Arizona State University

Pandemic Interface Research and Recommendations for the 1st and 2nd Year Domestic Ph.D. Students

User Research Summary Report

Prepared for

The Pandemic Interface Design Team

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February 8, 2021

Summary

The COVID-19 pandemic has dramatically impacted how ASU students communicate with one another. In accordance with social distancing guidelines, many students have not been able to meet in person, and have had to rely heavily on online interfaces instead. Unsurprisingly, many students have struggled with this transition; online interfaces were previously unfamiliar to many students, and these platforms were not intended to replace in-person communication completely. Although it is clear that these times have posed significant challenges in our ability to stay connected, we are not yet fully aware of the scope of the problem. Our study seeks to clarify the current social landscape at ASU by focusing our attention on a specific subsegment of the ASU student body: 1st and 2nd year domestic PhD students. In order to gain more insight into these areas, we emailed surveys to students in our focus group. We found that the majority of respondents (93%) were primarily utilizing online meeting services, specifically the platform Zoom. About 76% of students mentioned specific pain-points when using these interfaces, most frequently citing connectivity issues and difficulty socializing.

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Pandemic Interface and Recommendations for the 1st and 2nd Year Domestic Ph.D. Students

Introduction

Due to the pandemic, Arizona State University (ASU) has adopted a completely online teaching model since March 2020. This has been a major adjustment for ASU students who must now rely on various online interfaces to complete courseworks and communicate with the other students and faculty members.

First and second-year domestic Ph.D. students have been greatly impacted by this situation. Unlike Ph.D. students who have been in the program for more than 2 years, newer students are still adjusting to new programs, research ideas, and TA and RA responsibilities. We believe that the implementation of a more interactive interface will help these students connect within the ASU community and obtain the support they need to succeed.

We created research questions. These will guide the direction of our research design and data analysis:

1. What are users' overall experiences of making connections with the ASU community?
2. What are users' goals of using interfaces to make connections?
3. What are the strengths and weaknesses of the most commonly used interface regarding making connections?

To address the needs mentioned above, our research team have conducted a research that includes two parts:

- Preliminary Fieldwork: Online Survey
- Heuristic Markup

We looked for Ph.D. students at ASU to participate in our research and set a screen process at the beginning of the survey. After understanding students' experiences of connecting with the ASU community via online interfaces, we conducted a heuristic markup on the interface that was the most commonly used - Zoom. With the help of these two methods, we proposed several solutions to increase the connection between the first and second-year domestic Ph.D. students and their ASU community.

Methodology

Since our participants are located throughout the country, we decided that an online survey and a heuristic markup would be the most effective and feasible methods to collect our data.

Preliminary Fieldwork: Online Survey

A survey was very useful to our research because it allowed us to engage directly with our target demographic. This method provided context about how and why students are using online interfaces to connect with their peers. One strength of the survey format was that it utilized both multiple choice and write-in questions, both of which were useful in different ways. The short answer questions allowed us to measure data objectively along a continuum, and the written areas allowed participants to vocalize their thoughts on a more personal level. The survey added utility to our research by providing insight into our user's experience along multiple dimensions.

Heuristic markup

Given our limited access to our target demographic, a heuristic mark-up seemed like a reasonable way to evaluate how this group's chosen interface helps them to reach their goals. This method provides important insights because it forces us into the mindset of the user, and allows us to get hands-on exposure to the interface. The heuristic markup involved the following steps:

1. List User tasks, beginnings, and goals
2. Carry out each task, and document actions, thoughts, feelings
3. Summarize the product experience and any assumptions you brought
4. Return to the interface and note potential friction of pain points

At a time where it is especially difficult to access outside participants, the heuristic markup was valuable in that it allowed us researchers to operate somewhat much like a participant.

Results and Findings

Survey

Before we could collect our data, we recruited our participants by visiting multiple PhD program pages and establishing a contact list. Our finalized list consisted of 179 PhD students. Each of these students was sent an email containing a description of our research goals and a link to our survey. To make sure participants fit into our user group, we set up screening questions at the beginning of the survey. In all, 14 surveys fit our criteria and were utilized in our data analysis.

