) )</td>
</tr>
<tr>
<td>. . . more likely to report feeling prepared for the next steps in their educational journey. ( (r = .34) )</td>
</tr>
<tr>
<td>. . . more likely to want online learning options for 2021–22. ( (r = .22) )</td>
</tr>
<tr>
<td>. . . more likely to report having access to educational technologies needed for their courses. ( (r = .28) )</td>
</tr>
<tr>
<td><strong>Students Who Report That They Struggled to Learn How to Use EdTech in Their Online Courses Are Also</strong>...</td>
</tr>
<tr>
<td>. . . more likely to report that most of the EdTech they used across the academic year were new to them. ( (r = .32) )</td>
</tr>
<tr>
<td>. . . less likely to report that EdTech enhanced their learning experience during the academic year. ( (r = -.18) )</td>
</tr>
<tr>
<td>. . . less likely to report that they are learning the course material effectively in an online learning environment. ( (r = -.27) )</td>
</tr>
<tr>
<td>. . . more likely to report that the use of EdTech in their classes felt invasive. ( (r = .29) )</td>
</tr>
<tr>
<td>. . . more likely to report that they feel less connected to their peers in an online learning environment. ( (r = .17) )</td>
</tr>
<tr>
<td>. . . more likely to report that they would consider not enrolling for 2021–22 if their courses were to be fully online. ( (r = .28) )</td>
</tr>
</tbody>
</table>

*Note. All correlations significant at p < .001*

These findings about EdTech self-efficacy suggest that understanding students’ experiences with EdTech, and their confidence in their abilities to fully utilize EdTech for learning, is vital as online learning options become increasingly normative across higher ed. It’s important to realize, however, that the introduction of new EdTech results in a dual learning experience for students and time needs to be dedicated to ensure that students are digitally set up for success.
EdTech and the Learning Experience Across Institution Types

The COVID pandemic ushered in a grand, though unintentional, experiment across the higher education sector. In March 2020, nearly all colleges and universities across the United States went remote, having to convert to fully online learning in an instant. Come Fall 2020, online learning was still the mode for the majority of the higher education sector and, by May 2021, more students than ever before had gone through a full year of learning online. The CIN EdTech Student Survey was particularly interested in understanding how students experienced online learning in a year defined by EdTech.

When students were asked the extent to which they felt EdTech played a positive role in their online learning experience during the 2020–21 academic year, the majority reported positive feelings about EdTech: 55.5% of students agreed that EdTech enhanced their learning experiences, 52% of students agreed they felt they were learning course content effectively in an online learning environment, and 52.6% of students agreed that they felt academically prepared for the next steps in their educational journey after a year of online learning (see Figure 3).

### HOW STUDENTS FEEL ABOUT THE IMPACT OF EDTECH ON THEIR LEARNING EXPERIENCE

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational technologies enhanced my learning experience during this school year</td>
<td>8.6</td>
<td>12.4</td>
<td>23.5</td>
<td>32.4</td>
<td>23.1</td>
</tr>
<tr>
<td>I feel that I am learning course content effectively in an online learning environment</td>
<td>18.6</td>
<td>19.3</td>
<td>10.1</td>
<td>28.5</td>
<td>23.5</td>
</tr>
<tr>
<td>After a year of online learning, I feel academically prepared for the next steps in my educational journey</td>
<td>11.9</td>
<td>19.0</td>
<td>16.4</td>
<td>27.3</td>
<td>25.3</td>
</tr>
</tbody>
</table>

Key: Strongly Disagree, Somewhat Disagree, Neutral, Somewhat Agree, Strongly Agree

Note: numbers in bars are percentage of respondents

Figure 3
The unique composition of CIN Member institutions afforded the opportunity to examine how students’ online learning experiences with EdTech differed at various types of higher education institutions. Not all of the CIN Member institutions had to transition to online learning given that one was already a primarily online institution. The analytic sample was therefore split between students who attended an online institution — 54% of the sample — and students who were at a traditional higher education institution that transitioned to online learning as a result of the COVID pandemic — 46% of the sample (see Figure 4).

