MIT D-Lab

Monitoring, Evaluation & Learning D-Brief
September 2020

EVALUATION QUESTIONS

1. What challenges did students and instructors experience during the transition to virtual learning?

2. What types of resources, tools, and teaching strategies worked well for students?

3. What types of support would have made the transition to virtual learning go more smoothly for students and instructors?

Lessons from MIT D-Lab's Transition to Virtual Learning

When the Covid-19 pandemic necessitated a nationwide "stay in place" order in March of 2020, MIT transitioned all of its in-person classes to virtual learning. This transition was abrupt, and spring break was extended an additional week so that students had time to pack up and leave campus for the semester. During the Spring 2020 semester, MIT D-Lab offered six classes with a combined enrollment of 102 students.

With D-Lab's focus on hands-on shop work and semester-long projects with partner organizations around the globe that allows them to gain skills in design, apply principles of engineering, and obtain meaningful experiences in the field, the primary challenge was how to continue the D-Lab student experience in a remote environment.

This D-Lab Monitoring, Evaluation & Learning D-Brief summarizes key lessons about the transition to remote learning during the spring 2020 semester, drawing on survey responses from D-Lab students and focus groups with D-Lab's spring 2020 course instructors.

Key Findings at a Glance

1. Overall, 74% of students rated their satisfaction with the transition to virtual learning as a 7 or above on a 10-point scale.

2. The key challenges expressed by students included difficulties focusing and engaging during online class meeting sessions, feeling less connected to classmates and teams, difficulty navigating learning across time zones, and unstable internet connections. For instructors, key challenges included increased course preparation time, establishing connections with students, providing adequate resources to students, and contextual factors such as lack of childcare.

3. Zoom was an essential component of virtual learning this spring. Activities that promoted student interaction and group work were more effective than traditional lectures over Zoom.

4. Instructors used a variety of teaching strategies and online tools to adapt to the new remote learning environment, but additional trainings and access to online resources would further support their work.

5. Students reported that instructors' accessibility and ongoing support were key resources during this semester of virtual learning.
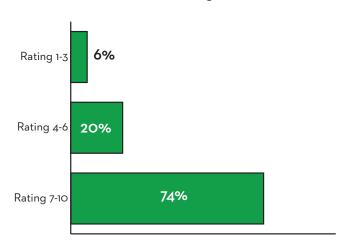
Methods

At the end of the spring semester, MIT D-Lab students and instructors were asked to share some of their experiences with virtual learning. Data was collected in two ways: end-of-semester student evaluations and focus groups with MIT D-Lab instructors.

Student survey: Seven questions on virtual learning were included on the end-of-semester MIT D-Lab course evaluations. 71 students responded to items related to virtual learning. Questions included:

- On a scale of 1-10, overall, how satisfied were you with the transition to remote learning in this course?

- How did your learning change in the remote environment compared to being in-person in class? (scale: I learned more in-person; I learned more in the remote environment; I learned about the same in both settings).

- What routines, tools, and teaching strategies best supported your remote learning experience in the course?

Focus groups with MIT D-Lab instructors: Thirteen instructors participated in focus groups that were conducted on May 18, 2020 and May 20, 2020. Focus groups were 60 minutes in duration. During the focus groups, instructors were asked to discuss barriers and enablers to virtual learning, and to share classroom strategies and key lessons learned from the spring.

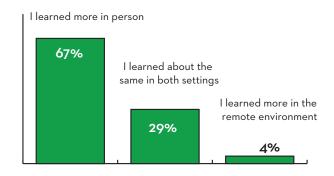**On a scale of 1-10, how satisfied were you with the transition to remote learning in the course? (n=69)**

Findings

1. Overall, 74% of students rated their satisfaction with the transition to virtual learning as a 7 or above on a 10-point scale.

While this finding showed that students were satisfied overall with the transition to virtual learning, two-thirds of students (67%) reported that they had learned more in-person than in the remote setting.

How did your learning change in the remote environment compared to being in-person in class? (n =70)

2. Students and instructors experienced a variety of challenges during the transition to virtual learning.

The top three challenges that students mentioned on the survey were difficulties focusing and staying engaged while learning virtually (21 mentions), access and connection to classmates (10 mentions), and access to workshop tools (9 mentions). One student noted, "It was extremely difficult for me to stay engaged in the same way as I was on campus and finding times for our group to meet also proved to be a challenge." Another student noted the difficulty of working on a project remotely: "This project was very much a social design challenge and it can feel difficult to do that remotely with limited social contact with others." Working remotely affected students' ability to develop and test prototypes for their projects since they did not have workshop access to tools and materials. Instructors were also concerned that some students may have access to tools and materials to work at home, but others may not, and worried about the cost students might incur to purchase supplies and tools. Further, instructors noted that some students faced contextual and logistical constraints such as managing unreliable internet connections, home responsibilities, and financial strains.

"…we didn't really have any capability to fabricate, and so we had to rely on our materials at home to create prototypes."

