

Overcoming Technology Barriers, Particularly for Historically Underrepresented Students

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Abstract

This paper describes efforts at the University of Arizona Libraries to improve access to internet and technology during the pandemic and we continue to adapt to an ongoing hybrid instructional modality. We highlight how our institution leveraged campus data and new partnerships to better meet student' basic technology needs, particularly for underrepresented and first-generation students.

The University of Arizona Libraries analyzed anonymized student demographic data, including race/ethnicity, first generation student status, and Pell grant recipients to determine how existing service utilization aligned with the campus population.

The initial data analysis and establishment of new campus partnerships has been completed, and we are in process of evaluating and refining our approach. This foundational work has provided us with new ideas for ways to reach more students in need and form additional unions with groups on campus. Additionally, we are awaiting a decision on a National Telecommunications and Information Administration grant that could increase access to technology for students throughout the state while also expanding partnerships. As literature suggests, not all internet access is created equal and students often rely on outdated technology particularly when they are unaware of educational resources. Long-term goals include further linking student access to technology so that it positively impacts overall retention and success. Funding is key to providing the amount of technology needed to accommodate the hybrid learning models that students currently work in. Technology has become a basic need for students to successfully participate in learning. Thus, it is important that we continue to increase funds for technology in the form of grants, partnerships and endowments.

I. Introduction/Background

According to [Pew Research Center](#) (Vogels, 2021), the percent of Americans without access to essential technologies “have not significantly changed” from 2019 over the course of the COVID-19 pandemic. However, reliance on broadband internet and technology became increasingly critical educational resources while inequities in accessing these resources were exacerbated. This was especially true for marginalized communities which have been historically technologically disadvantaged. Students who work in remote regions where access is limited or live in multigenerational households where the environment is not conducive to learning faced the biggest challenges. From the [Arizona Libraries Digital Inclusion](#), (Arizona Libraries Digital

Inclusion, n.d.) “...in 2019, the Federal Communications Commission (FCC) reported that 21.3 million Americans lack access to broadband availability. 1.3 million are in Arizona.” In April 2021, the [Benton Institute for Broadband & Society](#) (Benton Foundation, 2021) reported nearly 1 in 7 Arizonans live in an area without adequate broadband infrastructure, and in August 2022 at the Arizona State University’s [sixth annual Congressional Conference](#) (Arizona State University Congressional Conference, 2022) it was noted that “approximately 1 million Arizonans still do not have access to the Internet.”

According to the [U.S. Census Bureau American Community Survey](#) (Bureau, 2022), in 2019 the median household income in Tucson was \$43,425 and the poverty rate in the Tucson Metropolitan Statistical Area (MSA) was 16.8%. Thus, Tucson ranks 11th among 12 western MSAs.

As a participant with University of Arizona (UA) campus IT and other partners on a National Telecommunications and Information Administration Connecting Mobile Communities grant application, we highlighted that, located on the U.S. Mexico border, 80% of UA Distance Education students identify as Hispanic/Latinx and 74% are first-generation. UA typically uses Pell Grant eligibility to identify low-income. In fall 2021, 40% of the total population was eligible or received a Pell Grant at some point during their undergraduate academic career.

The [Federal Affordable Connectivity Program](#) (Federal Communications Commission, 2022) provides a discount for households with an income at or below 200% of the Federal Poverty Guidelines of up to \$30 per month toward internet service (\$75 for those on qualifying Tribal lands). This may not cover the full costs for some nor provide the bandwidth needed for online coursework. At this price point, some internet service providers throttle bandwidth after a fixed amount of use, which can become very restrictive on student productivity. While data use estimates vary, running Zoom at full 1080p or HD video streaming takes around 2.5 GBs of data per hour (Abbott, 2021). At the UA Libraries (UAL), our current data plans have maximum data use of 25 GBs, which would be reached after 10 hours of use. This limit has resulted in several students reporting that they are struggling after they use their monthly data allotment.

A [“Basic Needs” survey of UA students](#) in spring 2021 by the Office of Assessment and Research (UArizona Student Basic Needs Coalition Spring, 2021), found that 70% of students reported that not having access to a reliable internet connection was a barrier to their success. A [fall 2020 survey of students regarding the impact of COVID-19](#) (University of Arizona Student Services Fee Board, 2021), found that 1 in 3 students faced limited internet access and 2 in 10 reported that a lack of access to technology or software reduced their ability to perform well in classes delivered online. Supplemental reports for Hispanic/Latinx and Native American students indicated

even higher rates of internet challenges. Additionally, one third of the incoming freshman identified as first in their families to attend college, and 45% identified as an ethnicity other than white.

The [fall 2022 enrollment data](#) (University Analytics & Institutional Research, 2022) highlights that there are 51,134 students at the UA, which consists of 39,606 students on the main campus; 8,132 students in Arizona Online; 1,644 students in Arizona International; 766 students in Phoenix; 652 in distance education; 214 students in Southern Arizona; and 120 students in Global Direct. The demographics of this population based on self-reporting race/ethnicity show the campus is 66% white; 25.3% Hispanic/Latinx; 10.6% Asian; 6.7% Black; 3.5% American Indian or Alaska Native; 0.9% Native Hawaiian of Pacific Islander.