When responses about the impact of EdTech on students’ learning experience were compared between students who were enrolled at a primarily online university versus students enrolled at an institution that transitioned to remote learning, there were significant differences in the average student experience. Across the items shown in Figure 5, students enrolled at the online institution were significantly more likely to agree that (1) EdTech enhanced their learning experience, (2) they were learning course content more effectively online, and (3) they felt prepared for the next steps in their academic journey.

The differences shown in Figure 5 between different institution types were the largest group differences found in the CIN EdTech Student Survey — larger than any differences across the numerous demographic categories measured in the survey. There is, of course, a selection bias in these data given that students at the primarily online institution chose to enroll at that institution, whereas students at institutions that were forced to transition to remote learning did not necessarily enroll with the expectation of completing online courses.

Overall, however, students who were enrolled at a primarily online institution with an established online learning infrastructure appear to have enjoyed a relatively more positive online learning experience across 2020–21 than students at traditional institutions who had to transition to online learning.

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**Figure 4**

**Percent of Students at Different Institution Types**

- **Online**: 46%
- **Transition to Remote**: 56%

**Figure 5**

**Differences in Learning Experiences for Students at Different Types of Higher Education Institutions**

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational technologies enhanced my learning experience during this school year</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>I feel that I am learning course content effectively in an online learning environment</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>After a year of online learning, I feel academically prepared for the next steps in my educational journey</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

*Key:* Students at College/University that Transitioned to Online *Students at Primarily Online University*

*Differences significant at p < .001.*
The EdTech Driving the Online Transition and Issues of Access

EdTech is an industry that has been enjoying increasing investment for several years prior to the COVID pandemic. When higher education made the transition to nearly universal online learning, EdTech was what allowed higher education to remain operational online for more than a year.

The EdTech marketplace, however, is extensive, with a variety of devices, software, and applications available to solve creative problems in the online learning space. Despite the availability of niche products designed to solve specific problems of online learning, student reports in this survey reveal that a small handful of EdTech product types are used most often by students.

The CIN EdTech Student Survey asked students to list up to 10 EdTech products (hardware or software) that they used in their online learning during the 2020–21 academic year. The result was 4,315 unique entries that were compressed into 49 distinct product categories. Just 17 (34%) product categories made up 90% of total mentions by students (see Table 2).

### MOST FREQUENTLY MENTIONED EDTECH PRODUCT CATEGORIES USED FOR ONLINE LEARNING, MAKING UP 90% OF STUDENT MENTIONS.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Percent of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer/Tablet (e.g., desktop computer, laptop, iPad)</td>
<td>17.47%</td>
</tr>
<tr>
<td>Learning Management System (e.g., Canvas, D2L)</td>
<td>14.28%</td>
</tr>
<tr>
<td>Microsoft Office (e.g., Word, PowerPoint)</td>
<td>9.11%</td>
</tr>
<tr>
<td>Video Conferencing (e.g., Zoom, WebEx)</td>
<td>8.74%</td>
</tr>
<tr>
<td>Phone (e.g., iPhone, Samsung)</td>
<td>7.35%</td>
</tr>
<tr>
<td>Audio/Visual Hardware (e.g., camera, microphone)</td>
<td>6.72%</td>
</tr>
<tr>
<td>Google Suite (e.g., Docs, Sheets)</td>
<td>5.75%</td>
</tr>
<tr>
<td>e(text)Books (e.g., Pearson, McMillian)</td>
<td>4.98%</td>
</tr>
<tr>
<td>Messaging Apps (e.g., Teams, Slack, Email)</td>
<td>3.99%</td>
</tr>
<tr>
<td>Audio/Visual Editing Software (e.g., Adobe Suite, iMovie)</td>
<td>2.11%</td>
</tr>
<tr>
<td>Office Hardware - Other (e.g., Headphones, Printer)</td>
<td>2.04%</td>
</tr>
<tr>
<td>Study Aids - General (e.g., Flashcard apps)</td>
<td>1.53%</td>
</tr>
<tr>
<td>Social Media (e.g., YouTube, Facebook)</td>
<td>1.48%</td>
</tr>
<tr>
<td>Programming and Analysis Software (e.g., Python, R)</td>
<td>1.46%</td>
</tr>
<tr>
<td>Proctoring Software (e.g., Respondus Lockdown)</td>
<td>1.34%</td>
</tr>
<tr>
<td>Peer Engagement and Discussion Apps (e.g., Flipgrid, Kuracloud)</td>
<td>1.16%</td>
</tr>
</tbody>
</table>

