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## EDITED BY

Armando De Giusti,  
National University of La Plata, Argentina

## REVIEWED BY

Antonio Luque,  
University of Almeria, Spain  
María Alejandra Zangara,  
National University of La Plata, Argentina

## \*CORRESPONDENCE

Leah E. Huff  
✉ lh20@uw.edu

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# Student-led documentation of COVID-era education: a study of graduate programs on the human dimensions of oceans

Caroline Potter<sup>1</sup>, Luke Hiserman<sup>1</sup>, Gregory Papp<sup>1</sup>,  
Harshitha Viswanathan<sup>1</sup> and Leah E. Huff<sup>1,2\*</sup>

<sup>1</sup>School of Marine and Environmental Affairs, University of Washington, Seattle, WA, United States,  
<sup>2</sup>Nippon Foundation Ocean Nexus Center, Seattle, WA, United States

This communication highlights the major actionable findings from 27 interviews of students in master's programs that explore the human dimensions of oceans. The overall aim of the loosely structured conversations was to understand how COVID-19 impacted the interviewee's educational experience, what was helpful to them, and how their experience could have been improved. From these voices, we developed 24 recommendations for universities and programs. Specifically, we found that diversity, equity, and inclusion (DEI) should be a high priority as it supports students and a program's resilience.

## KEYWORDS

COVID-19, education, graduate education, diversity equity and inclusion (DEI), graduate students, marine affairs

## Introduction

### Background – COVID-19's impact on university students

In March 2020, there was a mass exodus from U.S. universities as campuses shut down, residential students traveled home, and online education became the new modality of learning. Students' academic lives shifted from in-person learning to real-time video conferences, asynchronous presentations, video recordings, and written communication (Aristovnik et al., 2020). For many, this abruptly altered assessment methods, workloads, and communication with faculty, administrative staff, and colleagues (Aristovnik et al., 2020; Aucejo et al., 2020). Many students withdrew from classes, took time off, and delayed graduation (Aristovnik et al., 2020; Aucejo et al., 2020).

The expulsion of students from university housing led to increased housing insecurity as some students were fully dependent on campus accommodations, with some not having a home to return to and others unable to travel abroad to reach home (Aristovnik et al., 2020; Lederer et al., 2021). Conducting school from home had heterogeneous impacts on students, with some ending up in inappropriate learning environments while others experienced benefits from, for example, reduced travel and working in more comfortable surroundings (Bączek et al., 2021; Mucci-Ferris et al., 2021). In addition, for some students, returning home expanded caregiving roles to children, elders, and sick family members (Lederer et al., 2021). Perhaps unsurprisingly, the move to a remote learning environment led to varying results on perceived performance, with some students finding the lack of in-person instruction less engaging and more fraught

with distractions while others reported it actually improved their academic performance (Aristovnik et al., 2020; Gonzalez et al., 2020).

COVID-19's impact on students' lives was far-reaching. The loss of campus-based food programs such as meal-plans and food pantries increased food insecurity (Lederer et al., 2021). Student financial hardship increased as many lost a job, internship, or job offer, and experienced decreased wages and work hours (Aristovnik et al., 2020; Aucejo et al., 2020; Lederer et al., 2021). Further, as student anxiety, depression, and loneliness rose during COVID-19, many found accessing mental health services more challenging (Lederer et al., 2021; Lee et al., 2021; Birmingham et al., 2023).

Laboratory and field activities were canceled or replaced with virtual counterparts (Barton, 2020). Although the practical, hands-on experiences may have been lost, geographical and financial barriers were lowered (Pennisi, 2020). Professors and students had to be creative and use available tools to accomplish once in-person tasks and, in the process, they often gained unexpected skills (Pennisi, 2020).

Online learning exacerbated digital inequality (Katz et al., 2021). Typically, on-campus resources such as WiFi and computers assist in mitigating digital inequalities; however, during COVID-19, students lost access to these resources (Katz et al., 2021). Lack of fully functional digital devices and access to high-speed, consistent internet is associated with lower remote learning proficiency (Katz et al., 2021). Students lacking these resources are disproportionately likely to be in positions of financial hardship (Katz et al., 2021). Additionally, COVID-19 disproportionately affected lower-income students resulting in them being more likely to delay graduation (Katz et al., 2021). It also increased the gap between higher- and lower-income students' expected GPA (Aucejo et al., 2020).