When asked about the degree to which they are feeling connected, the responses were generally neutral; no respondents indicated feeling entirely disconnected *or* connected, and instead fell somewhere in the middle of the spectrum. Furthermore, most 1st and 2nd year domestic PhD students are staying connected via online meeting services (93%), and Zoom was mentioned very frequently (see figure 4). The most popular reason for using online interfaces was for academic support (86%), followed by working/teaching (71%), social activities (64%), networking (50%), and mental health support (21%) (see figure 3). Although we also measured the amount of time spent per week using online interfaces, the results were distributed relatively evenly with no major discernable pattern.

Respondents were also given the opportunity to vocalize any pain points they experience when using online interfaces. This section had a couple of common themes, firstly inorganic or awkward social interactions. Some specific complaints include awkward conversation flow, Zoom fatigue, toxic comments, lack of informal communication, and general shyness. Secondly, several respondents cited connection difficulties that can be frustrating or encumbering.

Figure 1

Participants' Feelings of Connection and Engagement with ASU Community

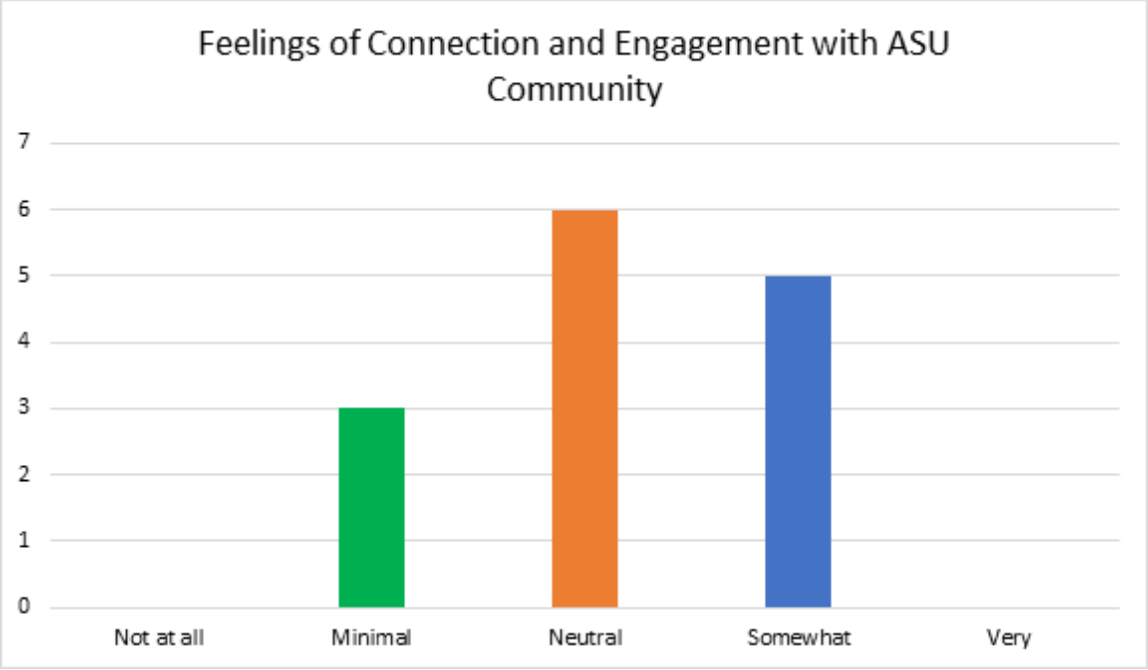


Figure 2

Time Spent Interacting with ASU Community

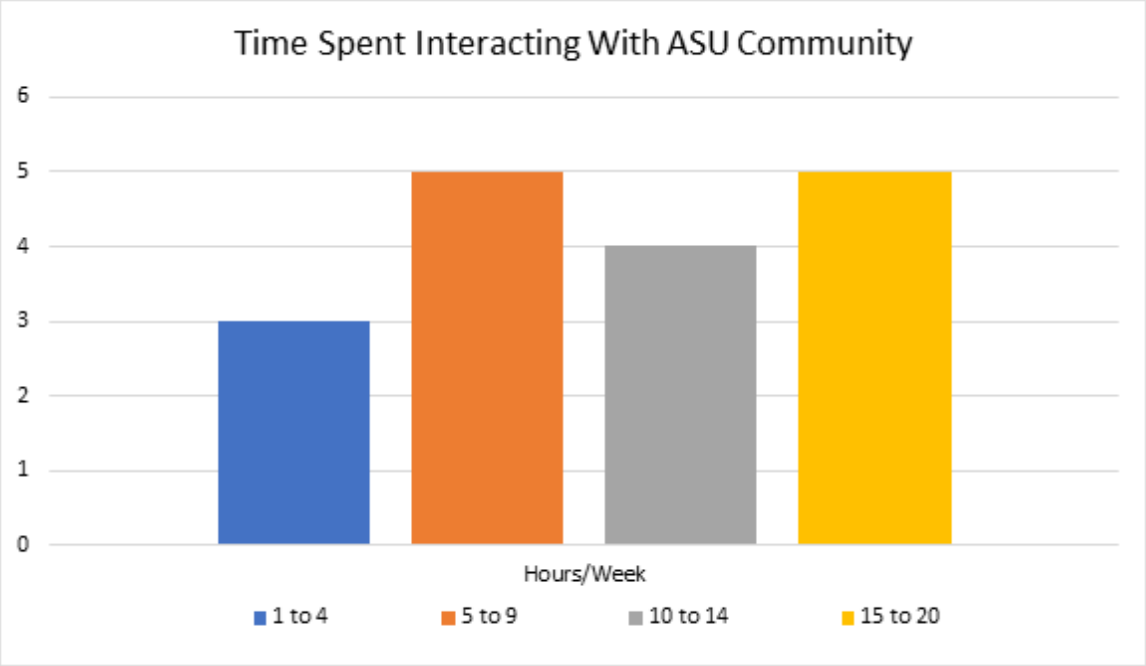


Figure 3

Participants' Primary Goals

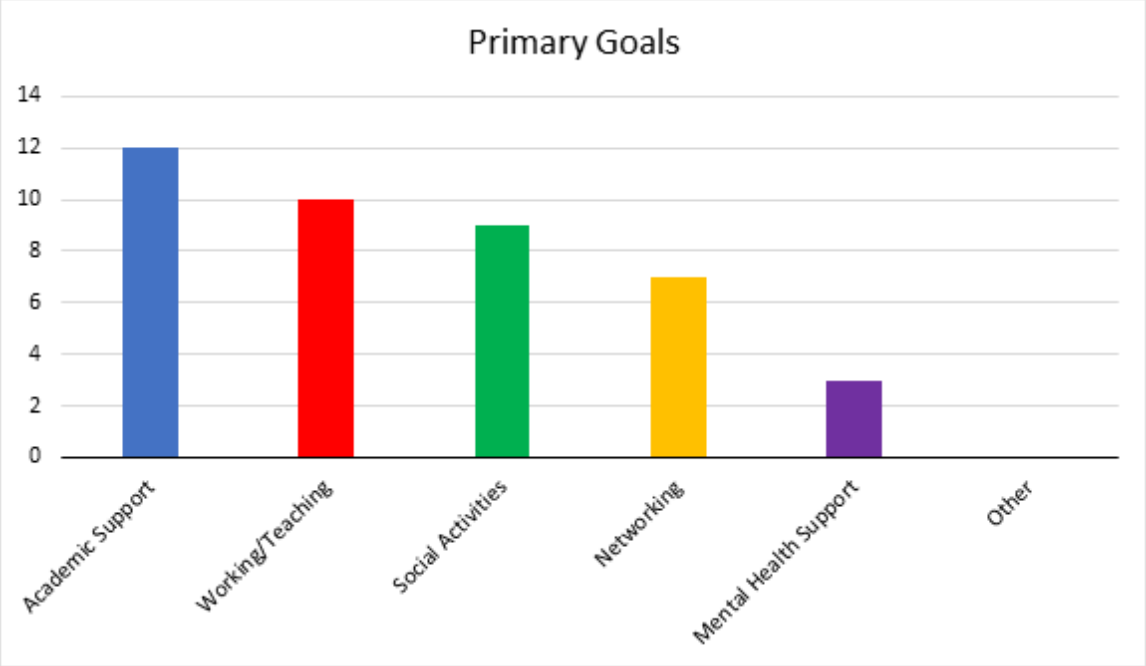
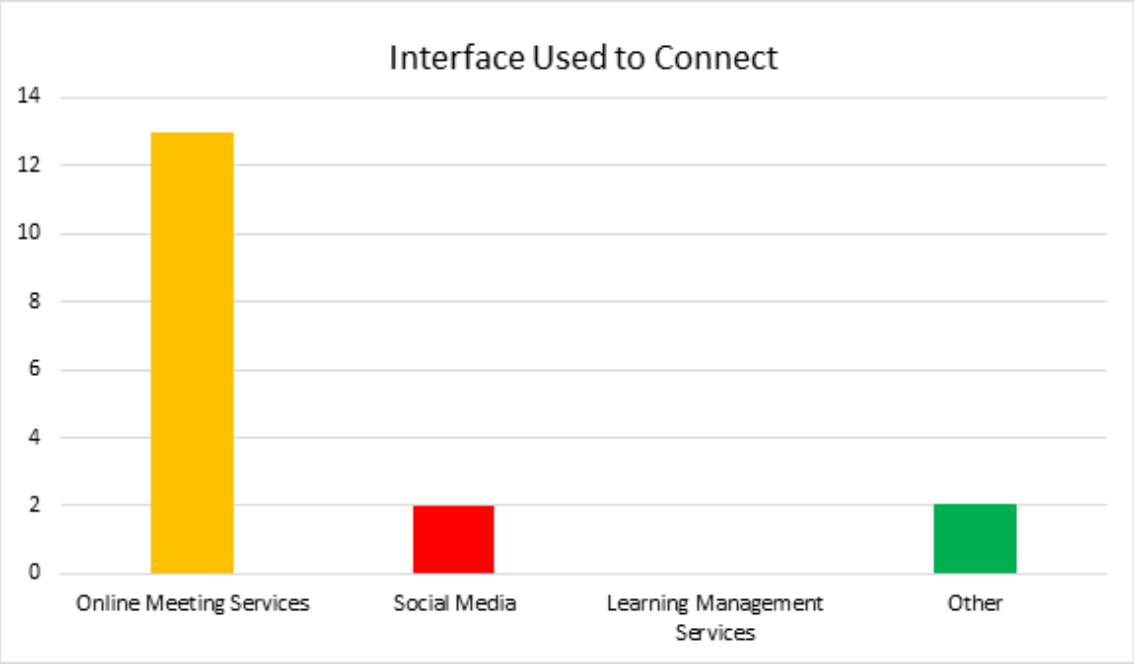


Figure 4

Interfaces Used to Connect



Heuristic markup

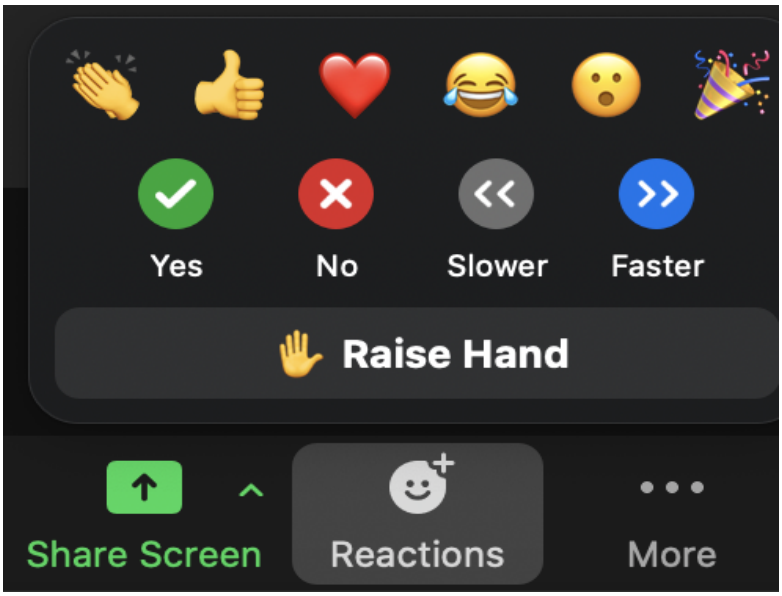
Although online meeting services have become the new normal in the pandemic, they lack many of the basic social elements required to form meaningful relationships and discussions. In order to schedule meetings online, students must engage with people they have probably never met or spoken to. For many, this situation can feel incredibly awkward and unnatural.While in-person interactions enable comfortable conversations between colleagues and staff, the same cannot be said within online mediums. Since informal discussions covering topics such as current research trends, career goals, or networking opportunities typically do not warrant scheduling, they are ultimately absent from the current online interfaces. There is simply no opportunity for these important types of conversations to take place, which is ultimately a roadblock for the success of students. Additionally, conversations tend to flow awkwardly online, and scheduled meetings or agendas can feel inherently inorganic because there is no organic sense of spontaneity. These issues can cause enormous difficulty for shy personalities who may have trouble socializing online. This is exacerbated by the fact that much of the information discussed in online meeting platforms (such as files, due dates and announcements) are also contained in the LMS, yet these interfaces are not integrated. This can make gathering information prior to scheduling meetings excessively time-consuming and cumbersome.