*Table 2*
Figure 6 shows the distribution of EdTech product categories and, as can be seen, a minority of categories dominate. These high-use products are long-standing, foundational hardware and software tools that have been used in some form for decades in online learning. Computers, tablets, mobile phones, cameras and microphones are the primary hardware used by students. In the software space, Learning Management Systems dominate, in addition to Microsoft Office, video conferencing tools like Zoom, eBooks from major textbook publishers, and email. The space in which more niche and novel EdTech can be found are in the Study Aids and Peer Engagement and Discussion Apps categories.

This pattern could also result from newer, and smaller, EdTech companies being crowded out by major EdTech companies who are more easily able to dominate the marketplace within higher ed. Institutions and their students may benefit from implementing specialized EdTech on their campuses that more directly address their students’ needs.
In addition to understanding what kinds of EdTech were used most often by students, the survey also assessed basic questions around access and ownership of EdTech to evaluate the extent to which the well-known digital divide of access manifested in the CIN student sample. When evaluating all students in the sample, 91.6% of students reported having access to the EdTech needed for online learning, and 89.5% of students reported having ownership of EdTech needed for online learning (Figure 7).

### ACCESS AND OWNERSHIP OF EDTECH

| I have had access to wifi, hardware, and other technologies needed for online learning this past year. | 4.4 | 19.6 | 72.0 |
| I have ownership of wifi, hardware, and other technologies needed for online learning this past year. | 4.0 | 4.1 | 16.4 | 73.1 |

**Key:**
- Green: Strongly Disagree
- Light Green: Somewhat Disagree
- Light Blue: Neutral
- Blue: Somewhat Agree
- Dark Blue: Strongly Agree

**Note:** Numbers in bars are percentage of respondents.

**Figure 7**

Although the vast majority of students had access to and ownership of necessary EdTech, the digital divide of access remains: students of color were significantly less likely, on average, than white students to have access to and ownership of EdTech they needed for online learning (Figure 8). Importantly, students of color were significantly more likely to agree that there are some EdTech they could not use due to lacking access to other technology needed (e.g., wifi or computers) — what can be called tech dependencies. If digital equity is not achieved for foundational EdTech, implementing new EdTech could exacerbate inequities of access and usage.

It is important to note, however, that the high rate of access and ownership overall could be due, in part, to the selection bias of the students who responded to this survey. Students with regular and reliable access to technology may have been more likely to complete this online survey and, additionally, many students could have acquired EdTech across the prior year of online learning. This means that access results likely could have looked different in early 2020.

### RACIAL INEQUITY OF ACCESS AND OWNERSHIP OF EDTECH

- **Strongly Agree:**
  - There are some educational technologies I cannot use due to lacking other technologies that are necessary (e.g., wifi, webcams, latest/updated computers, tablets, etc)
  - I have ownership of wifi, hardware (e.g., computers, tablets, etc), and other technologies to succeed in my academics the past year

**Key:**
- Cyan: White / European American Students
- Darker Blue: Students of Color

**Differences significant at p < .02.**

**Figure 8**
Despite high access to EdTech among the CIN students, and the fact that foundational EdTech has been driving the online transition, substantial portions of students still reported difficulties or negative experiences with EdTech during the past year: 28% of students agreed that EdTech in their classes felt invasive, 39.7% of students experienced difficulties using or accessing EdTech they needed for class, and 20.3% of students could not use some EdTech due to lacking access of other EdTech they needed (see Figure 9).