At UAL, supporting Student Success through delivering program and focused engagement is one of our [strategic priorities](#). Further, increasing our technology lending program through campus partnerships to better meet student needs, particularly for historically underrepresented students, is a current strategic action.

II. Library Survey Methodology

In order to better understand student experience at the library and improve our services, we distributed a four-question mixed methods survey via Qualtrics. All quantitative responses were analyzed in Tableau. Qualitative elements were first coded in Atlas.Ti to initially categorize text responses. All demographic data elements were exported from the user database in the Ex Libris Alma Integrated Library System and were merged data from campus analytics in Excel. These results were then visualized through Tableau.

To help increase the response rate, students were informed they would be entered into a drawing to receive either a \$25 or \$10 electronic gift card to the UA Bookstore. Winners were selected at random using the Excel Rand function to generate a random number assigned to each individual respondent. Prizes included (2) \$25 gift cards and (5) \$10 gift cards.

The survey was designed to assess the following (for full survey see Appendix A: UA Libraries fall 2022 Survey):

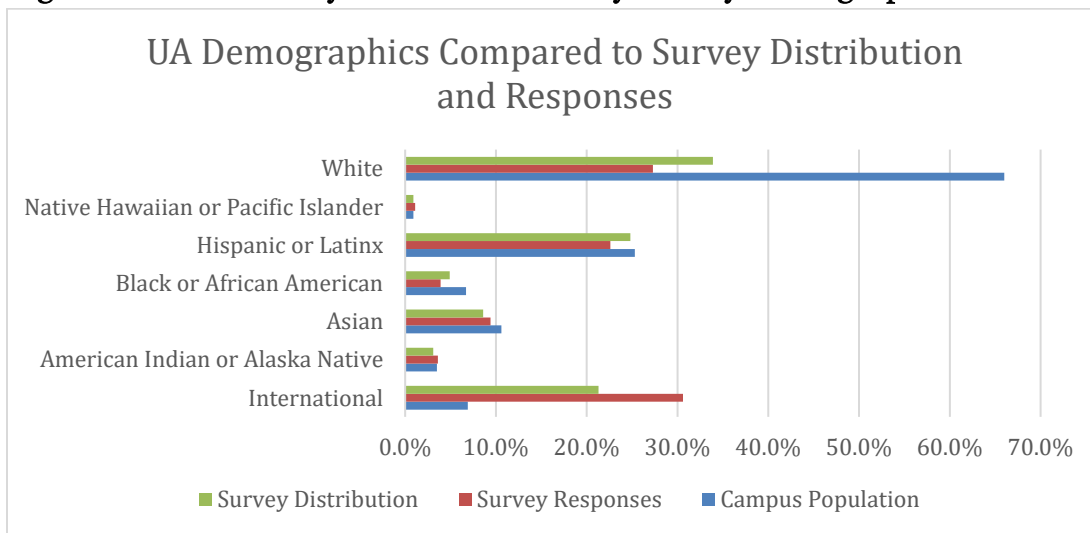
- Access to library technology supporting student success
- Reasons students borrowed technology from the library
- Technology barriers experienced by students
- How the library has helped meet technology needs and the areas students are still struggling and could use more support

The entire population of the 4,463 students who checked out equipment from January 1, 2022 to September 21, 2022 was contacted. The self-identified race/ethnicity of those surveyed was 33.9% White; 24.8% Hispanic/Latinx; 8.6% Asian; 4.9% Black/African American; 3.1% American Indian, Alaska Native; 0.9% Native Hawaiian, or Pacific Islander; and 21.3% international. Further, 27.1% of those surveyed were first-generation college students.

663 students replied to the survey, which is a 14.9% response rate. Of those that responded the demographic breakdown was: 27.3% White; 22.6% Hispanic/Latinx; 9.4% Asian; 3.9% Black/African American; 3.6% responses American Indian, Alaska Native; 1.1% Native Hawaiian, or Pacific Islander; and 30.6% international. Last, 25.8% of the responses were first-generation college students.

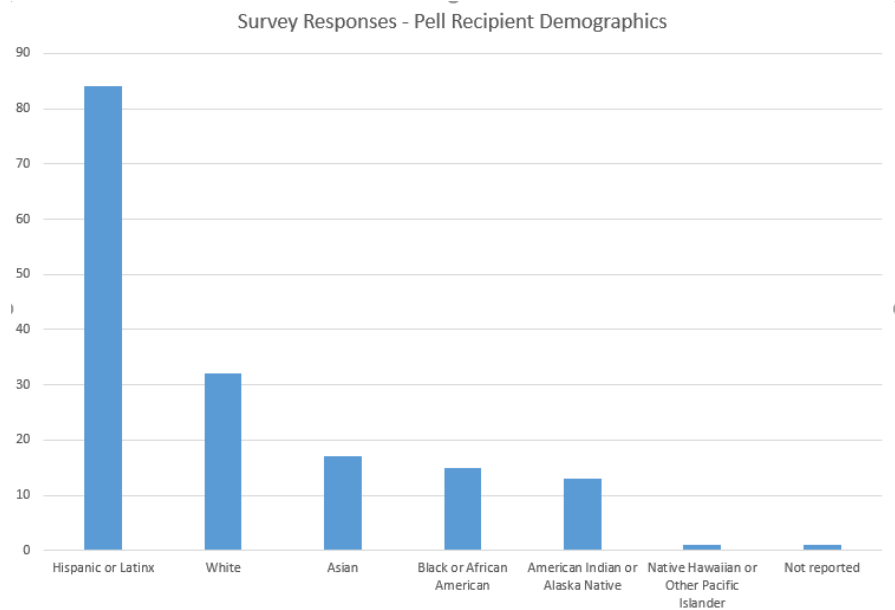
Overall, the survey distribution and response rate aligned with the demographic makeup of campus for underrepresented student populations.

