



*Research Article*

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# **HSI Students' Experiences of “Servingness” during COVID-19**

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In March of 2020, higher education institutions across the U.S. closed their doors and converted to remote and online learning due to the COVID-19 health crisis. As the country adjusted to the “new normal” of living and working at home, the economic and psychological impact of self-isolation and business closures were felt strongly by those who were most economically and socially vulnerable. In this context, the evaluation team of the Computing Alliance of Hispanic Serving Institutions (CAHSI) implemented a survey of students studying computer science at Hispanic Serving Institutions (HSIs) across the country to understand the impact of COVID-19 on their lives. In this paper, we identify the contexts in which students at HSIs continued (or failed to continue) their academic pursuits under great hardship. Our analysis highlights how the multidimensional framework of “servingness,” defined as a critical organizational, interactional, and ideological approach that many HSIs use to support their students, was experienced by students during the pandemic (Garcia et al., 2019). We argue that the practices and structures of servingness contributed to sustaining students’ well-being, dignity, and learning amid uncertainty.

Hispanic-serving institutions, defined as institutions that have at least 25% enrollment of Latinx students, have historically been underfunded, under-resourced, and typically lack the institutional capacity to adequately meet the needs of the predominantly Latinx and low-income populations they serve (de los Santos & Cuamea, 2010; Mulnix et al., 2002; Núñez, et al., 2015). Findings

from higher education research indicate the COVID-19 health crisis has exacerbated academic and economic inequities (Brenner et al., 2021). Aucejo et al. (2020) found that while 77% of students surveyed experienced more anxiety because of the health crisis, students of lower economic status (e.g., those who qualified for Pell grants) were more likely to consider their needs as choosing between their economic and physical health. This is particularly salient for HSIs, which enroll more Pell recipients than non-HSIs (NASEM, 2019). A study of faculty at 600 US institutions indicated that instructors were concerned about their students' lack of technological access (e.g., laptops, adequate Internet), particularly when they taught at universities and colleges with a large population of underserved students (Ralph, 2020). Similarly, Aucejo, et al. (2020) found that students from low-income backgrounds were 55% more likely to delay graduation based on their experiences of the COVID-19 crisis.

While there have been numerous large-scale studies of student experiences with COVID-19 disruption, none have focused on HSIs. The HSI perspective is valuable as HSIs serve students who are highly vulnerable because of their economic and social status. The unique approach that many HSIs take towards serving their students, so as to challenge deficit perspectives of Latinx students from low-income backgrounds, may also illuminate novel strategies for supporting students' thriving during this crisis.

*The professors were very responsive during this time and I would get random calls from people at the university checking up on how I was doing and reassuring me that if I ever needed any help to feel free and let them know.*

## HSIS AND SERVINGNESS

The definition of a Hispanic-Serving Institution is based on a federally-mandated mathematical representation of 25% or more of students who self-identify as ethnically Hispanic. Research in higher education has begun to identify institutional characteristics of HSIs that support the success of LatinX<sup>1</sup> students in higher education, described as “servingness” (Garcia et al., 2019; Núñez et al., 2015). As the demographics in the United States' college going population continues to shift, the number of HSIs grows annually, yet research in higher education indicates a difference between *enrolling* Hispanic students in great numbers and *serving* the Hispanic/LatinX population. The designation is consequential because federal funding can be accessed for institutions with the label “HSI”. Garcia (2017) proposed a matrix of HSI organizational identities, LatinX Enrolling, LatinX Enhancing, LatinX Producing, and LatinX Serving. While we consider organizational identity to be a nuanced concept that is embodied in the staff, faculty, students, departmental, and institutional systems that make up an organization, we find value in the concept of LatinX or Hispanic-*serving*, and consider how the practices and structures of “servingness” shaped students' experiences of the transition to remote learning in spring of 2020.