Institutions play a significant role in assisting students not only with access to necessary EdTech, but also assistance in solving EdTech issues that can inhibit student learning. CIN member institutions are doing well to bridge access divides among students: 66.3% of students agree that their institution was helpful in providing them with access to EdTech for online learning and 56% of students agreed that their institution was helpful in resolving EdTech issues they experienced across the academic year (see Figure 9). Importantly, these student reports did not differ across major demographic categories, suggesting these institutions are providing equitable access to tech support for their students.

**STUDENT RESPONSES TO QUESTIONS OF EDTECH USE**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Across the 2020-21 academic year, I encountered difficulties in using or accessing necessary EdTech for online learning.</td>
<td>25.4</td>
<td>24.8</td>
<td>10.2</td>
<td>31.2</td>
<td>8.5</td>
</tr>
<tr>
<td>My college/university was helpful in resolving technology issues I experienced across the year.</td>
<td>4.5</td>
<td>10.5</td>
<td>28.8</td>
<td>30.9</td>
<td>25.1</td>
</tr>
<tr>
<td>My college/university was helpful in providing me access to technologies that I needed for online learning.</td>
<td>33.5</td>
<td>19.3</td>
<td>31.0</td>
<td>25.3</td>
<td></td>
</tr>
<tr>
<td>There are some educational technologies I cannot use due to lacking other technologies that are necessary.</td>
<td>23.8</td>
<td>21.9</td>
<td>26.2</td>
<td>20.6</td>
<td>7.5</td>
</tr>
<tr>
<td>My close social network is a useful resource for learning how to use new educational technologies.</td>
<td>6.8</td>
<td>11.0</td>
<td>37.2</td>
<td>31.0</td>
<td>16.0</td>
</tr>
<tr>
<td>The use of education technologies in my classes has felt invasive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: Strongly Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Strongly Agree

Note: numbers in bars are percentage of respondents.
The Future is Hybrid: Looking Forward to 2021–22

After more than a year of online learning, many institutions are looking forward to returning to campus and engaging with their students. It’s important, however, to ensure that the student voice is heard when administrators and faculty are making plans about incorporating EdTech and online learning options into the curriculum.

The survey asked students to report on what they wanted regarding online learning options for the 2021–22 academic year, and to share the extent to which the social experiences limited by campus COVID restrictions were important to their future college experiences.

After a year of online learning, a substantial proportion of students agreed that they would like online learning options for the next academic year — especially those at online institutions. Students at institutions that had to transition to online learning due to the pandemic were less inclined to want online learning options next academic year, but 34.3% of students did report a preference for online learning options moving forward. Additionally, a significant proportion of students at traditional institutions that transitioned to online learning — 32.8% of students — agreed that they would consider not enrolling next year if classes were to be fully online (Figure 10).

### STUDENTS’ PREFERENCES FOR ONLINE LEARNING IN 2021-22

#### I would prefer online learning options for the next academic year.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>19.1</td>
<td>12.0</td>
<td>19.5</td>
<td>23.4</td>
<td>26.0</td>
</tr>
<tr>
<td>Students at Transitioned Institutions</td>
<td>28.1</td>
<td>14.6</td>
<td>23.0</td>
<td>21.9</td>
<td>12.4</td>
</tr>
<tr>
<td>Students at Primarily Online Institutions</td>
<td>8.5</td>
<td>8.9</td>
<td>15.4</td>
<td>25.2</td>
<td>42.0</td>
</tr>
</tbody>
</table>

#### If the 2021-2022 academic year was to be fully online, I would consider not enrolling.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>45.1</td>
<td>15.4</td>
<td>14.0</td>
<td>12.8</td>
<td>12.8</td>
</tr>
<tr>
<td>Students at Transitioned Institutions</td>
<td>35.5</td>
<td>16.4</td>
<td>15.3</td>
<td>17.5</td>
<td>15.3</td>
</tr>
<tr>
<td>Students at Primarily Online Institutions</td>
<td>56.1</td>
<td>14.2</td>
<td>12.5</td>
<td>7.3</td>
<td>9.9</td>
</tr>
</tbody>
</table>

**Key:**
- **Strongly Disagree**
- **Somewhat Disagree**
- **Neutral**
- **Somewhat Agree**
- **Strongly Agree**

**Note:** numbers in bars are percentage of respondents

*Figure 10*
Moving forward, it appears likely that hybrid instruction will become increasingly common across the higher education sector, with students and faculty both enjoying the increased flexibility that comes along with online options. Still, students who enrolled at traditional in-person institutions are clear that remaining fully online is not ideal for them.