Instructors also faced challenges while teaching virtually. During the focus group, instructors shared that course preparation time increased, and providing adequate materials and supplies to students was a major challenge this semester. They also noted that it was more difficult to build relationships with students remotely, and that there were fewer opportunities for spontaneous sharing of ideas compared to teaching in-person. At a contextual level, some instructors were also negotiating work responsibilities and home responsibilities, including a lack of childcare options, due to Covid-19.

3. Zoom was an essential and useful component of virtual learning this spring.

Instructors and students shared that the Zoom platform became an important space for not only class meeting times, but also for one-on-one student-instructor meetings. Zoom also allowed students in different time zones to participate both synchronously and asynchronously (via recorded lectures). When asked: What strategies and tools best supported virtual learning?, students identified online tools as the top category (19 mentions) and specifically mentioned tools such as Slack, Mural, Mentimeter, and Zoom's breakout room feature. The breakout-room function was particularly useful for small group interactive activities and provided a space for students to work on projects. Zoom also helped students connect with instructors during one-on-one appointments and office hours.

A key challenge for students, however, was "Zoom fatigue." Students noted that, in general, it was harder to pay attention in front of a screen than in-person, and that it was especially difficult to focus and engage when instruction was in a long lecture format. Learning activities with a mix of interactive components worked much better than lectures on Zoom.

"The breakout rooms and office hours were incredibly helpful. They gave us uninterrupted time with each other and then some time with the instructors as well. That, I think, allowed us to be more successful than had these two things not be used in the full capacity."

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MIT D-Lab Academics Program:
https://d-lab.mit.edu/academics

4. Instructors used a variety of strategies and online tools to adapt their courses to the remote learning environment.

During the focus group discussions, instructors cited strategies that coincided with students' experiences of what worked well. First, having a good flow between platforms and activities on Zoom kept students more interested and engaged more than lecture-style class meetings. Regular check-ins with students helped the teaching staff adapt instruction and provide students with support on projects. Instructors also noted the importance of focusing on essential concepts and identified alternative ways to support learning. For example, in the D-Lab: Design class, one team used AutoCAD to model prototypes and worked with community partners who had access to workshop space so those partners could build a model; and in the Humanitarian Innovation class, students were sent sketch modeling kits to work on design activities. In the Inclusive Economies class, instructors encouraged students to re-imagine projects that were meaningful to their own evolving experiences and within the current context of Covid-19.

"Constantly shifting the class dynamic and class breaks mattered A LOT. It's very difficult to stare at a screen and pay attention to class for 2 hours straight, but having to switch between group, individual, hands-on, online, etc. activities in class sessions helped me to pay attention."

5. Students reported that instructors' accessibility and ongoing support were key resources during this semester of virtual learning.

Students greatly appreciated instructors' accessibility through check-ins, weekly office hours, and meetings to support project work (18 mentions). Whether troubleshooting issues with projects, keeping students on track with tasks and assignments, discussing concepts, or helping students manage work with community partners, instructors' support and encouragement was a key resource to students during the spring 2020 semester. With regard to the ways their learning could have been better supported, some students mentioned that more structure and organization (e.g., updating virtual course workspaces on a regular basis with materials and resources for class) would have helped students better manage their time and prepare for class time more effectively (6 mentions).

"I thought the check-ins were very nice and allowed us to feel like we were connected and sharing, even if we weren't physically together."

Recommendations

The transition to virtual learning brought about many changes to the MIT D-Lab class experience, and also many learnings along the way. Based on the results of the student survey and focus group discussions with instructors, the following are four key strategies that can support student engagement and provide supports for instructors within a virtual learning environment.

1. Utilize a mix of interactive components and online tools to support students' engagement, including small group work, short lectures, discussions, use of polls, Q&A, and Mural.

2. Provide opportunities for students to connect with instructors and their classmates and project teammates (e.g., online office hours, small group, designated project work time, team-building activities) to foster connection and support a collaborative learning environment while students are learning remotely.

3. Provide students with physical tools and materials to support their learning. Sending materials (e.g., sketch-modeling kits) and facilitating student access to workshops in their locations would allow students to gain hands-on experience and develop their projects while learning remotely.

4. Inform instructors regularly of available teaching resources and provide opportunities for instructors to share best practices (e.g., a common platform to share tools and resources) to further support their work in developing engaging virtual learning environments.

Evaluation Next Steps

The evaluation team will continue to collect data on virtual learning during the 2020-21 academic year. In particular, we are interested in learning how instructors have adapted MIT D-Lab projects to provide students with high-quality experiential learning opportunities, and to identify best practices for virtual learning opportunities. Data collection activities will include student surveys and focus groups with instructors.

About MIT D-Lab

MIT D-Lab works with people around the world to develop and advance collaborative approaches and practical solutions to global poverty challenges. The mission is pursued through our academics program of more than 20 MIT classes and student research and fieldwork opportunities; our research groups spanning a variety of sectors and approaches; and a group of participatory innovation programs we call innovation practice.

Acknowledgments

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