<sup>1</sup> We utilize both Hispanic and LatinX in our identification of demographic groups. Hispanic is the federal term used for classifying “HSIs” and is focused on people who are from Spanish-speaking countries. We also use the gender neutral or non-binary term “LatinX,” which is a category that is based more on culture. <https://www.merriam-webster.com/words-at-play/word-history-latinx>

“Servingness” is a concept that focuses on the capacity of an HSI to create equitable opportunities for LatinX students to complete their degrees at similar rates as non-minoritized students, engaging the LatinX community through culturally-relevant and responsive pedagogy (Garcia et al., 2019). Unlike *LatinX Producing* institutions, *LatinX serving* schools build on the cultural wealth of LatinX student populations to “produce” graduates at similar rates to other student demographic groups. Using the cultural practices of LatinX students as a resource for deepening rather than diminishing heterogeneous epistemological and ontological perspectives fosters students’ academic and non-academic success (Gutiérrez, 2008; Núñez & Gildersleeve, 2016). Servingness, as enacted in HSIs’ social, material, and technical infrastructure, is a concrete way to increase access and to define what is meant by excellence in a more expansive and inclusive way.

Servingness is embodied in structures and practices that constitute HSIs. Servingness is enacted by faculty, staff, and administrators at HSIs in a variety of ways. It has been documented in student advising in the form of “intrusive advising” (Garcia et al. 2019, Varney, 2012); curricular and pedagogical practices that privilege cultural relevance (Garcia et al, 2019; Nora & Crisp, 2012; Núñez & Rivera, 2020); leadership decisions and hiring strategies (Cortez, 2015); and in regards to university policy and governance structures (Marin, 2019). As scholars studying HSIs have emphasized, servingness is a multidimensional framework that is enacted differently in and across institutions (Hurtado et al., 2015). That said, given how servingness pervades HSIs, we are interested in examining how this approach to engaging students may have mediated their experiences of COVID-19.

## METHODS

In spring of 2020, the CAHSI program evaluators administered a survey to 14 computer science departments through faculty and department chairs who distributed survey links to students. The survey was developed and implemented as part of an effort to collect data for a National Science Foundation grant, the CAHSI INCLUDES Alliance, as a method for gathering data to support national, regional, and institutional action. Some institutions targeted specific courses for distribution of the survey; others sent the survey to all students in the department. All institutions are classified as HSIs, yet their makeup varied cross demographic groups—the proportion of undergraduate students who are identified Hispanic/LatinX appears in Table 1. While the proportion of students who are Hispanic does not in and of itself connote “servingness,” understanding the prevalence of the student groups and differences across the institutions can provide context for the diversity of HSIs.

We administered the survey to students enrolled in 14 computing departments from 7 states and territories in the United States in April and May of 2020 about the diverse effects of COVID-19 on their lives and education. Respondents described the contexts where they lived, worked, and studied, their experiences with remote and online learning opportunities, how the COVID-19 health crisis influenced their day-to-day lives, and the effects on their academic and career pathways. We have intentionally chosen to focus our analysis on the qualitative data procured from the survey on who, what, and how students felt supported, encouraged, and helped during the crisis as a way of uplifting productive strategies to bolster and advance students’ social and academic success at HSIs.

School	Percent of undergraduate student body who are identified as Hispanic/LatinX
Kean University	31%
San Francisco State University	34%
California State University, Long Beach	44%
University of Houston, Downtown	51%
Texas A&M Corpus Christi	51%
California State University, Fresno	54%
California State University, Stanislaus	56%
University of California, Merced	56%
Merced College	57%
New Mexico State University	62%
California State University, Dominguez Hills	66%
University of Texas at EL Paso	85%
University of Texas, Rio Grand Valley	92%
University of Puerto Rico, Arecibo	100%

Table 1: Percent of Undergraduate Students Identifying as Hispanic/LatinX at each Institution