That students desire on-campus college experiences is consistent with other data collected in the CIN EdTech Student Survey which demonstrate the importance and impact of learning in a campus environment. When asked about their social experiences, 75.9% of students at institutions that transitioned to online learning report feeling less connected with their peers than when in a traditional in-person learning environment; and 75.7% of students at institutions that transitioned to online learning report looking forward to returning to campus social activities, likely because these students are highly likely to agree that social activities are an important aspect of their college experience (Figure 11).

### IMPORTANCE OF SOCIAL EXPERIENCES TO STUDENTS IN COLLEGE

**I feel less connected to my peers in an online learning environment as compared to a typical in-class learning environment.**

- **All students**
  - Strongly Disagree: 8.5%
  - Somewhat Disagree: 9.4%
  - Neutral: 12.9%
  - Somewhat Agree: 23.1%
  - Strongly Agree: 46.1%

- **Students at Transitioned Institutions**
  - Strongly Disagree: 6.7%
  - Somewhat Disagree: 8.7%
  - Neutral: 8.7%
  - Somewhat Agree: 22.5%
  - Strongly Agree: 53.4%

- **Students at Primarily Online Institutions**
  - Strongly Disagree: 10.5%
  - Somewhat Disagree: 10.2%
  - Neutral: 17.7%
  - Somewhat Agree: 23.9%
  - Strongly Agree: 37.7%

**On campus social activities are an important aspect of my college experience.**

- **All students**
  - Strongly Disagree: 14.7%
  - Somewhat Disagree: 10.1%
  - Neutral: 19.2%
  - Somewhat Agree: 19.7%
  - Strongly Agree: 36.3%

- **Students at Transitioned Institutions**
  - Strongly Disagree: 7.5%
  - Somewhat Disagree: 8.7%
  - Neutral: 14.5%
  - Somewhat Agree: 19.9%
  - Strongly Agree: 49.2%

- **Students at Primarily Online Institutions**
  - Strongly Disagree: 23.0%
  - Somewhat Disagree: 11.8%
  - Neutral: 24.5%
  - Somewhat Agree: 19.3%
  - Strongly Agree: 21.3%

**I am looking forward to returning to on campus social activities.**

- **All students**
  - Strongly Disagree: 11.1%
  - Somewhat Disagree: 9.1%
  - Neutral: 20.3%
  - Somewhat Agree: 17.7%
  - Strongly Agree: 41.8%

- **Students at Transitioned Institutions**
  - Strongly Disagree: 4.2%
  - Somewhat Disagree: 5.9%
  - Neutral: 14.1%
  - Somewhat Agree: 18.0%
  - Strongly Agree: 57.7%

- **Students at Primarily Online Institutions**
  - Strongly Disagree: 19.0%
  - Somewhat Disagree: 12.8%
  - Neutral: 27.5%
  - Somewhat Agree: 17.4%
  - Strongly Agree: 23.3%

**Key:**
- Strongly Disagree
- Somewhat Disagree
- Neutral
- Somewhat Agree
- Strongly Agree

*Note: numbers in bars are percentage of respondents*
It also turns out that living with peers across the year of online learning (as compared to living alone or with family) was not enough to fulfil the social needs of students that appeared to be heightened as a result of closed campuses. Overall, as shown in Table 3, students living with peers reported faring significantly less positively in terms of their learning experience and preparedness for next year, and were significantly more likely to be eager to return to campus in Fall 2021.