Figure II-1: University of Arizona Library Survey Demographics



Additionally, the survey had 163 students (24.6% of respondents) who were Pell recipients with a demographic breakdown of: 84 (52%) Hispanic/Latinx; 32 White (20%); 17 Asian (10%); 15 Black/African American (9%); 13 American Indian/Alaska Native (8%); 1 Native Hawaiian/Pacific Islander (1%).

Figure II-2: University of Arizona Library Survey Responses Pell Recipient Demographics



III. Library Survey Results

Question 1: Does having access to library technology support your success as a student? (Yes, Unsure, No). This question helped us validate whether students felt library technology supported their success. It was optional, and most of those who chose to reply said “yes” (514 responses; 78%). Those who said “no” (9 responses; 1%) or were “unsure” (6 responses; 1%) indicated they either had not used any tech, there was only “some” improvement over what they own, or the tech they need is not always available. Since we only emailed individuals who had checked out items from the library, the people who claimed not to have used library tech might have forgotten about their use or checked out a smaller item that they did not recognize as technology.

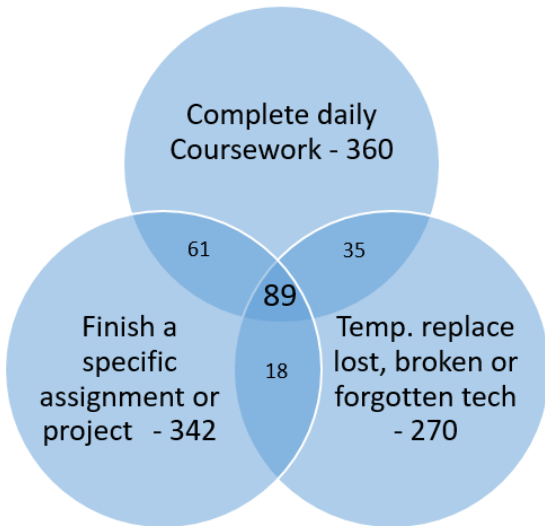
Question 2: I borrowed technology from the library to (check all that apply). While we anecdotally had ideas why students used library technology, we suspected there were multiple reasons for different individuals. Of those who responded to this question, reasons included:

- Complete my daily coursework: 360 students
- Finish a specific assignment or project: 342 students
- Temporarily replace my lost, broken, or forgotten technology: 270 students
- Experiment with or learn more about the technology: 171 students
- Other: 24 students

In this case, percentages are not included because this was a multi-select question with significant overlap. Some of the reasons listed under “other” included financial reasons,

what they already owned was not permitted by their instructor, to conduct data collection, lab work, remote work for a job, charge devices, use a second screen, conferences, or to conduct presentations.

Figure III-1: University of Arizona Library Survey Question 2 Top Responses Venn Diagram



Question 3: As a student, what technology barriers do you experience (check all that apply). This question allowed us to gain a deeper understanding of the student experience. We suspected that many students face multiple barriers, which was validated:

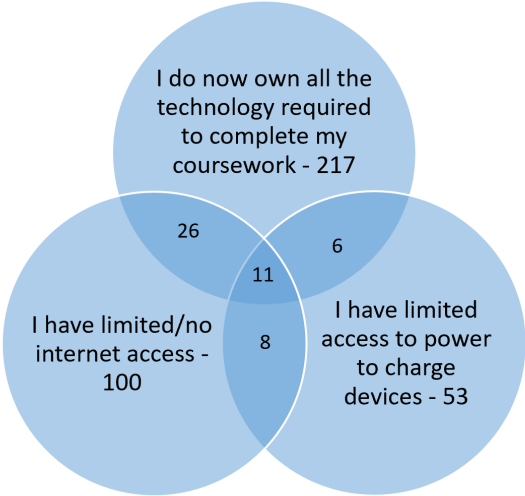
- Do not own technology required to complete my coursework: 217 students
- Limited/no internet access: 100 students
- Limited access to power to charge devices: 53 students
- My living environment is not conducive to using technology: 37 students
- Do not understand how to use the technology required to complete my coursework: 27 students
- Other: 28 students
- I do not have any barriers: 207 students

Once again, percentages are not included. Some of the reasons people selected “other” included financial reasons, forgetting technology at home, convenience, medical and transportation (difficulty carrying), owning older technology, application and software needs, and already having access to “most” of what they need.