There was a total of 918 survey respondents, with a modal item response of 738, however only 518 provided open-ended data across at least one of the open-ended items provided in the survey. Respondents were all attendees at HSIs. In the following we provide a demographic breakdown of the 518 who responded to the open-ended items. Fifty one percent identified as Hispanic (15% Hispanic female, 36% Hispanic male). Twenty four percent identified as Asian (9% Asian female, 15% Asian male). Twenty one percent identified as Caucasian (5% Caucasian female, 16% Caucasian male). Five percent identified as African American (2% African American female, 3% African American male). Three percent identified as American Indian/Native American/ Pacific Islander/Native Hawaiian (1% AI/NA/PI/NA female, 2% AI/NA/PI/NA male). Participants in the survey were most often 4<sup>th</sup> year students (40%) and 3<sup>rd</sup> year students (30%), though second year (16%) and first year students (9%) also participated. Five percent of respondents were graduate students.

## DATA COLLECTION AND ANALYSIS

In response to the COVID-19 pandemic and the rapid transition to remote learning, we developed a survey to investigate students' experiences in spring 2020. The survey was designed to explore all facets of students' experiences—academic, financial, social, emotional, and professional. Survey constructs measured the impact of the pandemic on students' interest, self-efficacy, aspirations, and access to opportunity structures (e.g., research, internships). The survey also measured students' engagement with faculty, peers, and other campus resources during the pandemic. Finally, the survey explored the impact of the pandemic on students' financial, personal, and mental wellness. Due to the rapid onset of the pandemic and the lack of opportunity to validate the instrument psychometrically, the survey is descriptive and exploratory in nature. Nevertheless, the survey was adapted from a validated instrument that had been deployed in a

study of diverse students' STEM pathways at three land-grant universities (Thiry & Hug, 2021). The survey contained Likert-scale items about students' access to institutional resources, peers, staff, and faculty. The survey also contained open-ended items related to students' experiences of COVID-19, including academic, financial, and personal challenges and supports. Open-ended items were situated after the Likert-scale quantitative items related to that topic. For instance, after a set of quantitative items related to the impact of the pandemic on students' academic success and progress, there was an open-ended item with a prompt in which students could write about how the pandemic had impacted their academic progress and educational/career goals. Open-ended items contained a text box in which students could write an extended response to the survey prompt. The open-ended survey items included in this analysis were: a) What was the most important support you received from your college or your department during the crisis? b) How could your department or your university better support you during this challenging time? c) What was the greatest challenge you experienced in the shift to online classes? d) What or who helped your learning during the shift to online classes? How were you helped? and e) How has the COVID-19 disruption affected your academic progress. The survey was approved by the campus institutional review board.

The qualitative analysis included two rounds of coding of the entire corpus of the data across all respondents. The first round consisted of "open coding," a process of marking statements to generate inductive themes. The coding process was completed across all responses in this exploratory study—the intention was to understand the perspectives holistically across all respondents in this particular moment of time (spring 2020) rather than to make comparisons among the respondents, bounding the unit of analysis in time (Miles et al., 2020). The first round of open coding allowed us to identify themes related to student support, care, and flexible departmental and institutional policies towards student achievement. Examples of codes in the first round of coding included: faculty care, staff responsiveness, and flexible grading policies. Upon review of the codes that emerged, the first and second author noted how the open codes related to the notion of servingness at HSIs. Servingness was a concept that we were reading about in the literature and it was evident in observational, interview, and focus group evaluative data across the CAHSI INCLUDES alliance during the first months of the COVID-19 global crisis. For example, we noticed that staff were creating communication mechanisms to connect students across the department.

In our second round of coding, we used the analytic lens of servingness to develop deductive codes that mapped HSI servingness at the organizational (e.g., institutional, departmental) and individual (staff, faculty, peer) levels. Using this lens, we identified specific ways in which students experienced servingness at these broad levels.

In this paper, we chose to forefront the open-ended items, the qualitative aspects of the data we have, and utilize the quantitative data as background to contextualize the students' collective lived experiences. We draw on Nora and Crisp's (2012) call for research on HSIs to focus on "how" questions regarding HSIs through qualitative methods. Our goal through this analysis was to understand servingness of HSIs during the COVID19 pandemic. The research question that drove

our analysis was: How did students enrolled in HSIs during the 2020 transition to remote learning experience “servingness?”

