Transitioning to Remote Teaching

Step 1: Conceptualizing a Virtual Classroom Experience

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Many universities world-wide are scrambling with the Coronavirus threat and how to deliver high-quality courses using alternate delivery methods. With the appropriate use of technology, we can provide a virtual alternative to our physical classroom that include high quality face-to-face interactions. Rather than considering this as a strategy for online instruction, I prefer to think of this as having somewhat traditional class meetings where the venue is virtual not physical.

Transitioning to remote teaching will be challenging for all of us. There will be issues with technology and adapting the course format. These challenges will be multiplied since many instructors are changing their delivery methods in the middle of the term.

1 What is Zoom

Zoom is a cloud-based platform for audio and video conference and webinars. While this document directly addresses Zoom, many of these same strategies can be utilized with alternate technologies such as WebEx. Key features include:

- Participants can join from any desktop or laptop computer, tablet or phone.
- Tools for scheduling and managing meetings.
- Includes the ability to share screen content, annotate documents and whiteboards.
- Meetings can have breakout sessions so that students can work in groups both inside and outside of class.

2 Goals for Student Interaction

Replacing physical in-class interaction with students is a daunting task. We depend on the class room environment in so many ways. To be a reasonable substitute for many courses, a virtual classroom must

- Provide quality face-to-face interactions between the instructor and students, and between students
- Have fully supported technologies to minimize impact of issues affecting the class meetings

- Allow students to be able to easily participate in classroom discussions
- Enable students to work in groups and help their peers where appropriate
- Provide a mechanism to the instructor to directly help individual or groups of students

There is no way that these interactions would be the same as they would be in a physical environment and it will take time to adapt. But the technology will still allow alternate forms of high-quality interactions for our virtual classrooms. Lessons we learn using these new instructional methods will also allow us to improve our pedagogy as situations normalize.

3 During Class Meeting Times

Traditional lecture equivalent

As a starting point, Zoom and similar tools can provide a good environment for more traditional lecture, question/answer delivery methods. Instructors can choose when to display their face or share a window with lecture slides to the students. Zoom provides the ability to use visual pointers and annotations to the screen to highlight or emphasize important points in their discussions. Virtual whiteboards can also be used to deliver material. These whiteboards are not adequate replacements for a traditional blackboard lecture, but are more than sufficient for displaying supplemental points of discussion.

Instructors can see a grid with a view of all of the students and Zoom has the ability for students to ``raise their hand'' when they want to ask a question. The instructor can chose to either allow students to interrupt with their questions or request that they keep their microphones muted until called upon. This allows the management of the course in a manner similar to those in a traditional classroom.

An example Many instructors use PowerPoint or other forms of lecture slides to provide content and/or guide class discussion. This adapts quite nicely to Zoom. You can share your slides on the screen for everyone to see, lecture as you normally would while using a virtual laser pointer, if desired, to highlight talking points. Students will be able to ask questions and join in the discussion when they want. Depending on the course, the instructor can set a policy of have a live discussion, or raising of hands. For a larger class that might have a TA or learning assistant, perhaps they could moderate the questions using the chat window.

Students with slow connections From a technical perspective not all of our students will have great internet connections to participate in class. If this is the case, you can provide students a PDF of the slides in advance. Students can then use Zoom with audio only which requires much less bandwidth or use the dial in number to join the discussion on their phone.

Breakout rooms: peer and group interactions

Many instructors choose to have their students interact with each other during class. These collaborations can take many forms: peer instruction, POGIL or students working on worksheets and getting assistance from their neighbors. Breakout rooms provide a useful method for adapting these pedagogical methods to a virtual environment. Breakout rooms are private discussion rooms that can be created for a student group of any size. These groups can be pre-assigned, created manually or randomly. Within each breakout groups students can communicate with each other, share screens and documents. When have questions or need assistance they can alert the instructor and the instructor can join their breakout group. If the course utilizes learning assistants, they can also rove the breakout

groups and provide assistance. Instructors can also make announcements to all of the breakout groups simultaneously.