Surprisingly, many students indicated that they do not have any barriers. In the future, we need to explore why students are borrowing technology if they do not have any

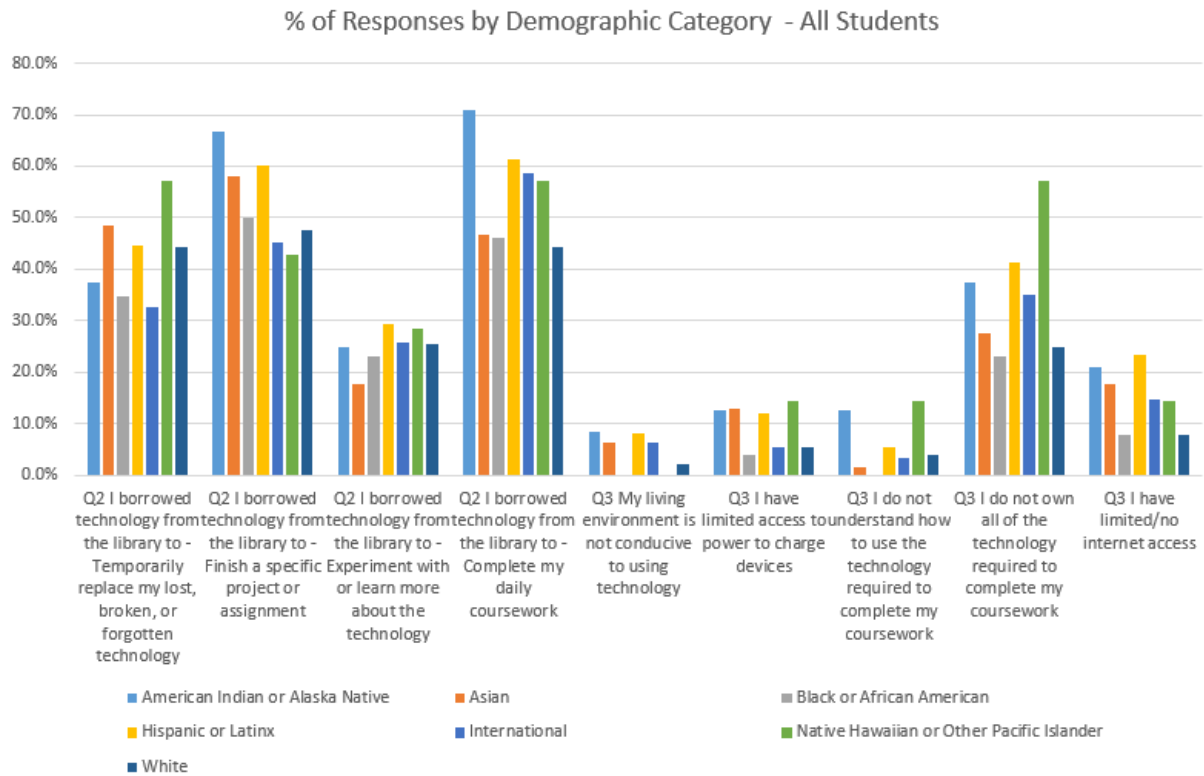
barriers. It could be due to the temporary nature of their needs as identified in the previous question or not readily identifying with any of the options provided.

Figure III-2: University of Arizona Library Survey Question 3 Top Responses Venn Diagram



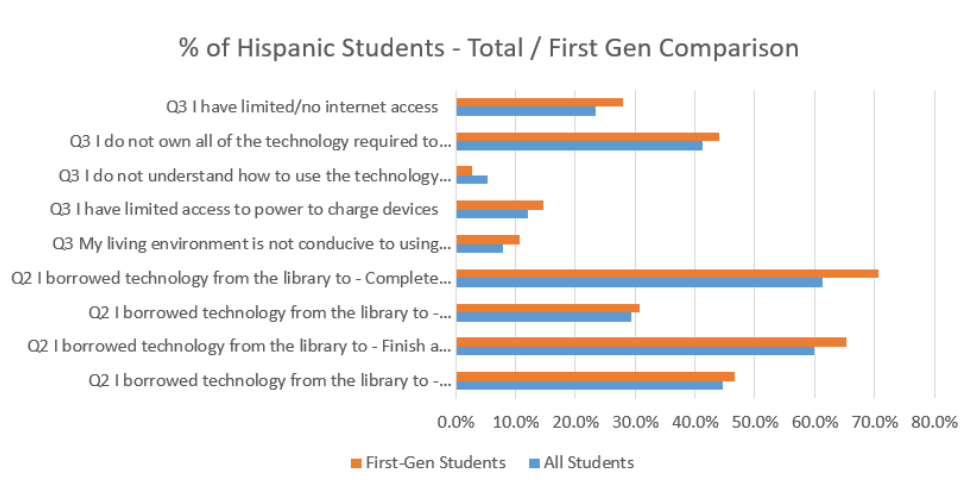
Additionally, for the first two questions, we analyzed whether there were significant differences in the responses by the self-identify demographic categories and we found they roughly aligned but there were noticeable differences for certain populations:

Figure III-3: University of Arizona Library Survey Response Demographics



We also checked to see whether there were significant differences based on being a first-gen students and found there were not. While it was true of all student categories, the below table focuses on Hispanic/Latinx students.