We acknowledge the fact that the timing of our data collection may have unintentionally sampled from those students with greater resources of time and money, as they may have had greater bandwidth to complete the survey in a timely manner. We honor the fact that our survey was passive, and only possible to complete if a student had access to internet and the few spare minutes needed to complete the instrument. We do not know the extent to which our sample is representative of all students in the departments we surveyed, which is a limitation of our findings.

## RESULTS

In this section, we illustrate the themes that emerged from our analysis of students' survey responses. The themes were: 1) maintaining accessibility of physical infrastructures; 2) creating flexible policies that center relationality and responsibility; 3) holistic approaches to student wellness; 4) development of online culturally responsive pedagogy; 5) departmental and institutional provision of technical resources; and 6) student development of peer support networks. Following Núñez et al. (2015) recommendations, our goal is to create a representation of students' experiences at HSIs during the global pandemic that captures the fullness and complexity of their realities. We strive to work against deficit and one-dimensional narratives about HSIs and their students without ignoring the very real challenges that these institutions face.

### Maintaining accessibility of physical infrastructures

Even with the closures of campus facilities, some resources at the HSIs under study were kept open to serve the most vulnerable students during the COVID-19 health crisis. For example, quantitative findings indicate that 5% of respondents needed food pantry resources for survival and students shared in open-ended responses that the use of the food pantry during the spring semester was vital to their well-being. In their words:

*I appreciated that school sent out food to students.*

*Even though we moved to virtual classes, the University student cupboard is still open to help us.*

Students also described how universities' decision to allow for remote access to machines in the computer science computer lab was essential to their capacity to participate effectively in their computer science courses. Their coursework required specialized software without which they would not be able to complete their assignments.

*The university helped me somehow in using systems for lab activities which are available in the lab (room number) online.*

Decisions about how to use physical infrastructure during the pandemic requires thinking carefully about who needs to use what and when. As a result, it is an essential component in organizing for equitable education. The HSIs we studied recognized the need for flexibility in how physical structures could be used to serve students' changing needs. Sending food to vulnerable students,

finding ways to allow patronage of the food pantry, and reworking physical infrastructure like computer labs so that students could use them from a distance were concrete ways in which these HSIs enacted “servingness” during the COVID-19 crisis.

### Creating flexible policies that center relationality and responsibility

During the pandemic, all institutions needed to develop new plans for grading and adjusting assessment practices. As students reported in their responses to open-ended questions about their greatest struggles and supports during COVID-19, their institutions gave them the option of earning a letter grade or choosing a pass/fail option. This choice stands in contrast to practices reported by *Inside Higher Ed* of using a blanket “pass/fail” or “letter grade” policy. The students were grateful for the flexibility of the pass/fail option because it acknowledged the fact that they needed to adjust to remote/online learning. In this way, the institutions we studied centered students’ needs and agency. This option created a way for students to maintain their identities and dignity as learners who needed time and room for trial and error during the crisis.

*The most important support I received was the option to be graded on pass/fail for my classes.*

*Courses may be pass/fail if you choose them to be.*

At the same time, students expressed anxiety around the choice of earning a letter grade or taking a pass/fail. They were concerned about the repercussions of their decision for the future. Would opting for a “pass” make them look like a less serious or capable student on a graduate school application?

*I am glad to have a pass/fail option, but I also fear that Masters programs may not like it as much and reject my applications.*

*I am putting one or two classes on the pass/fail because I'm not too sure where I will stand.*

*I worry that once this pandemic simmers down, years later, companies may not be as empathetic towards students who may have failed classes or forced to take a class as credit/no credit as well as how it will affect my internship opportunities.*

Students described advice they received from multiple sources in making their decisions about whether or not to request a pass/fail option for courses within and outside their majors. Advisors, faculty, and department staff spoke with students about their needs and their career plans to help them make decisions about what to do. As the students recognized, these were consequential decisions and in uncertain times, the times their advisors spent considering options with them were invaluable.