COVID-19 drastically impacted graduate students' ability to conduct laboratory and field research (Radecki and Schonfeld, 2020; Toronto Science Policy Network, 2020). This resulted in delayed graduation and career advancement and loss of funding (Pardo et al., 2020; Radecki and Schonfeld, 2020). Many students were forced to abandon their projects or create new research methodologies, often utilizing increased digital technology (Sokhulu, 2021; Suart et al., 2021). While this adaptation allowed students to ask and answer research questions in novel and innovative ways, it also limited research to digitally accessible stakeholders (Zuberi, 2022). However, COVID-19 has also allowed for unique opportunities in research. For example, COVID-19 mandates reduced anthropogenic disturbances, allowing researchers to assess human impacts on biological systems (Monroe, 2020; Pardo et al., 2020; Huveneers et al., 2021).

While the cancellation and postponement of conferences at the beginning of the pandemic equated to missed opportunities for graduate researchers to learn, discuss their research, and network, the switch to on-line conferences has increased accessibility and potentially participation (Pardo et al., 2020; Radecki and Schonfeld, 2020). The increased reliance on digital communication has also led to innovation in research collaboration and scholarly communication (Radecki and Schonfeld, 2020). However, lack of division of household labor disproportionately affected women, which potentially contributed to the reduced publication rate and fewer new projects by women during the pandemic (Pardo et al., 2020; Suart et al., 2021).

Although COVID-19 had numerous negative effects on students in higher education, it also ignited innovation in teaching, researching, learning, and living. As universities transition back to in-person instruction, it is important to apply what was discovered

to strengthen the education system and those within it. As such, this report captures the voices of students studying the human dimensions of oceans in order to learn what their experiences were during the pandemic, what was helpful to them, and how their experience could have been improved. Given that the subject matter is sensitive and contextual, this study focuses primarily on qualitative storytelling and highlighting individual circumstances during the COVID-19 pandemic. This report aims to capture the voices that are not reflected in current survey results. Furthermore, we emphasize diversity, equity, and inclusion (DEI) because DEI and the ability to respond to shocks such as those from COVID-19 are inextricably linked, and because DEI is a high priority for many students. Thus, we are taking time to reflect on what we learned from the pandemic to prepare for the future.

## Methods

We contacted 17 universities with master's programs that explore the human dimensions of oceans (See [Appendix A](#) for university list). We did this by contacting heads of departments and using personal contacts requesting that they share our email elicited interviewees on the program's listserv in an effort to reach as many students of that program as possible. We were successful in sending messages on most but not all intended listservs. We also used snowball sampling. At the end of each interview we inquired whether the interviewee knew of any peers that would be willing to share their experience.

We interviewed 27 students from 9 universities, 1 of which was a written response to interview questions (See [Appendix B](#) for represented universities). Ten were PhD students, 16 were master's students, and 1 was an undergraduate student just entering into their master's program. Most interviewees started their program in the fall of 2020 or 2021. While the overall aim of our typically 40–60 min conversations was to understand how COVID-19 impacted the interviewee's educational experience, we also focused on topics of DEI and community engagement. Each interviewer shared a list of pre-constructed questions, however, interviews were fluid and thus the range of discussion topics often varied between each interview (See [Appendix C](#) for preconstructed interviewer questions). Therefore, in our results we do not list the number of interviewees that agree with a specific statement because we do not know how many of the interviewees would agree with that statement if each were asked identical questions.

## Results

### Remote academic experience

#### Overall experience

Interviewees expressed that during the pandemic and their virtual education, they experienced additional stress, were less motivated or discouraged, struggled to be efficient, or were easily distracted, and found conducting school in a virtual format a challenging experience.

A few interviewees explained that they adapted well to or liked online learning. However, more mentioned that they disliked their overall online educational experience, with a similar number stating they had a neutral opinion on remote learning.