Figure III-4: University of Arizona Library Survey Hispanic First-Gen Comparison



Question 4: Please tell us your story. As the library continues to seek funding to sustain ongoing technology lending, it helps to hear your experiences. How have we

Focusing more narrowly on unmet needs and service gaps for students, we heard that the library should have a larger inventory of equipment; provide training/support for high-end technology; provide training for different user levels; implement longer loan periods; offer more check-out locations across campus; circulate newer models of equipment; and do a better job marketing to inform students of our service.

While the figures and this visualization give a sense of the categories of feedback received, below are anonymized stories shared by several students that help more fully illustrate situations library technology users encounter:

- “Due to financial issues my family was unable to afford a laptop for me to complete MATH100. When I thought I had no option, I was elated to hear how many laptops the library had available for students. Without it, I wouldn’t have been able to complete my coursework.” – Hispanic, First-Gen, Undergraduate Freshman Student; Neuroscience & Cognitive Science major, Pell recipient
- “I live on a ranch where the internet is spotty. I have to commute an hour a day to go to school. With the hotspot, I was able to quickly download software necessary for classes, projects, and assignments. I also borrowed a graphing calculator since I can’t afford it.” – Undergraduate Student – Hispanic, First-Gen, Undergraduate Senior Student; College of Engineering, mechanical engineering major, Pell recipient
- “My daughter’s lung collapsed but I had a paper due. I rented a laptop and headed to PHX Children’s Hospital.” – American Indian, Graduate Student; American Indian studies major
- “I live in an apartment where the Wi-Fi is not great, and the upload speed is very poor. I was almost close to missing the deadline for homework submission when I tried to submit the assignment 10 minutes before the deadline and the file size was nearly 50MB. I started borrowing a hotspot and it is really helpful Thanks.” – International, Graduate Student; College of Engineering, systems and industrial engineering major
- “My family has no internet at our house near the edge of town. This became a huge strain on me. I needed to have access to the internet to complete my assignments, and I couldn’t keep parking at McDonalds and using the internet there.” – Hispanic, Undergraduate Sophomore Student; College of Fine Arts, film and television major, Pell recipient
- “I was homeless for over a year (first 3 semesters). I did not always have access to Wi-Fi. I borrowed technology multiple times to help me complete and even attend class. As a non-traditional student, I also have to work and provide for my family. Having access to the Wi-Fi and laptop allowed me to continue engaging

in my courses and studying.” – Hispanic, First-Gen, Undergraduate Junior Student; College of Agriculture and Life Sciences, microbiology major, Pell recipient

- “I come from a low-income family where without scholarships and lending of things, I would not be able to attend. I bought my school iPad with my graduation money, after checking syllabi, none of them said mine was not able to be used. I walked into math and learned otherwise. I was stressed about being able to buy a new laptop for this one class.” – Hispanic, First-Gen, Undergraduate Freshman Student; College of Nursing, pre-nursing major, Pell recipient
- “I am a mother of five, one being too young for school and with the price of daycare it is more cost efficient for me to stay home with him. Instead of letting times pass me by while being a stay-at-home mom, I decided to use this as chance to finish my education. Thankfully for the school’s computer lease program this has been possible. It allows me to do work on my time while still being the mother my kids need.” – Hispanic, First-Gen, Undergraduate Junior Student; College of Social and Behavioral Sciences, information and eSociety major, Pell recipient
- “This library definitely helped me with many different barriers for example I accidentally cracked my laptop screen and was able to borrow technology until I can replace.” – Black, First-Gen, Undergraduate Freshman Student; College of Medicine, Physiology & Medical Services, Pell recipient
- “The library was helpful in providing a laptop within 30 minutes of my computer breaking, preventing me from falling catastrophically behind.” – Black, Undergraduate Sophomore Student; College of Science, Biochemistry
- “This is my first semester as a college student and I was not about to purchase a laptop when I first arrived but after checking the website, I saw that the library rents out technology which was a major relief. I can now handle my day-to-day assignments and not have to worry about how I am going to complete them.” – Black, First-Gen, Undergraduate Freshman; College of Social & Behavioral Science, Communication major, Pell recipient
- “As a fine art student equipment are expensive, so borrowing technology from the school has saved me money and also exposed me to equipment that I may get in the future.” – Black, First-Gen, Undergraduate Junior Student, College of Fine Arts, Film & Television major, Pell recipient
- “A research team from UA went to the Navajo Nation, on the reservation, the internet connection can be little to none, and the hotspot I rented from the

library helped me work on assignments while I was away from school.” — American Indian, Graduate Student, College of Architecture, Planning and Landscape Architecture, Urban Planning major