*My academic advisor spent time helping me to understand the pass/fail systems and if the option was best for me or not.*

The decisions about “pass/fail” are also linked to economic considerations. Financial aid policies are often implicated when a student chooses a “pass/fail” option and this varies depending on the institution and the funding students receive (e.g., Pell Grant, university-based scholarship). As

students considered the ramifications of choosing a “pass/fail” rather than a letter grade, they needed to consider financial constraints as well. One student identified the biggest challenge of the pandemic as

*Fear of failing my classes and then my financial aid being affected.*

The catastrophic impact of COVID-19 on vulnerable students cannot be overstated; the pandemic has tentacles that reach into multiple dimensions of students' lives and institutions need to recognize the interconnections. Based on our review of survey responses, we found that institutions can support students best when communication between different university offices and centers are clear and consistent. All staff and faculty need to be informed about the domino effect of policies and how they influence different aspects of students' lives. This was underscored by a student who shared that the greatest support they received from their institution was in how the

*Financial aid office advis(ed) me for what to do when I fail a course.*

In our survey data, we found staff and faculty from multiple offices across the university centered relationality in the implementation of their policies. They created opportunities for discussion and dialogue with students. They also assisted students in interpreting policies and developing strategies with them so that they could use the policies to their advantage. Students were positioned agentively to navigate policies rather than accepting them passively.

### Holistic approaches to student wellness

In “forced-choice” survey items, almost all students reported mental health and emotional struggles related to the COVID-19 health crisis and the resulting campus closures. In all, 91% of students noted that they experienced emotional and personal challenges and 52% of students indicated that they were severely affected (i.e. they reported 3 or more mental health challenges related to the COVID-19 pandemic). On average, students reported they had experienced 2.62 negative mental health impacts each. The pandemic, unsurprisingly and overwhelmingly influenced students' sense of their mental health and well-being. More specifically, nearly three-quarters of students reported greater stress (476); nearly 2/3 described greater anxiety (408, 63%), and 42% said they were experiencing more loneliness (270). Over one in three faced depression (251, 39%) and nearly a third expressed greater fear (226, 35%). A small minority turned to increased drug and alcohol use as a coping mechanism (68, 11%).

In this context, students described how institutional agents worked to support their wellness. Tele-health and mental health counseling services were resources that 5% of the more than 900 respondents used.

*Student Counseling Services has helped me realize that I am being too hard on myself especially during these times.*

*The most important support I received was psychological counseling via TeleHealth.*

Students also reported that representatives from their institutions reached out to them to check in on their well-being. This occurred in structured and routinized ways such as in courses where



faculty began each course with a moment to let students talk through their experiences of the pandemic. It also emerged in less structured ways as in when staff called students to see how they were doing.

*An instructor has taken 5 minutes before each class to ask about how are we handling the quarantine, if we are safe and if we have any problem we can let him know, or let our department know.*

*The professors were very responsive during this time and I would get random calls from people at the university checking up on how I was doing and reassuring me that if I ever needed any help to feel free and let them know.*

When asked about the most important support they received from the institution, students emphasized that faculty demonstrations of care for them were some of the most vital practices that sustained them.

*All teachers said to stay safe and all offered to ask them questions on anything.*

*Faculty/department staff are always asking how we are doing.*

*The most important support I received from the department is the fact that everyone cared for me and asked how I felt or if I was okay.*

*Professors always tried to reach out to support us.*

Responses of care and humanity buoyed students during extremely tumultuous times. One student told a story of hardship in which she took a drastic - and ingenious - measure to remain healthy during the pandemic when the dorms were closed.