Since Zoom was the most commonly used online meeting platform, our research group used the results from the survey to conduct a heuristic markup. Our goal was to identify ways to make Zoom meetings feel more "natural." Based on Nielsen's 10 general principles for interaction design, we comprehensively evaluated the functionality of Zoom. Several major issues and corresponding levels of severity were identified:

1. There is a disconnect between real-world communication conventions and the dynamics of Zoom meetings. Users cannot have one-on-one conversations freely, and people speaking within groups often interrupt or overlap with each other. Not only does this feel awkward, but it decreases the efficiency of the communication. This is a severe issue that needs to be resolved as soon as possible; the deficiency of Zoom will prevent users from fully completing their goals indicated in the survey.
2. Users have limited control of the interface, especially within non-class contexts. Participants are not able to individually select a speaker that they wish to talk to. The entire functionality of the conversation is dominated by the host(s). This is a moderate issue because although users can complete the major tasks (e.g., communicate with the participants), they must do so with limited flexibility. In this case, users' participation is quite passive, and their freedom as a user is restricted.
3. Some aspects of Zoom are unfamiliar to users, like the "reaction" function (see Figure 5). This function allows users to briefly display reactions to the Zoom meeting, It is underutilized for a couple of reasons, 1) there are not many occasions that require participants' reactions, and 2) the reactions that participants can choose from are very limited. This is a minor issue; it does not prevent users from actively participating in the conversation. Although being unable to show reactions during the conversation is sometimes irritating, it is not a fatal flaw.

Figure 5

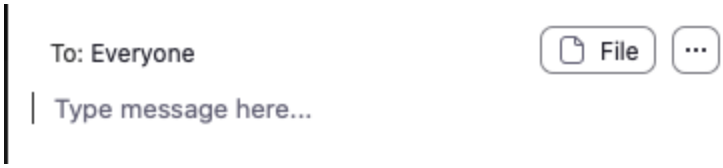
Screenshot of Zoom "Reactions" Function



4. It is not easy for participants to type interactively. The chat box (see Figure 6) is quite one-dimensional, and users are limited to typing in words or uploading files. Users can only respond on an individual basis and can do so by sending private messages. These are invisible to the other meeting participants. This is a moderate issue because a lack of options within the chatbox can negatively affect users' ability to communicate at a high level.

Figure 6

Screenshot of Chat box Function



5. There is a disconnect between the breakout room and the main room; this results in a fragmented interactive experience. Since the discussions in the breakout rooms are separate from one another, it is difficult for organizers to control and participate in each room. In order to do so, organizers must check in with each room separately. Although guidelines for group work are often established by the organizers, these rules are easily forgotten, resulting in decreased working efficiency. Users must rely on the other platforms in order to work on an assignment. This is a moderate problem; working and teaching can be somewhat strained and the ability to pursue academic support can be limited.