- “I plan to check out technology I don’t own to try it out before I buy it. Sometimes bringing everything I need on a daily basis is difficult because then you have to carry it with you on your back all over campus and knowing that if I forget something or if I have too much to carry that day, I can check it out reduces my stress. Having people who are familiar with the items so they know how to use them if I need someone to show me also reduce the stress and anxiety.” — American Indian/Alaska Native, Undergraduate Senior Student, Interdisciplinary, Non-Degree Seeking
- “The laptop that I have had since high school not only is rapidly becoming outdated with advancing technology, but has also broken in multiple ways. Being able to rent out a library laptop has really saved me in regards to being a student. Additionally, I have had the opportunity to rent out and learn how to use new technology that I never would have been able to afford myself, such as an iPad, that will give me a better edge going into the workforce.” — American Indian/Alaska Native, First-Gen, Undergraduate Senior Student, College of Science, Biochemistry major
- “It has been helpful for me to be able to borrow a school laptop since the need for a laptop has been essential with the start of the school year and making a large purchase for a laptop that meets all of my academic and research needs is an important decision.” — Native Hawaiian/Other Pacific Islander, Graduate Student, College of Agriculture and Life Sciences, Natural Resources major
- “As someone who comes from generational poverty, I am still a low-income student that needs to take in as many resources as possible. With the library, I have not only access to the books and technology in the library, but an abundance of technology available to rent out such as computer, tablets, DSLR cameras, and even projectors.” — Native Hawaiian/Other Pacific Islander, First-Gen, Undergraduate Freshman Student, College of Fine Arts, Theater Student, Pell recipient
- “I made several personal games throughout the years, and I’ve been interested in creating a VR game. I was able to rent the VR kit from the library.” — White, Undergraduate Freshman; College of Engineering, undecided major, Pell recipient
- “In order to succeed in my Intro to Photo Concepts class, I needed access to a DSLR camera — a camera I don’t have and cannot afford to purchase. With the

technology-lending resources of the library, I was able to check out a small Nikon camera, enabling me to complete my course work to a high degree of quality and succeed in the class” – White, Undergraduate Sophomore Student; College of Law, law major

- “I was able to borrow a GoPro camera to document an outdoor experience and create a film for a class assignment. This equipment is not something I would have been able to afford otherwise, and I made an awesome project as a result of my access to it!” – White, Graduate Student; College of Education, counseling major
- “I am an online MBA student, and my laptop broke. I cannot afford a new computer due to rising inflation and technology costs. UA allowed me to borrow a computer and continue my education.” – White, Graduate Student; Eller College of Management, business administration major
- “As an international student everything is expensive for me, and I work two jobs to make ends meet. The ability to borrow from the library for free eases some of the financial burden on me and my family.” – International, Undergraduate Junior Student; Eller College of Management

IV. Remedies and Actions

When the pandemic hit, and students were unable to come to campus for in-person instruction, it became clear that access to broadband and remote learning equipment was a significant educational barrier for many students. In order to try to address these issues, UAL began to experiment by checking out laptops and Wi-Fi hotspots for longer periods of time (by the semester), compared to the pre-pandemic five-day checkout period. In the “hybrid” learning model that ensued as the pandemic progressed, students attended some classes in person while other classes met remotely. Currently, this hybrid model of course delivery still exists through the institution. This new hybrid educational reality has substantially increased demand for equipment required for access to remote education.

Traditionally, libraries have served as a central hub for information and resource dissemination across the campus community, including digital literacy and technology resources. One of our new roles is to bring together units that have not traditionally worked together to provide increased access to technology and spaces for students. This approach intentionally prioritizes students most in need, while acknowledging the historic inequities that our community members face.

To provide a sense of scale, the table below illustrates the types of equipment offered at UAL as of November 2022, how many items are in each category, and how many unique users there were in 2022 for each type of equipment. Even with these inventory levels

and UAL’s history of offering technology to students, the increase in demand resulted in still not having enough inventory to meet campus needs while also not being able to determine which students should be prioritized.

Figure IV-1: University of Arizona Library Equipment Inventory and Unique Users

Material Type	Quantity	Unique Users
3D Scanners	4	25
Accessories/Cables	679	2,780
Audio Recorders	70	219
Calculators	192	1,804
Cameras - 360	5	65
Cameras Accessory	110	473
Cameras - Digital	65	673
Cameras - Go Pro	12	103
Cameras - Video	34	278
Cameras - WebCam	35	218
Headphones	151	1,308
Laptops and iPads	1,298	6,156
Portable Recording Studios	2	41
Projectors	22	321
Tablets	49	590
Technology Kits	40	332
WiFi Hotspots	190	734
Total	2919	N/A

While front-line library staff has regular interactions with students, they seldom get to understand students’ individual needs on a deeper level. Fortunately, there are units on campus that had access to additional resources and are positioned to develop in-depth student relationships. Specifically, the library formed partnerships with the Hispanic Serving Institution Initiatives; Native American Initiatives; the Thrive Center; and the Arizona Science, Engineering, and Math Scholars.

Initially, the library worked with [Hispanic Service Institution Initiatives](#) (Hispanic Serving Institution Initiatives, 2022) to expand the size of its equipment lending program. Hispanic Serving Institution (HSI) is a federal designation by the U.S. Department of Education that acknowledges colleges and universities with 25% or more total undergraduate Hispanic full-time equivalent student enrollment. This also opens access to additional grant funding opportunities, which the libraries were able to use to purchase an additional 620 PC laptops. This almost doubled the existing lending program to its current size of 1,200 laptops.

Another partner, [Native American Initiatives](#) (Native American Initiatives, 2022) was most familiar with the state of tribal lands and broadband challenges. In Arizona, there are twenty-two federally-recognized Native Nations with political sovereignty. They

were able to work with the library to determine financial eligibility of individuals and make student referrals.