*My sister had caught the virus from a patient at her work, so I moved to my car in order to continue my schooling in a safe environment. I stayed in the car for the next 20 days and moved back into the house a few days ago. When I had emailed professors about the situation with my sister, all of them responded as a friend and then as a professor. Not only did I feel better about having to miss certain assignments, but I felt as if they really wanted to help in any way they could.*

*The most important support I received from the department is the fact that everyone cared for me and asked how I felt or if I was okay.*

## Development of online culturally responsive pedagogy

Culturally responsive pedagogy is a main indicator of servingness in the literature on HSIs (Garcia, 2017). As Flynn et al. (2017) write, cultural responsiveness is “a skill that is developed to respond to students’ needs as they arise” (p. 75). Culturally-responsive educators have high and clear expectations for learners, build relationships with students, and realize the need for systems of support to promote learning (Whalen, 2016). Survey data from students indicate that during the pandemic some faculty implemented culturally responsive pedagogy that was proactive, responsive to student needs, and created multiple avenues for receiving instruction. These dimensions of faculty pedagogy helped structure a dignified space for learning that acknowledged

students' lived experiences and offered strategies for thriving academically and socially (Espinoza & Vossoughi, 2014).

### ***Proactive approaches to remote learning***

Faculty anticipated the closures and, in some cases, prepared their students for the inevitable changes to remote learning through mock online sessions and training in technical tools. Faculty also provided detailed instructions for utilizing departmental and institutional resources for online instruction. Students who experienced these preparatory lessons and received up-front communication reported these behaviors eased their transition to online/remote education. One student noted the contrast between professors who were proactive and responsive and those who were more reactive.

*Mainly the professors (eased the transition online). A couple of them were very communicative and specific with what we would be doing and how. That helped a lot. A couple weren't and didn't give information until asked, sometimes multiple times. Those classes were confusing and a little stressful.*

Another student described the transition to online instruction as less disruptive when faculty were communicative and remained interactive following the transition.

*One of my professors helped intensely because she was very interactive with us as a class and made sure we knew what we had to do well in advance.*

Similarly, another respondent described how faculty supported students online.

*All the professors sent out emails on how to turn in assignments and offered different ways for students to feel more comfortable with their online teaching.*

### ***Faculty awareness of student challenges shapes flexible pedagogical responses***

Our quantitative survey results underscore that students were facing challenges that significantly and negatively influenced their capacity to attend to their coursework as they did before campus closures. These challenges took many forms. Nearly half were living with school-aged children (42%) who were also home during the pandemic. Student responses indicated that childcare responsibilities changed dramatically for students during the pandemic as their responsibilities as parents and older siblings took precedence. A significant number of students also worked in essential positions (n=108) such as grocery store clerks and delivery drivers and because of their new societal roles, their work hours increased. Other students who held jobs that were viewed as “inessential” were laid off, which amplified their financial precarity.

The respondents indicated how grateful they were for faculty who addressed students' shifting circumstances with flexibility. One student whose job as a firefighter and Emergency Medical Technician required him to focus on COVID-19 patients more than his schoolwork explained:

*I am a firefighter/EMT working every other day for 24 hours for the past 2 months. I miss a lot of schoolwork and classes and am dealing with covid19 patients daily. Learning online is NOT the same as learning in the classroom and is much harder. I am working*

*more because of the pandemic and I am not being able to make all classes or finish class work on time. Thankfully my professors were understanding & willing to help.*

Another student described how the pandemic influenced their ability to get work done for school and how this shift will likely increase how long it will take them to graduate.

*Prior to COVID-19's spread, My in-laws watched 4 of my 6 kids. This is no longer the case as they are now constantly at home and require more attention, time, patience, increased assistance in their workload, and more factors. This takes away from my allotted time for studying. I'll have to extend my time at [Institution] in order to complete my end goal. In my (course) the professor has reduced the stress levels drastically for all of my classmates.*

Professors who recognized the import of new constraints on students' time and priorities and adapted their practices in response were praised for their efforts and adaptability.

### **Multiple avenues for accessing faculty expertise**

As the pandemic progressed, students reported in some cases, greater access to their professors through a variety of instructional means. They identified increased office hours, quicker response times, and the provision of additional resources that facilitated their learning during the pandemic. This was not communicated by all students; some struggled to get in touch with their faculty and felt frustrated with their absence. Some students indicated the differences among the support they received from faculty, and lauded faculty who supported their learning by making themselves easily available.