Conclusions

At this point in time, we have found that most users are not feeling strongly engaged with the ASU community. One explanation is that the transition from in-person to completely online communication is still relatively new, and students are still in the process of adapting to these systems. As students become more familiar with these interfaces over time, they will hopefully become more comfortable in using them. On the other hand, flaws within the interfaces are also contributing to students feeling disconnected from the ASU community. These interfaces are not perfect replacements to in-person communication, and they are lacking in many aspects: these interfaces can be technically challenging, inorganic, awkward, and limited in scope. These drawbacks add up, and ultimately online platforms are inferior to meeting in-person. Although online platforms can meet certain needs, there is still a lot of room for improvement before they are a worthy substitute to face-to-face interaction. During quarantine, our primary communication methods are being radically redefined, and it is critical that these interfaces continue to innovate at the expense of user needs.

From another perspective, it could be generalized that students are not primarily using online interfaces to connect with others or meet their social needs. Although the survey results indicate that 64% of respondents are interested in using online interfaces for social connections, academic support was the primary goal (86%), followed by working/teaching (71%). This is not entirely surprising; even under normal circumstances where in-person learning is possible, students (particularly PhD students) are most concerned with academics. The social aspect of a classroom environment is often secondary/it is the byproduct of a classroom environment. That being said, it is not to say that connectedness within the ASU community isn't necessary for academic success or emotional well-being; it may be one of a series of burdens imposed by the pandemic. In a future study, it would be interesting to measure other ways that ASU students might be challenged by the pandemic, and to compare how this data relates to feelings of connectedness at ASU.

Recommendations

Since most participants in our research complained that the deficiencies of online communication prevent them from reaching out, socializing, and having organic conversation, we recommend facilitating smaller, more comfortable conversations and deeper discussions by creating spaces for students to gather online in small groups (e.g., round table discussions, one-on-ones) and providing students access to open online meeting areas with those that have similar goals and interests. Integrating online meeting services with LMS will make meeting resources more accessible and provide ways for users to easily connect and support one another. This will foster an environment for more informal

discussions, which are currently neglected on online meeting services. We also recommend that Zoom and other online meeting platforms add several features to meet users' different purposes:

1. Add a meeting mode that is specifically for social purposes, which can be selected when setting up a meeting. Whereas the traditional mode allows one person to exercise control over the meeting, this new mode will grant all users some degree of control. With that being said, all users will have the ability to directly set up a breakout room. Also, once users mention the other users' name in the conversation, the meeting will automatically ask the users if they want to set up a breakout room individually. Once users finish the discussion in the breakout room, they can easily go back to the main meeting room by clicking "leave".
2. To make the chat function more interactive and engaging, we recommend integrating an emoji feature to the chat box. This feature will allow conversations to more closely resemble in-person interactions, and add an element of liveliness. This will breathe some much-needed life into online interactions, which can easily become dull or stale. Additionally, we recommend implementing a reaction function to the chat box. By right clicking the messages sent by others, a user can react to content with a thumbs-up, heart, or other emoji. This provides users with greater emotional context and grants quick reactions which will boost their engagement.

Appendix A

Survey Data

1. Are you a 1st/2nd year PhD student?

ID	Response
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	No
8	No
9	Yes
10	No
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	No
19	Yes
20	Yes
21	Yes

2. Are you a domestic (USA) PhD student

ID	Response
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	No
8	Yes
9	Yes
10	No
11	Yes
12	Yes
13	Yes
14	No
15	Yes
16	Yes
17	Yes
18	No
19	Yes
20	No
21	Yes

3. How connected and engaged are you with other ASU PhD students, faculty members, and staff during the pandemic?

ID	Response
1	Neutral
2	Minimally connected
3	Neutral
4	Somewhat connected and engaged
5	Somewhat connected and engaged
6	Somewhat connected and engaged
7	Very connected and engaged
8	Somewhat connected and engaged
9	Minimally connected
10	Somewhat connected and engaged
11	Neutral
12	Somewhat connected and engaged
13	Somewhat connected and engaged
14	Somewhat connected and engaged
15	Neutral
16	Neutral
17	Minimally connected
18	Minimally connected
19	Neutral
20	Minimally connected
21	Somewhat connected and engaged