Additionally, the [Thrive Center](#) (Thrive Center, 2022) worked with the libraries to connect students with technology support during the peak of COVID and stay at home orders. Thrive was able to identify students who were struggling through peer mentors in First Cats, the Cultural Learning Communities, and Thrive Guides. They also identified students who were seeking additional funding to assist with technology through New Start, Arizona Assurance, and Financial Wellness. Their regular check-in processes with students through these programs and their interactions helped them find those most in need of support.

Lastly, the libraries partnered with [Arizona Science, Engineering, and Math Scholars](#) (Arizona Science, Engineering, and Math Scholars, 2022). This program supports students who are underrepresented in STEM, especially students who are; first in their family to attend college; from low-income households; who transferred from a community college; underrepresented groups, such as women and minorities. Their unique connections resulted in additional student referrals to the library.

Through these partnerships, the library received HSI CARES Act, donor, and UAL matching funding to expand our laptops inventory from 300 to 1,208 (300% increase). Additionally, through donor/matching funding, UAL established a Wi-Fi inventory of 190 hotspots, which were not provided prior to the pandemic.

As a result of this new and expanded inventory, more students were reached. Also, since more items were available, UAL began to experiment by checking out laptops and Wi-Fi hotspots for longer periods of time. We increased the due date to semesterly for any referrals (checked in with students to see if they needed longer loan periods) and to 3 weeks for all others. Pre-pandemic, the loan period was five-days.

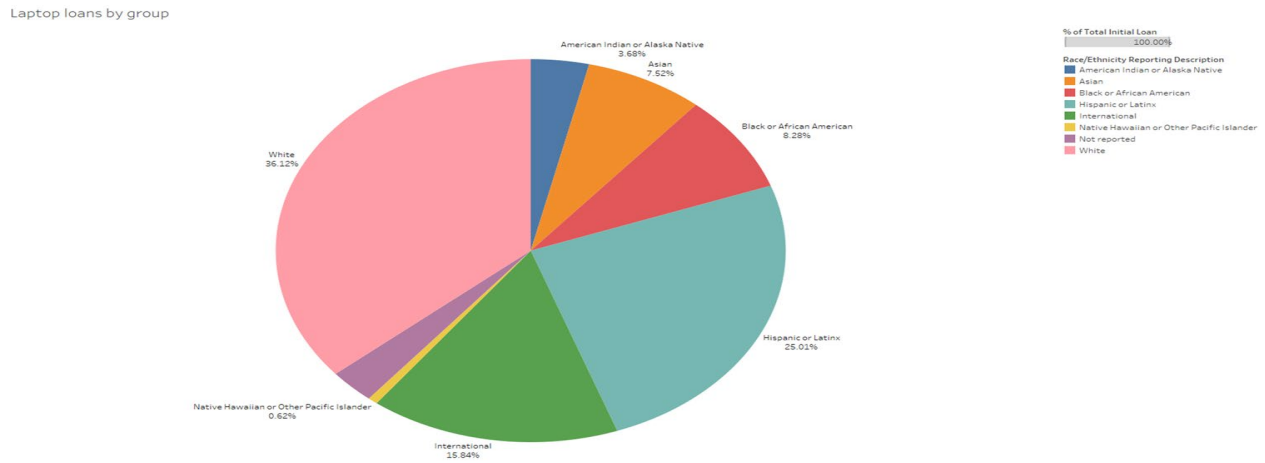
Further, as the reputation of the library's equipment program grew, the campus Disability Resource Center (Disability Resource Center, 2022) reached out to have the library circulate MS Surface tablets for their students in connection to training offered by the campus.

Ultimately, equipment use aligned with a campus population demographics. When comparing the self-identified race to what percentage of laptop loans (they most popular equipment category with the largest inventory) they represent, the library had the following breakdown:

- 65.5% White; 36% laptop use
- 24.6% Hispanic/Latinx; 25% laptop use
- 10% Asian; 7.5% laptop use
- 6.4% Black or African American; 8.28% laptop use

- 4.2% American Indian, Alaska Native, Native Hawaiian or Pacific Islander; 4.3% laptop use

Figure IV-2: University of Arizona Library Laptop Use Demographics



In terms of individual partner student referrals, a total of 27 students were sent to the library. While the hope was to reach a wider group, communication and partnerships take time to develop. These 27 students were in desperate need and most affected by the pandemic. Due to the smaller group size, UAL was able to continuously provide access to each of these individuals for as long as they needed.

Another effect of this initiative is that the library has since been invited to collaborate on additional opportunities and grants, including a possible corporate sponsorship. We are also experiencing new colleagues reaching out to discuss possible collaborations (e.g., use of research laptops that would otherwise be surplus). Even small successes generate word of mouth referrals, which can ultimately lead to additional funding, service expansion, and reaching more students in need. An example of this includes recent conversations with UA [Student Affairs Policy Committee](#) and the [Basic Needs Student Coalition](#) where the current basic needs definition is being pushed to expand beyond food and housing. National basic needs initiatives are also discussing the expansion of these concepts, including the stress that inadequate or lack of technology places on student success (ECMC Foundation, 2022), (Blankstein, 2021).