One student said that communication was valuable early in the transition to online learning.

*Constant emails from professors and online office hours multiple times a week.*

Another appreciated that faculty made a practice to reaching out individually to students.

*We managed to establish a form of communication. Feedback from each other- this is what reaffirmed if (course instruction) was working for the class or not.*

Students also shared that they experienced increased and more on-demand access to faculty knowledge during remote learning.

*The fact that the classes are recorded (means) I can go back to them and that is helpful.*

A structure for support that some faculty designed staggered responsibility for fielding questions between the instructor and the TA and this created increased availability for students in the course.

*One of my professors and his TA are available on alternating days and they have been so helpful.*

Another structured support system was a discussion board that faculty developed for curating all comments and responses to questions. This distributed expertise across courses so that students were not only accessing faculty knowledge but could also facilitate students learning from their peers.

*The discussion boards allowed me to explain how I understood a topic and see what other students understood.*

Student survey responses indicate faculty were responding to their needs as learners during the global pandemic. Some faculty were creating multiple ways to keep in touch, and creating new resources through video lectures and providing their own notes, as well as through recording and posting their live sessions for later use. As students' lives were upended, faculty responded to students needs with principled improvisation that centered a commitment to students' education (Philip, 2019).

### Departmental and institutional provision of technical resources

For remote learning to be effective, there is an implied assumption that students will have unfettered access to consistent Wi-fi as well as to a computer that they can use exclusively. However, survey results show that of those who completed the quantitative items, 12% stated they had no internet at home, 49% said they had unreliable internet at home, and 21% explained that they had a computer, but that it was old and/or broken.

Three elements of technological use that were clear from our data are: 1) internet access and quality internet access are two different things, 2) peripheral hardware and software are vital to remote learning, and 3) provision of resources versus exclusive use of resources are a major concern for students. In open-ended response items students indicated that while they may have a computer, they had to coordinate their use of it with multiple members of their family in order to do schoolwork. The additional burden of close surveillance around test-taking at home necessitated having a webcam to prove authorship of test responses. The lack of trust of students and the need for specific testing software caused hardships for some.

HSIs did offer technological resources for students that aided their capacity to participate in online learning. Survey respondents noted that they received funds that allowed them to get laptops, access hotspots, or pay for internet service. Departments also used a variety of means to provide technological resources for students. Some stated that they were given funds to purchase a laptop of their choice and others received computers on-loan. Remaining flexible regarding how to meet students' technological needs has been important as the pandemic continues to disrupt schooling. Considering all aspects of technological needs, from a technical and social perspective, is vital to supporting students at HSIs.

### Student Development of peer support networks

A central feature of sustainable and effective learning communities is that their values and practices are embodied by their members (Bricker & Bell, 2014). In our analysis of HSIs, we found evidence of the disposition of servingness being taken up in the actions of students supporting each other's learning. Peers in instructional roles within a course as well as peers co-enrolled in coursework were empowered to lead and collaborate with other students, and in this way they created the network of support students need to be successful.

**Expanded instructional teams**

Some students experienced learning as very social despite the lack of physical presence. This was due, in part, to consistent electronic access to instructional aides and peers. While the quote below does not note the technology used to connect, the student mentions access to a network of other students to whom the respondent had synchronous access during remote learning.

*The peer leaders and other assistants were really helpful in my lecture and lab courses, as well as some peers that I was able to contact outside of the class. The assistants in my cs (computer science) courses were able to answer my questions during the online sessions about something the TA or professor had mentioned and they also provided review sessions where they used various examples to help us understand or review subjects as well as answer specific questions we had. My peers would mostly help me understand the homework given to us by showing me how to do it.*

Another student described a positive experience with learning remotely because of regular, asynchronous accessibility to course peers, instructional aides, and faculty.

*Professors, TA's, and my peers have helped a lot. If we had any question, there was always people emailing or texting others to aid them in anything. Personally, emails and texting have been a very helpful way to communicate.*

A suite of digital communication forms – beyond Zoom classes – enabled communities of learners to thrive during the pandemic.