4. How many hours per week do you spend interacting with other ASU PhD students, faculty, and staff during the pandemic?

ID	Response
1	20
2	12-15
3	8
4	3
5	8
6	6
7	No idea
8	6
9	7
10	12
11	10 (including class)
12	3
13	6 hours (including class)
14	3
15	12
16	2 hours or less
17	12 (9 hrs of class + 3 hrs of meetings/socials, etc.)
18	1.5 hours every 2 weeks
19	About 15
20	5
21	6

5. What are your primary goals when trying to connect with other PhD students, faculty members, and staff? Select all that apply.

ID	Response
1	Academic support;Mental health support;Working/teaching;
2	Academic support;
3	Social Activities;Academic support;Working/teaching;attending class;
4	Working/teaching;Social Activities;Academic support;
5	Academic support;Social Activities;Working/teaching;
6	Academic support;Networking;Mental health support;
7	Mental health support;Working/teaching;Academic support;
8	Academic support;Working/teaching;
9	Networking;Social Activities;Working/teaching;
10	Working/teaching;
11	Networking;Social Activities;Academic support;
12	Working/teaching;Networking;
13	Social Activities;Academic support;Working/teaching;
14	Networking;
15	Academic support;Working/teaching;Networking;
16	Networking;Academic support;Social Activities;Working/teaching;
17	Networking;Social Activities;Academic support;
18	Academic support;Working/teaching;
19	Social Activities;Academic support;Mental health support;Working/teaching;
20	Working/teaching;
21	Academic support;

6. What type of interface do you use most to connect with other PhD students, faculty members, and staff during the pandemic?

ID	Response
1	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
2	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
3	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
4	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);text/phone;
5	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
6	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);WhatsApp;
7	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
8	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
9	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
10	Learning management systems (e.g., Canvas, Blackboard));Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
11	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
12	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
13	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
14	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
15	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
16	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
17	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);Social Media (e.g., Facebook, Instagram);
18	Email, phone;
19	Social Media (e.g., Facebook, Instagram);Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
20	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);
21	Online Meeting Services (e.g., Zoom, Skype, Microsoft Teams);

7. Do you experience any specific difficulties when using these interfaces? Describe any scenario(s) that may cause trouble or frustration.

ID	Response
1	It is hard to have informal discussions via Zoom. For example, in the classroom there are a lot of spontaneous pre/post class discussions with classmates. This is missing for me in virtual land.
2	Just online connection issues i.e. slow internet connection
3	Nothing is particularly difficult, except for issues with connectivity since Zoom seems to require a lot of bandwidth (especially when screen sharing, etc.)
4	limited organic discussion abilities, occasional connection issues
5	Poor internet; too many people for meaningful connection
6	Zoom isn't always stable on my internet connection. Hard to naturally dialogue.
7	Not really
8	
9	Too shy to reach out and set up a meeting to talk over email
10	
11	Large zoom meetings are very difficult for networking and forming new relationships
12	Zoom has been very effective
13	As a new student, it is difficult to connect socially through Zoom.
14	time difference
15	Difficulty in flow of conversation and gaining input from multiple perspectives, sometimes it feels that information moves slower from person-to-person and throughout a whole group
16	Sometimes I experience internet connection issues. I have not experienced them in a while, but when I did the webcam sometimes froze.
17	People not showing up because they're "zoomed" out.
18	
19	Zoom fatigue and negative experiences on social media i.e., toxic comments, comparisons, etc.
20	connection stability
21	I think working on Zoom is fine but it makes it more difficult to have deeper conversations/discussions.

8. Do you have any suggestions for how these problems might be improved?

ID	Response
1	
2	N/A
3	n/a
4	funds available for students to update their personal technology
5	No
6	-
7	not really
8	
9	Virtual meet and greet events
10	
11	Devise a way for impromptu one-on-one or small group conversations within a large zoom meeting
12	No problems
13	
14	allowing students to watch recorded classes; or reschedule the courses
15	Though it can be demanding, using multiple forms or platforms for engagement
16	N/A
17	No
18	
19	
20	
21	I don't think you could make online interactions more like in-person activities.