From a pedagogical perspective this provides a very good way for students to interact. Virtual communication is something most students are quite comfortable with and this should not provide a significant barrier. Activities do need to be crafted for this environment. In particular, careful thought needs to be given to how the students would collaborate on any deliverables.

An example In my Artificial Intelligence course, I often have students work in groups of 2--4 students exploring a particular concept. This often involves them running a series of software simulations on their laptops to observe the behavior of the AI and then answer a series of questions on a worksheet. In the physical classroom this takes the form of students huddled around a couple of laptops and answering a series of questions on paper that are designed to help them understand deeper concepts. This can easily be adapted to a breakout meeting in Zoom. One student might run the simulation on their laptop and share the screen with their team. The paper worksheet can be turned into a word document and another student can act as the scribe and fill in the groups answer's on the worksheet. The entire group will be able to see both of these students screens as they collaborate. If they run into difficulties, they can alert me and I can enter their breakout meeting, see their screens and help them out. If the student group needs to meet outside of class, they could use the same breakout room to collaborate.

Non-verbal communication channels

Zoom also provides several means for side communication. One primary form is a chat window. At the instructors discretion chat can be public, private or not enabled at all. Instructors at other institutions have commented how, if used properly, this can be a useful instruction tool. It allows students to ask side questions and indicate confusion. There is also support of students to click on icons that indicate understanding or confusion, asks the instructor to slow down or participate in polls. In some courses, a learning assistant might monitor these chats and provide quick answers to the student queries. These alternate communications allow the instructor to not only take the ``temperature'' of the room, but have the potential to enhance the discussion is ways not possible in a traditional classroom environment.

4 Outside Meeting Times

Zoom and similar tools can also be used outside of the classroom. Faculty can create meeting times for office hours and can meet with students using the same tools available in the classroom. They can work with student all at once or can create a waiting room and have private discussions with students one at a time.

Course meetings can also be left open to students outside of class time. This would allow students to meet with homework groups in a breakout room or join in impromptu study sessions. Faculty can also use this space for study and review sessions. At the instructors discretion, course meetings can be recorded and shared with students for future reference.

5 Practicalities

There are many practical concerns when switching to a remote teaching environment. In is essential that students and instructors have the necessary technology support to limit the barriers to effective engagement. Also, document handling needs to be carefully considered. For many instructors this might take the form of a learning management system such as Blackboard or Canvas. For others, they might choose to use Google docs to allow document collaboration. It is admissible that any documents be made available to the students prior to class to enable them to be properly prepared for class.

It is also imperative for the instructor to setup a remote classroom environment that is comfortable, accessible and productive. This might include working with students to develop policies for etiquette, using the chat window effectively, whether students should be muting their microphones when not asking questions, how to "raise hands" and properly take part in class discussions.

Instructors can also open up the class meetings prior to class time. This provides an opportunity for everyone to test their connections and the technology and for the instructor to have typical informal before class discussions with students and for them to chat with each other.

To make managing the technology easier for instructors, I highly recommend using a two monitor setup, possibly using an external monitor in addition to your laptop screen. This allows you to use one screen to manage the Zoom session and the other to contain course content.

6 Conclusion

In the coming weeks many of us will be experimenting with new teaching technologies. In this process, we will need to find the balance between what we can incorporate from in person instruction techniques and augment them with the new possibilities that these technologies allow. To maximize success, we will need to include our students as active participants and creators of an online learning community.

Resources

http://www.slu.edu/cttl/services/instructionalcontinuity.php

https://zoom.us/docs/doc/Tips%20and%20Tricks%20for%20Teachers%20Educating%20on%20Zoom.pdf

https://www.insidehighered.com/advice/2020/03/11/practical-advice-instructors-faced-abrupt-move-online-teaching-opinion

https://www.sageonstage.com/5-easy-steps-for-switching-your-face-to-face-course-to-online/

https://blogs.swarthmore.edu/its/2017/03/16/zoom-video-conferencing-for-remote-teaching/