Even with its drawbacks, a multitude of positive aspects to online education were identified with one of the most common being a more flexible schedule. Students' ability to determine when and/or where to accomplish their work was described as giving them freedom and autonomy. It also increased employment options and, for some, increased mental health. A major contributor to this was not having to travel to class, which some interviewees found a very time-consuming and difficult endeavor. Interviewees also explained that it was easier and cheaper to attend remote conferences and other events and there was increased equity and improved environmental stewardship.

Remote schooling allowed some students to live in better neighborhoods, spend more time with family, save money, and be more efficient. In addition, some found learning from home was a more pleasant experience than attending in-person classes and they were able to absorb information better in the more comfortable working environment at home.

A couple students stated that the pandemic was the catalyst that led to their return to school, with one interviewee stating that schools' waiver of certain requirements such as GRE scores encouraged them to return.

### Remote courses

About a third of the interviewees mentioned that some classes were poor quality as a consequence of the pandemic. The reasons for this varied but were often due to the format of the class not being well suited to an online medium. For example, discussion-heavy classes were commonly flagged as worse quality, awkward, had low engagement, and, as one interviewee put it, "felt like pulling teeth." Some interviewees admitted that they participated less in Zoom discussions than they usually did during in-person class discussions with some explaining they felt less motivated to participate and less engaged in the conversations online. Interestingly, for discussion-heavy courses, online was not always the worst option, as one interviewee explained that in-person learning without group learning, due to separation from COVID-19 protocols, made for less community building than online learning done well with breakout groups in small classes.

Alternatively, some students explained that poor class quality was not due to the format of the class but because of the professors teaching them. Some professors had difficulty transitioning to remote teaching while maintaining class quality. Others appeared to struggle with the effects of COVID-19 such as needing to provide child care. A few interviewees argued that certain professors simply did not care enough to successfully transition to online instruction with one interviewee stating that teachers who cared found ways to teach effectively. A couple interviewees identified older professors as more often having difficulty transitioning or not attempting to adapt.

On the other hand, some students believed that class quality was not affected. In addition, many interviewees stated that some classes benefited. These included more technical courses, such as Oceanography, core courses/prerequisite courses, and lecture based courses. Inviting guest speakers from all over the world became a more common practice during remote education, which sometimes increased the diversity of speakers and benefited classes overall.

In addition, there were numerous aspects of online courses that students found helpful. A few interviewees appreciated how some professors altered the way tests were conducted with a switch from

timed multiple choice/essay tests to oral tests. This altered how students studied, from memorization to mastering large concepts. In addition, attending classes from a computer allowed students to have instant access to notes, readings, and the internet which also enabled less memorization. Several found this very helpful and some admitted it resulted in them studying less in preparation for class. Moreover, recorded classes allowed students to rewatch, pause, and rewind lectures, which was helpful in absorbing information.

Conversely, there were some aspects that interviewees found were not replicated during their virtual education such as lab and field work opportunities and the overall "college experience." However, some interviewees were still able to conduct some of the former and others contended that the latter is not as important to master's and PhD students.

Many interviewees felt that classes were easier to pass during remote instruction for several reasons including teachers waiving some requirements and being more lenient graders. This allowed students to learn content with less pressure on meeting grading metrics. In addition, allowing courses to be taken pass/fail reduced pressure for students to perform optimally while coping with the effects of the pandemic. Tests and exams from home were easier for some as they felt less anxiety/pressure in the comfort of being at home. Open-note tests allowed students to focus on understanding overall topics rather than memorization. Interviewees were appreciative of faculty and school policies that allowed flexibility such as extending deadlines. However, some felt that faculty should have been more accommodating, for example, with hybrid options and late work policies, particularly for students who were recovering from COVID-19.

Many interviewees mentioned that a decent percentage of their cohorts did not want to or have a desire to transition back to in-person education. This was particularly true for students who could socialize outside of classes and had in-person field and lab work. This demonstrates that remote education can benefit many individuals and should not be disregarded now that the COVID-19 pandemic is subsiding.

### Training professors to teach virtually

Several interviewees believed professors needed more support to teach virtually. Some programs support the use of certain platforms, such as Brightspace, however, interviewees pointed out that not all faculty were trained on how to use these platforms, with some struggling to adapt. One interviewee expressed that faculty often struggled with technology, which made virtual interactions challenging or impossible and delayed course progression as well as made it harder for students to be engaged. Thus, the faculty's ability to learn and master the virtual teaching platform directly relates to how well the students learn and master course material.