**Establishing peer routines/structures for support in online learning**

While some student responses indicate interaction with peers in unstructured (e.g., texts and emails) and semi-structured (e.g., review sessions) ways, students mentioned more structured support. The first two quotes below name specific top-down tools developed by the department for their use in collaboration (e.g., the Discord channel) and the following two quotes described organic systems that peers devised to improve their learning collectively.

*The CS department invited the entire CS community into a Discord server. This made it extremely easy to look for news/info, stay in contact, and view classroom discussions.*

*Application online such as Discord and MSTEams really helped learning through remote classes bearable. Having my friends to chat with while we do homework through these applications have really helped. It still feels like I can study and do things I would normally do in campus (But of course not the same).*

These official tools were valuable for students, but they also developed homegrown approaches to learning remotely. Their networks helped them establish affinity groups in which they led their own learning.

*My classmates were the ones who helped my learning while transitioning to online classes. We all keep in contact during synchronous learning and make sure we are understanding the material and helping each other out with any questions or confusion from the online lecture and/or assignment.*

*My friends and I would organize study groups and help by asking questions to each other.*

*My classmates were the ones who helped my learning while transitioning to online classes. We all keep in contact during synchronous learning and make sure we are understanding the material and helping each other out with any questions or confusion from the online lecture and/or assignment.*

*Peers/classmates, with creating study groups to be able to talk about the lectures, homework, etc. to keep up with what we're being taught*

The survey respondents shared how they were using, inventing, and adapting technologies to meet their needs as students.

## DISCUSSION

As higher education struggled to adapt to remote learning in the spring of 2020, our data shows students were experiencing multiple obstacles to their learning—exacerbated financial strain to mental and physical health struggles, to great shifts in responsibility. The responsiveness of faculty and staff highlights labor that was not necessarily part of official job requirements. Faculty and staff, according to survey respondents, were developing relationships, their pedagogical practices, and policies in ways that were informed by their university's ethos of servingness.

Students experienced servingness through support of one another's learning. They accomplished this serving through formal pathways created in their courses and through informal, grassroots routines they established to engage with one another in course content. Students used a suite of technological tools to reach one another and balanced the use of synchronous and asynchronous means of interacting based on their pandemic circumstances and schedules.

Students also experienced servingness from university personnel. University personnel embodied servingness through how they supported students' wellness and their learning in courses, while also considering students' long-term academic careers. Staff and faculty provided nuanced guidance related to course taking and financing college courses during the pandemic. Faculty developed principled pedagogical approaches that allowed them to respond to students' needs as people living through the pandemic and as individuals who newly needed to engage in online learning. Servingness from faculty required them to learn about students' particular circumstances and about the ever-evolving resources that were becoming available to support students.

Students experienced servingness through policy enacted at the institutional, departmental, and course levels. Policies regarding how universities used physical infrastructure and personnel

resources (e.g., finding ways to allow students to use food pantries and computer labs) were consequential for how students' academic survival during the pandemic. Policies about grading and assessments are important not only in relation to students' academic records (i.e. grades in class), but also to how students can access financial aid. Changes in policies as well as how they are communicated were critical in our analysis—departmental and institutional agents communicated in multiple ways with students about consequences of course choices and communicated care in their efforts to enact flexible policy when possible.

Our evidence suggests multiple ways in which students experienced servingness, and the primary way that this servingness was received- through added human labor at the institutional and departmental level. Staff and faculty appeared to go the extra mile beyond their job descriptions to ensure student wellness and academic progress. These actions to embody servingness should be officially embedded in departmental and institutional practices. Doing so would support student development as well as recognize the labor that it takes to live servingness in practice.

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To cite this article:

Hug, S., Jurow, A.S., & Thiry, H. (2021). HSI students' experiences of "servingness" during COVID-19. *Dialogues in Social Justice: An Adult Education Journal*, 6(2), Article, R1147