**FOR STUDENTS ENROLLED AT A UNIVERSITY THAT TRANSITIONED TO ONLINE LEARNING DURING COVID, THOSE THAT LIVED WITH PEERS, AS OPPOSED TO FAMILY OR ALONE,**

<table>
<thead>
<tr>
<th>. . . WERE <strong>LESS LIKELY</strong>, ON AVERAGE . . .</th>
<th>. . . WERE <strong>MORE LIKELY</strong>, ON AVERAGE . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>. . . to feel that they were effectively learning course content.</td>
<td>. . . to feel that the use of EdTech in their classes felt invasive.</td>
</tr>
<tr>
<td>. . . to feel academically prepared for the next steps in their educational journey.</td>
<td>. . . to be looking forward to returning to on campus social activities.</td>
</tr>
<tr>
<td>. . . to report wanting online learning options for the next academic year.</td>
<td>. . . to report that campus social activities were an important aspect of their college experience.</td>
</tr>
</tbody>
</table>

*Table 3*

Differences significant at $p < .01$

Differences significant at $p < .05$
Strategies to Improve the EdTech Learning Experience

Higher education's grand online experiment this past year has provided a wealth of insight to administrators and faculty about the student learning experience in online contexts and students’ use of EdTech in these online spaces. Importantly, this past year can be seen through the lens of opportunity: opportunity to try new things, learn more about our students, and plan for lasting change in our institutions.

The CIN EdTech Student Survey aimed to understand how EdTech has shaped the online student learning experience during the 2020–21 academic year, and revealed four clustered insights about:

- The importance of EdTech self-efficacy
- How EdTech impacted the learning experience at different types of institutions
- What EdTech is driving the online transition, and who has access to it
- What students want from online learning next year

Based on the findings from students reported above, actionable recommendations can be made for how institutions — administrators and faculty alike — can improve the EdTech learning experience for their students moving forward.

UNDERSTAND DIVERSE STUDENT EXPERIENCES WITH EDTECH

Although basic EdTech (like learning management systems and video conferencing tools) have been around for decades, not all students’ prior experiences with EdTech are equal. Just as other facets of college preparedness vary across student populations, so too will students’ EdTech experiences. Our data show that the construct of EdTech self-efficacy, defined as students’ confidence in their ability to learn and adapt to EdTech in the classroom, is a robust predictor of positive online learning experiences. **Ensuring that all students are prepared to use the EdTech necessary for success in their courses will help build confidence early** and drive better learning experiences.

ACKNOWLEDGE THE DUAL LEARNING OF CONTENT AND NEW EDTECH

When students are required to use new tools and software in their courses, they are not only learning new course content, but they are also learning how to use new EdTech. Our data show that substantial portions of students struggled to learn how to use new EdTech in their courses. It’s important to realize that the introduction of new EdTech results in a dual learning experience for students. This can be beneficial as students are learning how to use new technologies, but it is important to design courses to incorporate proper instruction of new technologies to students, and ensure that all students have the digital literacy skills they need to succeed in courses.
LEARN VALUABLE LESSONS FROM ONLINE INSTITUTIONS

Although many higher education institutions had to abruptly transition to online learning in March 2020, there are several higher education institutions that have been doing online learning at scale for years. Our data show that students who were learning at institutions that are online by design had more positive online learning experiences than students who were at institutions that had to transition to online learning due to the pandemic. What can traditional institutions learn from online institutions? Traditional institutions can apply insights about different faculty models, asynchronous learning, building peer communities, flexible terms, and more that are staples of many large online institutions. Fostering collaboration between diverse institution types is at the core of what CIN does, and we encourage administrators and faculty to reach out to higher education professionals at different institutions to see what can be learned.

ADOPT HYBRID LEARNING OPTIONS

The switch to online learning brought with it insights about the student learning experience that can be applied long after students and faculty return to campus. Our data show that although a substantial proportion of students do want online learning options for next year, an equal proportion don't want to be fully online. Hybrid course options, whereby some aspects of courses are online but there are still regular synchronous class meetings, can have the best of both worlds — and is a research-backed pedagogical strategy. Passive aspects of course learning, such as watching recorded lectures and reading texts, can be done asynchronously and independently, whereas class meetings can be used for active and collaborative engagement among faculty and peers to maximize student learning.