### Recommendations

Recommendations are intended to provide future guidance to university programs and do not critique what programs should have done during the pandemic.

1. Remote education provides many benefits and should not be completely abandoned. Instead, remote education should be embraced where appropriate.
2. Faculty should receive training on how to teach virtually.

3. Lecture-based and technical courses may benefit from continued use of online or hybrid teaching and, therefore, faculty should evaluate whether their courses should continue to be offered virtually.
4. Courses that utilize online discussion during class should be kept small and use breakout rooms to facilitate meaningful conversations and increase engagement.
5. Faculty should not limit guest speakers to those that can visit classes in person but, instead, should consider inviting speakers from around the globe.
6. Open-note and oral tests should be considered if the learning objectives of a course are to understand large concepts as opposed to memorization.
7. Lectures should be recorded to prevent students from missing course material and to allow them to rewind and pause past lectures, promoting information absorption.

## Hybrid courses

Hybrid classes were identified as having the greatest potential benefits but, in practice, were often identified as the worst experience. Interviewees appreciated not having to travel to every class and the ability to only have to attend class in person occasionally. For example, in one of the interviewees' classes, the professor and students agreed to meet in person only once a month. This allowed students to maintain many of the benefits of remote education while also being able to build stronger connections by occasionally having in-person interactions. Furthermore, one interviewee explained that another university was conducting outside, socially-distanced classes, which they wished their program supported. In addition, if a class is primarily in person but offers remote attendance, it can prevent absences. For instance, one interviewee explained that a student in one of their in-person courses without remote options had to miss several weeks of class in order to care for a sick family member. Another interviewee mentioned that they had to return home due to a family emergency but because of remote options, they did not have to withdraw for the term.

Although hybrid accommodations were not necessarily required by universities, many interviewees stated that hybrid options were usually available when classes were transitioning back to in-person instruction. Typically, professors were flexible and understanding during this transitional period, especially when students had to miss in-person classes. However, this feeling was not universal as a couple interviewees explained that hybrid accommodations were not usually made unless you had COVID-19 symptoms. Another interviewee expressed that once classes began to transition back to in-person instruction, hybrid options were completely revoked, which made resources inaccessible for students who could have benefited from continuing to attend classes remotely. Furthermore, some interviewees expressed frustration with some classes having mandatory in-person attendance while others were still completely remote. One interviewee explained it was challenging to travel to the school due to their COVID-19 living situation and another felt it was an inconsistent application of protocols.

A few interviewees found the use of hybrid classes during the transition from remote to in person haphazard. Faculty conducted hybrid courses in various ways with various rules on attendance and guidelines on participation. Not only was it sometimes confusing to

track which classes students needed to physically attend that week, but it was sometimes difficult to attend a class in person within a short time frame of needing to attend one remotely.

As already alluded to, hybrid courses can be the most inclusive but in execution, they produced the most inequality. This stems from professors' common struggle to manage hybrid technology, teach effectively, and interact with students simultaneously. Faculty were often good about incorporating online students into in-person classes. However, faculty also tended to prioritize in-person students, with only very proactive instructors fully incorporating remote attendees into class. An interviewee explained a common hybrid method, even before COVID-19, was for remote students to only be able to watch and not participate or interact with the rest of the class. As such, when some courses eliminated their hybrid option during the pandemic and all students were virtual, there was no more prioritization of in-person students and as such, there was more engagement during class. Inequality among physically present and remote students is not an inherent part of hybrid courses but speaks to the need to support the use of technology that better incorporates remote students into the physical classroom. Specifically, having all students be able to see, hear, and participate during class.

## Recommendations

1. Hybrid education provides many benefits and should not be completely abandoned. Instead, hybrid education should be embraced where appropriate.
2. If a course can allow remote attendance, it should. Whether remote attendance is discouraged for students who can attend in person is at the discretion of the faculty.
3. Faculty should be advised on methods and technology that fully incorporate remote students into the in-person classroom.