V. Next Steps/Conclusion

To both sustain and expand this program, we need better approaches to identifying students in need, seek more partnerships, provide more training to users, and continually look for ways to reduce costs that can be redirected towards sustaining refresh needs.

In order to have more consistent and reliable methods of determining which students are most in need, we intend to establish a new relationship with the Office of

Scholarships & Financial Aid (OSFA). We still intend to maintain our partner referral process as they are working most closely with students and there is a benefit to knowing individual situations. That said, the OSFA has indicated they can provide a list of students with the greatest financial need. Specifically, they can generate a list of all incoming, first-generation students and evaluate their total cost of attendance compared to their Expected Family Contribution (EFC) and gift aid. Having this information will allow us to reach out to students in a timely manner.

We also plan to pursue other new partnerships and seek additional grant funding in order to secure and potentially increase our inventory. Some specific examples include working with the Native Student Outreach Access, and Resiliency (SOAR), UA Near You Network, and helping articulate evidence-based practices as a part of the state-wide HSI Consortium.

Ultimately, our goal is to establish donor-based endowments to better secure funding needed to sustain a program of this size. Targeted endowments will also assure that we are able to serve specific student populations over time. For example, the [Native SOAR program](#) (Native SOAR, 2022) is focused on meeting the needs of indigenous students at the UA. Setting up a library technology endowment would allow us to provide a set number of individual students with a technology bundle (consisting of a laptop, Wi-Fi hotspot, headphones, and webcam) for their entire academic career.

A partnership with the UA [Near You Network](#) (Near You Network, 2022) will help us reach more traditionally underserved students geographically spread out on individual UA campus locations throughout the state. Many of these students are non-traditional, underserved populations, and Pell eligible, which aligns with library goals.

Providing data on evidence-based practices to the HSI consortium will give us more opportunities to share our story and reach a broader audience. The hope here is that we will continue to identify new partners, which may lead to additional grant opportunities.

To help improve training, we plan to increase the presence of others on campus who have more expertise, such as [campus IT](#) and [Adobe partners](#), who have a greater depth of knowledge on A/V equipment. The library has the ability to provide centrally located space for these groups to conduct training. Several students have expressed this need, but the library does not have the bandwidth to create, maintain, and regularly deliver training for the wide range of equipment available.

Lastly, we are exploring whether there are lower cost options for certain types of technology. One area that is particularly costly is Wi-Fi hotspots, which have an ongoing monthly contract cost. Companies are starting to offer discounts to educational institutions that were not available at the start of the pandemic. Doing so

will allow us to cut our costs and redirect funding to new categories of equipment or expand our inventory to better meet student demand.

Overall, the pandemic brought to light the degree to which students rely on technology to be successful and this has only continued to grow with increasing reliance on hybrid instruction modalities. Libraries remain uniquely positioned to fulfill this need, but will likely never be able to keep up with student demand. This necessitates finding the best way to prioritize those most in need while continuing to make efforts to expand resources and partnerships to help as many individuals as possible.

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Robyn Huff-Eibl is the Department Head of Access & Information Services at the University of Arizona Libraries. She leads the library's Space Planning efforts and has served as co-project manager in the planning, design, and construction of the newly opened Student Success District. Her role includes fostering donor development, including the new Rhonda G. Tubbs Tech Toolshed where nearly 3,000 technology items are circulated. She provides leadership for both the Undergraduate and Graduate Library Advisory Councils, and during the past several years has served on the Provost's Pandemic Academic Coordination (PAC) Work Group. Robyn is a UCLA Senior Fellow and has been an active member of American Library Association. She has a B.A., in Communication and a M.S., in Information Resources and Library Science.

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Travis Teetor is the Manager of Technology & Operations at University of Arizona Libraries and helped to establish the current library technology lending program in 2006. In 2008, Travis was awarded the UA Staff Award for Excellence. During the pandemic, Travis initiated an informal program to ship equipment to students in need who were living in remote areas of the state, such as Native American reservations. In addition to his duties in the tech lending program, Travis serves as a liaison for campus IT partners and programs serving first-year and at-risk students. Travis has his B.A. in Operations Management and M.S. in Library Science and has been employed with University of Arizona Libraries for 24 years.

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Appendix A

UA Libraries Fall 2022 Survey

Please take a moment to help us improve technology lending at the UA Libraries and you will automatically be entered for a chance to win one of several \$10 and \$25 gift cards from the UA Bookstore.

1. Does having access to library technology support your success as a student? (Yes, Unsure, No)
2. I borrowed technology from the library to (check all that apply)
 - Complete my daily coursework
 - Finish a specific assignment or project
 - Experiment with or learn more about the technology
 - Temporarily replace my lost, broken, or forgotten technology
 - Other [text box]
3. As a student, what technology barriers do you experience (check all that apply)
 - I have limited/no internet access
 - I have limited access to power to charge devices
 - I do not own all the technology required to complete my coursework
 - I do not understand how to use the technology required to complete my coursework
 - My living environment is not conducive to using technology
 - I do not have any barriers
 - Other [text box]
4. Please tell us your story. As the library continues to seek funding to sustain ongoing technology lending, it helps to hear your experiences. How have we helped meet your technology needs and what are the areas where you are still struggling and could use more support?