KNOW WHAT EDTECH IS FOUNDATIONAL TO ONLINE LEARNING

The EdTech space is ripe for innovation and the sector continues to experience robust growth year over year. Our data show, however, that the EdTech at the foundation of the near universal online learning experience of the past year is basic hardware and software that has been facilitating online learning for decades. To ensure that students have what they need to succeed, institutions should focus on ensuring complete access to foundational EdTech and incorporating basic tech literacy into their curriculum. It’s also important to understand dependencies among EdTech: new EdTech innovations may require more foundational technologies to operate optimally. Without addressing the inequities of access and literacy for foundational EdTech, new innovations could exacerbate inequities among students.

DON’T FORGET THE SOCIAL ASPECT OF THE STUDENT EXPERIENCE

Even in the online environment, students are social creatures who benefit from peer interactions. Our data show that, especially for students at traditional campus-based institutions, the social experiences that campus affords are critically important to students’ college experience. As higher education becomes increasingly integrated into the online space, it's necessary to remember the inherent social needs — and benefits — that students have. There is a ripe EdTech space devoted to building peer communities to help students connect virtually; within the classroom, faculty play a critical role in fostering learning communities and connections among peers. No matter the context, ensure adequate social engagement experiences among students.
Join the Network

The goal of CIN is to transform the EdTech adoption process for institutions and create a community that fosters greater innovation. As a Network, we strive to address core challenges of EdTech implementation facing diverse institution types, including the recommendations outlined above. Our comprehensive processes and wrap-around supportive services provide CIN Members with a light-lift EdTech selection, adoption, and evaluation process embedded within a supportive peer community of higher education professionals.

We seek institutions that educate diverse student populations, including a significant proportion of traditionally underrepresented and underserved students. By joining CIN, you are connecting with a community of like-minded education practitioners who are committed to the common goal of implementing and testing technological innovations to better support students.

We would love to chat with you and see if your institution would be a good fit for our growing Network.

Contact Business Operations and Product Manager Erika Wandsneider at cin@wgulabs.org to get started!

ACKNOWLEDGEMENTS

This survey project and associated report were made possible in full through the support of a grant from the Charles Koch Foundation, and through the cooperation of Leadership at our CIN member institutions. The opinions expressed in this report are those of the author and CIN staff and do not necessarily reflect the views of the Charles Koch Foundation or CIN member institutions.

The support of generous donors who believe in the mission of CIN make this work possible. If you are interested in supporting CIN, please contact us at cin@wgulabs.org.
Appendix 1:  
2021 CIN EdTech Student Survey

Instructional Statement Following Informed Consent:

The goal of this survey is to better understand your experiences with educational technologies (defined below) over the previous academic year (Fall 2020 and Winter/Spring 2021). The survey should take approximately 10-15 minutes to complete. Upon completion of the survey, you will be compensated $10 via an e-giftcard.

Educational technologies (EdTech) are any hardware (e.g., computers, webcams, etc) or software (e.g., Canvas, Moodle, phone and computer applications, video software, peer discussion software/forums, anything you use online for classes, etc) you have used in the context of courses and online learning at your college/university over the previous academic year.

EdTech Survey Items:

 Unless otherwise stated following an item, all items used a 5-point Likert scale of strongly disagree – strongly agree.

1. Please list up to 10 of the education technologies you have used most regularly in the past academic year. [ten text entry boxes]

2. I have struggled to learn how to use educational technologies in my online courses.

3. Across the 2020–21 academic year, I encountered difficulties in using or accessing necessary educational technologies for online learning.

4. My college/university was helpful in resolving technology issues I experienced across the year.

5. My college/university was helpful in providing me access to technologies that I needed for online learning.

6. I feel confident in my ability to adapt to new technologies in my courses.

7. Keeping up with having to learn how to use new educational technologies throughout the year has been hard.

8. Most of the education technologies I’ve used over this school year have been new to me (I had not used them previously).

9. Educational technologies enhanced my learning experience during this school year.

10. I feel that I am learning course content effectively in an online learning environment.

11. After a year of online learning, I feel academically prepared for the next steps in my educational journey.

12. There are some educational technologies I cannot use due to lacking other technologies that are necessary (e.g., wifi, webcams, latest/updated computers, tablets, etc).