## Research

### Overall impacts

Many interviewees stated that their research was not affected. However, slightly more stated that they were required to change their project due to the pandemic and a similar number stated that other students' research was impacted. The same number of interviewees stated that COVID-19 had a positive effect as stated that COVID-19 had a negative effect on their research. Effects were usually the result of the switch to using a digital methodology or not being able to acquire field data as anticipated. One interviewee also explained that the process of developing a thesis was severely hampered by COVID-19 protocols as students could no longer partake in current research vessel trips, field work, or lab meetings, which hampered their ability to develop their own research questions and methods. A few interviewees found it helpful that their school conducts long-term field studies and hosts large data sets on its servers. This provides a significant amount of data to students, which was incredibly helpful to students who could not conduct field work.

### Digital methods

While many interviewees mentioned they conducted in-person field work, more mentioned that they used digital methodologies.



Positive and negative aspects of digital methods were discussed, however, overall, they were more often described as having had a positive impact on the interviewees' research. Digital methods enabled students to engage with people around the globe and reach a broader and, at times, much larger audience, both of which improved the sample of many interviewees' research. For some, this also increased the diversity of their sample population and, overall, resulted in better data. Digital methods also made scheduling and conducting interviews more convenient with virtual meetings, reduced work cognitively and logistically, and saved time, money, and carbon emission. One interviewee stated that their work was "liberated" because they use a digital methodology.

On the negative side, interviewees felt in-person research can lead to more inspiring conversations and allow the researcher to more easily read body language and expressions. Virtual interactions can feel more forced and less personable and thus it can be harder to emotionally connect to people. One interviewee stated that it takes more effort to have participants share openly in a virtual setting. In addition, students were sometimes forced to target a different population than they originally intended as they had no way to connect with their original population via virtual means. This happened with geographical communities, or those that did not want to engage with researchers remotely, such as some older or indigenous people. A few interviewees said it would have been helpful if there was some way to engage with a community virtually but simply did not know if such a platform existed. Thus, even though it was often easier to acquire data, some found it significantly harder to do so for specific populations. And while digital methods often resulted in a larger sample, that sample sometimes became less diverse. For example, some interviewees posted surveys on facebook groups or sent them using organizational listservs, but felt that these methods produced minimal diversity in their sample. Furthermore, interviewees found that not everyone has access to a good internet connection, which hampered people's participation.

## Community engagement

Numerous interviewees' research incorporated community engagement, and while some said that COVID-19 did not affect this aspect, more said that it did. One student found community engagement became easier with virtual tools. They were able to visit local schools and interact with students online and not have to set up booths or attend fairs, which saved time. It also allowed the student to access a broader audience. Their primary audience of the in-person events was white, wealthy, coastal vacationers, whereas the online format allowed the interviewee to bring their work to a more diverse audience. However, more interviewees mentioned worsening community engagement quality. One interviewee explained that collecting data through virtual platforms limited communities' ability to form interpersonal connections with students or the project and miscommunications resulted in unmet community goals. While COVID-19 protocols were usually the reason research projects were forced to change, one interviewee explained that they changed their project's methodology because they could not find enough people walking around the community to interview, which they surmised was due to COVID-19. In addition to students' research, classes that had a strong community engagement component were canceled or, as one interviewee explained, were less impactful due to the lack of direct

communication between professors, students, and the community they wanted to engage with.

## Recommendations

1. Students should be advised where they can access datasets relevant to their research interests.
2. Students should be encouraged to consider using a digital methodology and how it might impact their research.
3. When attempting to engage with a community, virtual tools should be considered.

## Professional interactions

### Faculty interactions

Numerous interviewees explained that faculty and advisor interactions were negatively affected during the pandemic. Not having casual face-to-face interactions with faculty after class or during office hours made getting questions answered and building relationships much more difficult. One interviewee shared that they did not meet their advisor in person for a full year and as such, they never made a real connection with them. Overall, there was less dialog between professors and students virtually. One interviewee explained the situation as professors delivering information during class time with students expected to digest it and tune out when class was over. In this format, light hearted conversations with professors were eliminated. Interviewees also explained that it was more difficult to get in touch with faculty and advisors. A major contributor to this was the logistics of having to schedule a virtual meeting. Miscommunication, full or inconvenient meeting time slots, and long email response times created a barrier that students would have to break through every time they wanted to connect with certain faculty. A couple interviewees also explained that reduced meaningful interactions between faculty and students hampered professional development and the construction of and interaction with their thesis committee.

On the other hand, some interviewees felt that COVID-19 did not greatly affect their ability to interact with faculty and that they received all needed help and support. This was usually mentioned with the fact that these faculty regularly held virtual office hours. In addition, one interviewee had a weekly meeting with their advisor, which they found helpful.

### Networking and job attainment

The same number of interviewees stated that networking was and was not affected. Several more felt that job attainment was not affected than felt that it was negatively affected. One interviewee explained that during COVID-19, access to opportunities such as jobs and fellowships were not limited and another stated that they were still able to create a great network during the pandemic and that it was, in fact, the best part about their program. Advisors were pointed out as key in connecting students to professionals and job opportunities. However, it was also noted that due to the virtual nature of school and events, students lost casual side conversations and networking opportunities that they otherwise would have engaged in with guest speakers and at in person events.

## Recommendations

1. Students should easily be able to have in-person interactions with faculty and their advisor.
2. Faculty should regularly hold office hours.

## Social networks

### Family and friends network

While many interviewees mentioned that they lived at home for some portion of their education, more mentioned they moved away from home to live near their university. Some did this before the school announced an abrupt move to online education, others moved knowing that their classes would be virtual. This change in setting often changed the nature of students' family and social networks. Several mentioned that their friends and family relationships were restricted. However, several familial relationships stayed constant as some interviewees explained they were accustomed to interacting with their family via remote means. In addition, a few interviewees mentioned that their family or friends network actually became stronger during the pandemic because they made more of an effort to connect with them and maintain those relationships.

### Student network

A couple interviewees stated that a virtual student network was not created but many more stated one was created, however, the usage and longevity of those networks varied. The primary platform mentioned was Slack, occasionally alongside Facebook which was sometimes used for slightly different types of communications such as more professional news or events hosted by faculty. For many, these platforms were heavily used when school initially went virtual, however, they usually fell into disuse. Although school programs often supported the use of these platforms, it was typically students who created them. One interviewee was frustrated that the burden of community building fell to students, not only to create virtual discussion platforms but also to plan welcoming events for new cohorts. Another interviewee stated that to have a good graduate experience, you need to have multiple groups such as student groups and the graduate program facilitate social events, but this did not occur. A handful of interviewees mentioned that the school did host social gatherings, however, one stated that school-organized virtual socializing events were generally unsuccessful. Furthermore, a couple interviewees stated other students did not attempt to socialize or build connections during remote learning.

### Student community building

Numerous interviewees said building connections/community was more challenging due to no or limited in-person classes and events. Many interviewees mentioned they rarely socialized, felt isolated, and wanted more interaction with their peers. These feelings often grew from the difficulty in interacting with others in the virtual medium. However, these feelings were not universal as one interviewee explained that they thrived from less social interaction as they are an introvert. Both students' non-academic and academic interactions with their peers were affected. For instance, a couple interviewees explained that forming study groups was more difficult virtually.

At the beginning of remote learning, some students engaged in socially distanced outdoor gatherings, while others only engaged with students online. As time went on, in-person gatherings became more frequent. However, interactions did not simply return to normal as interviewees explained that masks made social interactions more challenging as it was hard to read social expressions and hear soft spoken individuals. In addition, it was sometimes harder to navigate in-person social interactions as you do not know people's preferred COVID-19 protocols. Moreover, one interviewee observed that in-person classes after the pandemic were not as social. Overall, even with the return to in-person instruction, the initial lack of student interaction and continued COVID-19 protocols stunted cohort bonding.

## Finding support

Several interviewees stated they received support during the pandemic by being part of communities on and off campus such as ethnic, minority, DEI, LGBTQ+, and student support groups, as well as churches and post class gatherings. These social networks were crucial in providing community during COVID-19 in a potentially isolating situation. Furthermore, an interviewee stated that virtual support groups for minority students which were created by students during COVID-19 became in-person groups as COVID-19 protocols relaxed and that these groups acted as a catalyst for other social networks benefitting marginalized communities. In addition, several interviewees found writing workshops, hosted by students and faculty, as a way to create accountability with other students, reduce distractions, and boost creativity. Interviewees also mentioned the library was a very helpful resource. Furthermore, many students utilized and recommended their university's counseling center. Some said counselors were an underutilized resource while others stated it was often hard to get an appointment due to high demand.

## Recommendations

1. Student groups and the university should facilitate social events and the building of social networks. The burden should not fall solely on students.
2. Students should be informed about the existence of different student groups and how to get involved.
3. Students should be connected with their library and be informed which librarians oversee their research areas.
4. Students should be informed of the university's counseling services.

## University and department policies

### Dialog with students

Many interviewees stated that there was no dialog between the school and students or faculty and students regarding COVID-19 protocols. One interviewee expressed that faculty and administration seemed to genuinely care about students' best interests, but often assumed what the students best interests were, rather than listening to students. Thus, the burden was on students to advocate for themselves with respect to COVID-19 needs. On the other hand, one interviewee felt their school tried to create a dialog with students with a survey on students' experiences and how to improve the program, however, the response rate was limited.

## COVID-19 communications

In addition to not having a dialog with students, multiple interviewees stated that their program had poor communication regarding COVID-19 protocols and a similar number stated the protocols were confusing. While students seemed to be understanding of the constantly changing situation, many found the constant change in COVID-19 protocols difficult to track and adapt to and thus made completing research more difficult. One interviewee stated that due to miscommunication between the administration and the student body, international students were not aware if COVID-19 tests would be covered by the university health insurance. Students were not the only ones confused, as a handful of interviewees mentioned that the administration provided inadequate guidance to faculty particularly during the transition back to in-person instruction. One interviewee explained that as a result, faculty did as they saw convenient, without input from students. This led to hard to juggle schedules with some classes in person, some online, and some hybrid. This was particularly problematic for students who commute to school. However, some interviewees were sympathetic to professors with one stating that teachers and students received information at roughly the same time and faculty, like students, lacked extra preparation.

Conversely, good communication regarding COVID-19 protocols was mentioned the same number of times as poor communication with some explaining that their program regularly sent out emails on COVID-19 protocols which included information on the current situation and what was expected to happen in the future. Professors were also mentioned as providing necessary support to students.

A couple interviewees appreciated how easy their university made getting tested and vaccinated by offering COVID-19 tests and hosting vaccine clinics. In addition, one interviewee stated they appreciated how teachers would be notified if a student in their class tested positive and shared that info with the class.

## Departmental support

Several interviewees indicated that their program's administration department did a poor job of supporting students during the pandemic particularly when it came to accommodating students' specific needs. For example, eliminating hybrid options during the transition to in-person for those continuing to live out-of-state, and not providing support to sick students. One interviewee stated that in order to treat all students fairly, sometimes it was hard to accommodate the special circumstances of international students relative to in-state or out-of-state students. Another interviewee explained that the lack of accommodations impacted students' academic timelines and research scope. Furthermore, a couple interviewees shared their difficulty in scheduling meetings or receiving email replies from the program's departmental heads. Contrarily, a similar number of interviewees felt that their program did, for at least part of the pandemic, properly support students by providing the necessary tools to engage in online learning and was accommodating to those students who needed alternative tools, technology, and access to the resources.

## Recommendations

1. Programs should provide a way for students to anonymously provide concerns, feedback, and recommendation.
2. When changing program policies, student opinions should be elicited.

## Diversity, equity, and inclusion

### Student participation in DEI

About half the interviewees participated in DEI groups or programs with the other half not participating. Those that did had varying levels of engagement with some simply attending lectures to receive a certificate while for others, DEI initiatives were a major focus throughout their program. While some universities provided certificate programs, many students stated that DEI groups and endeavors were completely student instigated and run. For example, one interviewee stated the school's institutional DEI efforts did not support students during COVID-19, rather students created and supported the DEI programs, which in turn benefitted both the students and the institution. The reliance on students to run these efforts was not the interviewee's opinion but was explicitly acknowledged by the Dean during meetings with students. The interviewee also expressed that the school administration "loves to take credit" for the students' DEI efforts. Another interviewee explained how they pushed for official recognition from the school to receive funding for their DEI group and while their program was supportive, the larger institution was resistant, requiring them to create a financial analysis demonstrating that the institution could afford to support the proposed DEI initiatives. It is also important to note that it is not just DEI groups that struggle to receive assistance from their school. Interviewees mentioned several student-led initiatives faced uphill battles such as tutoring, child care, mental health support, and social programming. Despite their critical role in helping students during the pandemic, interviewees explained, they repeatedly faced various levels of resistance when attempting to receive support from their institution.

### Impacts on DEI

There was not one resounding opinion of how COVID-19 impacted DEI. An equal number of interviewees stated that DEI efforts gained momentum as stated that they were not active or petered out during the pandemic. One interviewee believed that their program's DEI certificate may have had increased participation during COVID-19 as more people attended the online lectures than would have otherwise if students had to travel to school. However, a couple interviewees explained that COVID-19 made achieving DEI more challenging. For example, a few felt that COVID-19 exacerbated some issues that arose within their department as people seemed very tense during the initial return to in-person schooling. Difficult topics around race and gender were more uncomfortable and more challenging to engage in due to lack of in-person interaction during the pandemic. One interviewee shared that they felt uncomfortable interacting in a virtual environment with groups of unknown people, some of whom already knew each other, especially as a student of color in a predominantly white male institution. Another explained that reporting issues surrounding DEI or holding important meetings with officials in their school was made difficult via a virtual medium. They preferred to have serious conversations face to face.

### Programs' DEI efforts

Several interviewees were dissatisfied with their program's efforts towards DEI. A few interviewees explained that their program had a serious diversity issue with one stating that people are expected to assimilate. One interviewee felt that their program's department used the pandemic as an excuse to take less action towards DEI. Another

felt their program's responses were not genuine and often minimized concerns raised by students. They also wished there were more comprehensive EJ courses that explored issues affecting diverse and underrepresented communities. One interviewee felt as though individual conversations with faculty were more fruitful than seeking institutional response, which was more resistant to change than some faculty who were willing to listen and act to improve DEI initiatives. Another interviewee explained that when responding to a letter written by students regarding the school's lack of DEI initiatives, the administration was honest and forthcoming about its shortcomings, which the interviewee appreciated.

Regarding international students' experience, a couple interviewed indicated that for some international students, the concept of DEI is new with one stating that it needed to be better communicated to students. A couple interviewees explained that DEI initiatives help international students integrate with the community and improve their academic experience.

### International experience

International students had additional stressors and challenges during the pandemic. For example, for some, a primary concern was visa and immigration status and OPT work permits. One interviewee mentioned that during the pandemic there were limited job opportunities for international students, which raised concerns surrounding financial stability. In addition, some international interviewees mentioned the feeling of being isolated due to the lack of family and social networks and the limited interaction with other international students at their university. The support network for international students was often more hampered not only due to the large geographical distance between students and their families and friends but also due to border restrictions and the inability to visit family or the fear that if they did visit, they would not be able to return. One international interviewee stated that they found it helpful to share their feelings with other international students experiencing similar situations and also joining communities on and off campus including an ethnic community. In addition, they found their university's international office helpful as it connected international students. Furthermore, some interviewees explained how their program had very few international students and faculty. One interviewee explained that faculty diversity and the opportunity to connect with an international faculty is very important with the latter allowing the sharing of experiences and challenges. In addition, one interviewee shared that the most important thing for international students is to advance their English skills in writing and reading and thus the writing center is a crucial resource for international students.

### Recommendations

1. To fully support DEI, the burden of initiatives cannot solely fall on students.
2. Programs should have a full-time staffer responsible for DEI initiatives and not simply a part time student. Not only would this person be compensated for their work on DEI initiatives, they also would be a point person for students.
3. Programs should make measurable efforts towards increasing student and faculty diversity in their program.
4. Programs should make a concerted effort in connecting international students together.

## Data availability statement

The original contributions presented in the study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

## Ethics statement

The studies involving humans were approved by University of Washington Human Subjects Division. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

LEH: conceptualization, analysis, and writing (reviewing and editing). CP: coordination, data collection, analysis, and writing (draft preparation). LH: data collection, analysis, and writing (reviewing and editing). GP and HV: data collection and analysis. All authors contributed to the article and approved the submitted version.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2023.1201688/full#supplementary-material>



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