13. My close social network is a useful resource for learning how to use new educational technologies.

14. The use of education technologies in my classes has felt invasive.

15. I feel less connected to my peers in an online learning environment as compared to a typical in-class learning environment.

16. Engaging with my professors has been [easier/harder] in an online learning environment as compared to a typical in-class learning environment.

17. I am looking forward to returning to on campus social activities.
18. I would prefer online learning options for next academic year.

19. On campus social activities are an important aspect of my college experience.

20. I have had access to wifi, hardware (e.g., computers, tablets, etc), and other technologies needed for online learning this past year. (access = owning or having a place to go to gain access to hardware and software)

21. I have ownership of wifi, hardware (e.g., computers, tablets, etc), and other technologies to succeed in my academics the past year. (ownership = owning hardware and software in your place of residence and not having to go elsewhere to access it)

22. If the 2021-2022 academic year was to be fully online, I would consider not enrolling.

23. Describe your experience with educational technologies this academic year with up to three words [3 open single line boxes]

24. Anything else you'd like to share with us about your use of and experiences with educational technologies this academic year? [multiline response box]

**Student Demographic Items:**

25. What is your gender? [Male, Female, Non-binary, An option not listed here (write in)]

26. What best describes your race/ethnicity [Major racial/ethnic categories presented with options to provide more specific options within each category; for example “Black” also included options of “African American”, “African”, “Caribbean”, “Other” with open response]

27. What is your age in years? [drop down menu of whole numbers]

28. What is your current employment status [Full-time, part-time, not currently working]

29. Think about this sliding scale as the distribution of income across the US, with those with the lowest income on the left (e.g., the lowest percentile of the income distribution), and those with the highest income on the right (e.g., the highest percentile of the income distribution.) For example, if you feel that your income is higher than 40% of the US population, put the slider at ‘40’. If you feel that your income is higher than 60% of the US population, put the slider at ‘60’. What percentile position best represents your income relative to everyone else in the United States? (use your cursor to move the slider) [sliding bar ranging from 0 - 100]

30. How many course credits have you completed at the conclusion of this current semester? [0-30 freshman, 31-60 sophomore, 61-90 junior, 91-120 senior, 121+ graduate]

31. What was your predominant living situation during the 2020–21 academic year? [Lived in on-campus housing majority of year, Lived in off-campus housing with other students majority of year, Lived in off-campus houses with family or alone majority of year]

32. What type of degree are you pursuing? [certificate credential, associates degree, bachelors degree, Master’s or other graduate/professional degree]

33. Over the past academic year, what mode have your classes been? [Fully online, mostly online, about equal online and in-person, mostly in-person, fully in-person.]

34. Are you a veteran? [yes, no]

35. Do you use campus support services for a learning disability? [yes, no]
ABOUT THE COLLEGE INNOVATION NETWORK (CIN)

CIN is a network of higher education institutions committed to serving diverse student populations. Our vision is to support the evolution of higher education towards a future in which EdTech is an effective vehicle for social mobility. EdTech is an increasingly critical piece of students’ learning experience, but the adoption of such technology poses a particular set of challenges that can impede progress and reduce the positive impact of EdTech on student experiences. By leveraging the power of relationships, CIN supports educational institutions throughout the full lifecycle of EdTech implementation and evaluation with the ultimate goal of improving the student experience. Our goal is to transform the EdTech adoption process for institutions, and create a marketplace and community in which innovation can thrive.

Learn more about CIN by visiting wgulabs.org/cin

ABOUT THE CIN EDTECH STUDENT SURVEY SERIES

CIN is in a unique position to learn about the student experience with EdTech by leveraging the diversity of students who attend the CIN Member institutions. The CIN EdTech Student Survey will be an annual survey administered to participating CIN member institutions with the goal of generating knowledge and actionable insights for the broader higher education sector. As CIN continues to grow, so will the impact of the CIN EdTech Student Survey.

Queries about the CIN EdTech Student Survey can be addressed to cin@wgulabs.org

Citation: