Using Zoom to Support Whole-Class Monitoring & Support of Software Skill Development

For the UVic Libraries
Digital Scholarship Commons

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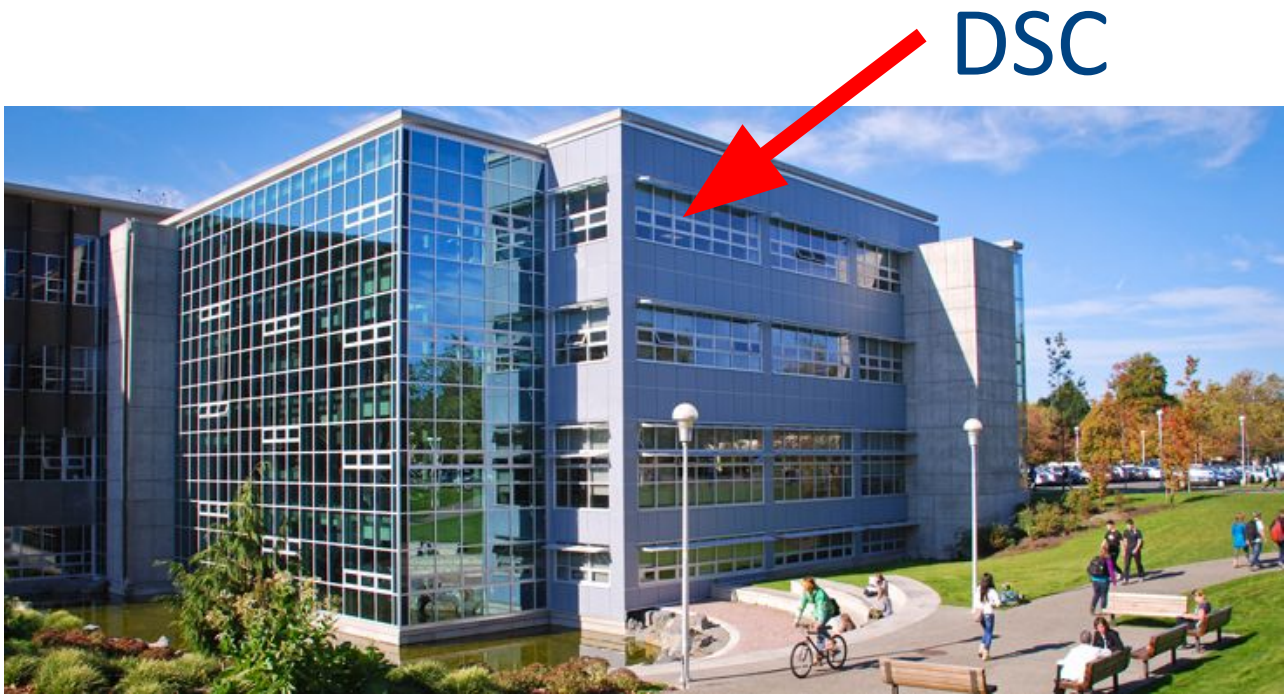
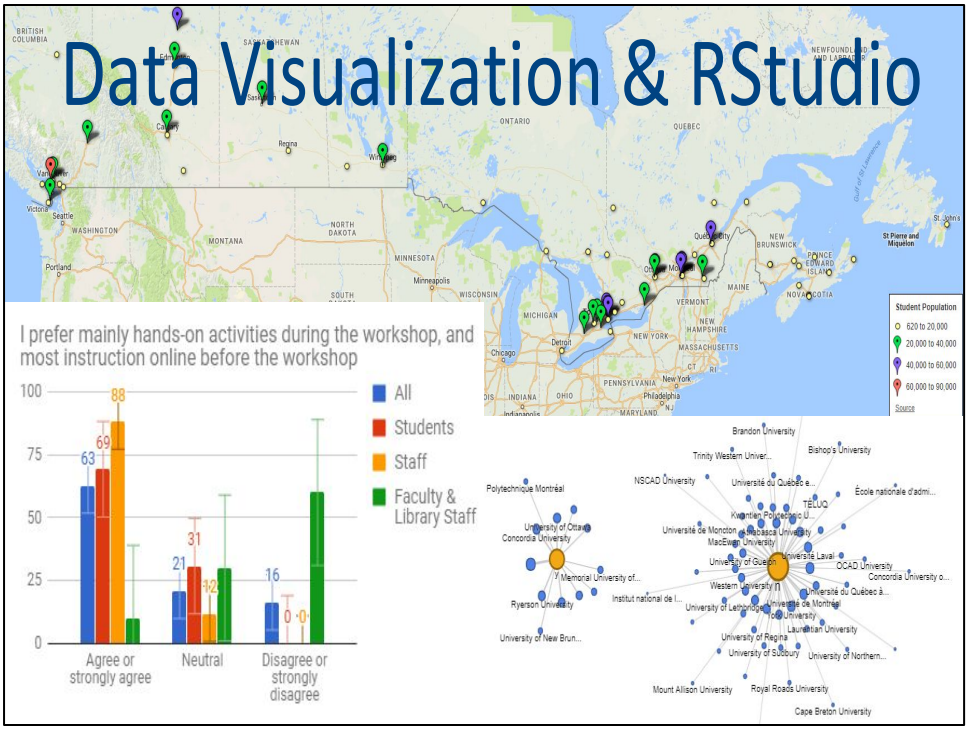
University of Victoria

I’m Rich McCue...

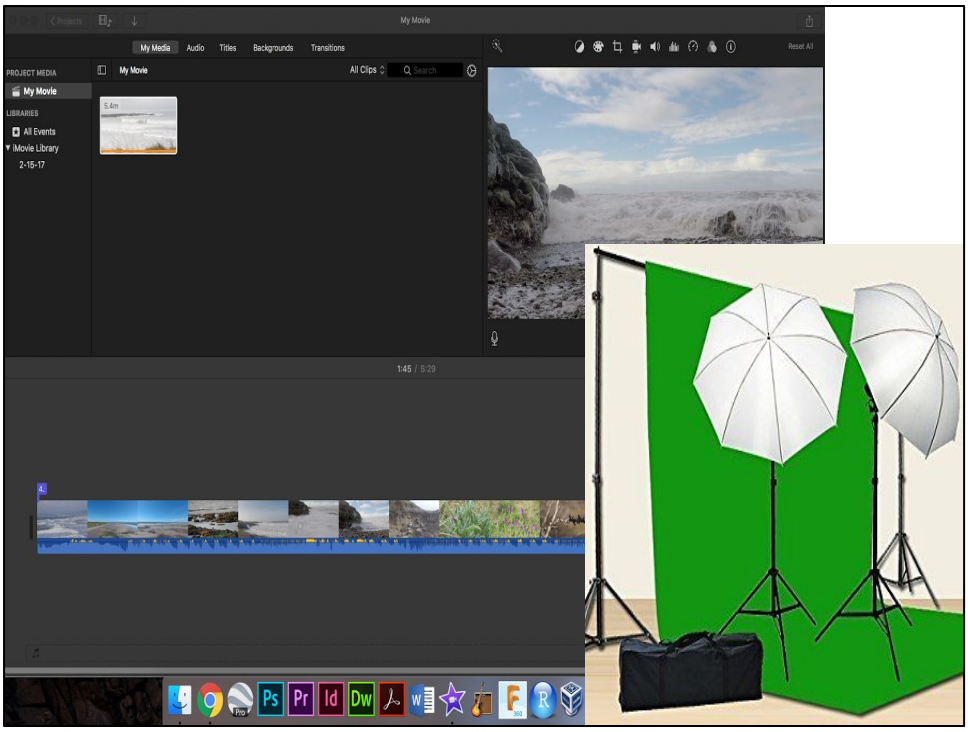


- and I manage the Digital Scholarship Commons in the Library where, among other things,

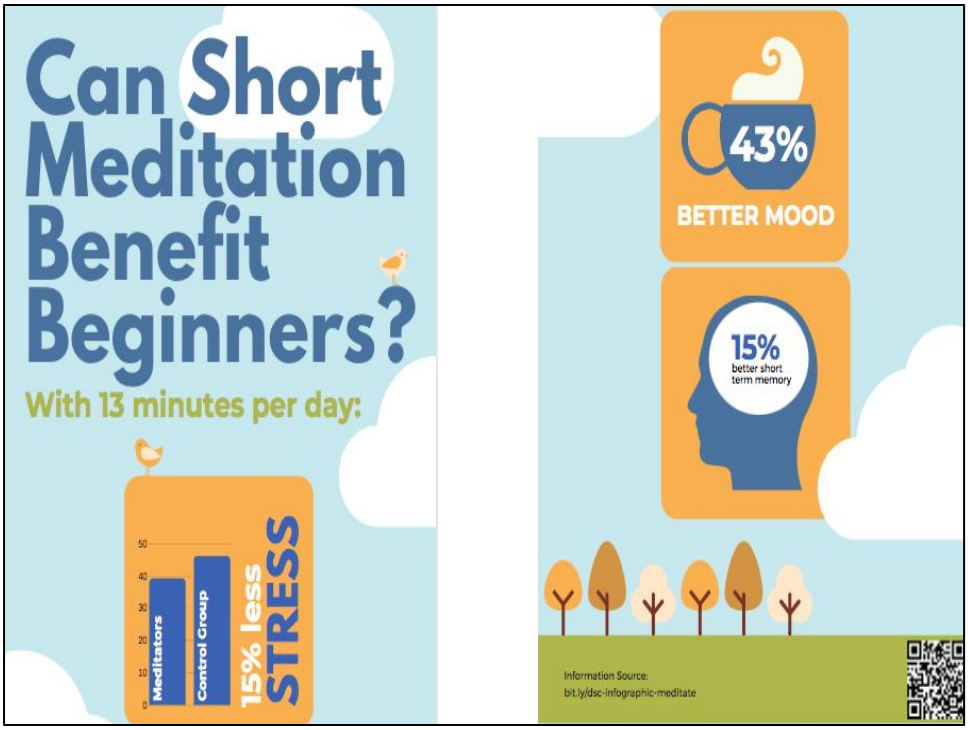
- We help students, faculty, and staff learn to create accessible scholarly communications to tell their research stories in ways _beyond_ text.
- Just to give you a bit of background, in the Digital Scholarship Commons, we offer free, hands-on, introductory skills workshops



- for digital tools like data visualization & RSudio

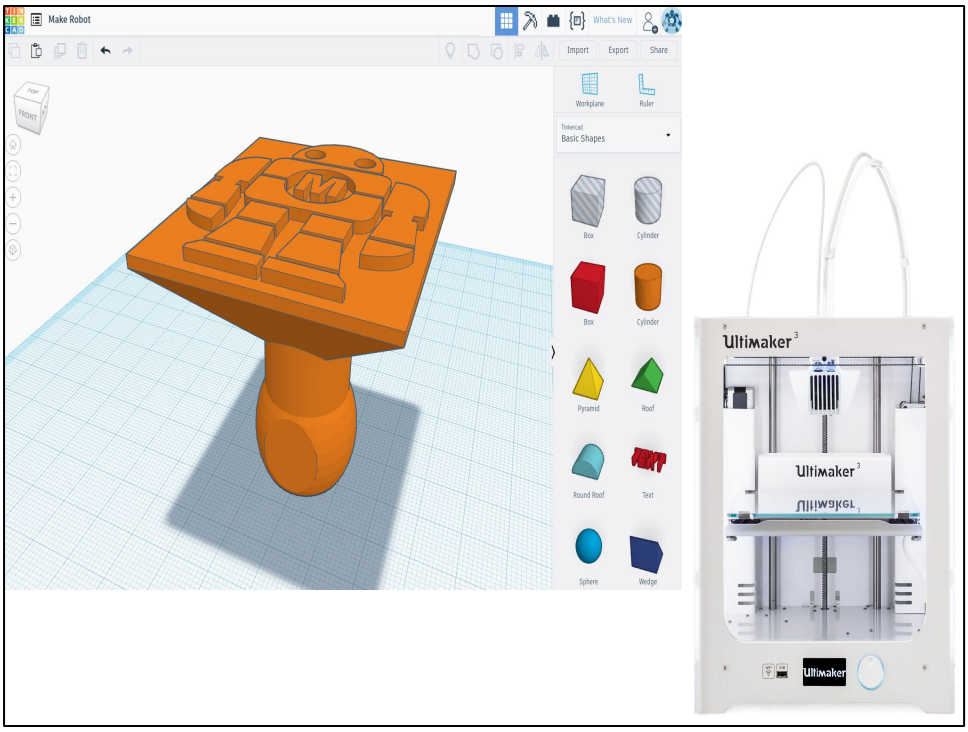


- video editing,

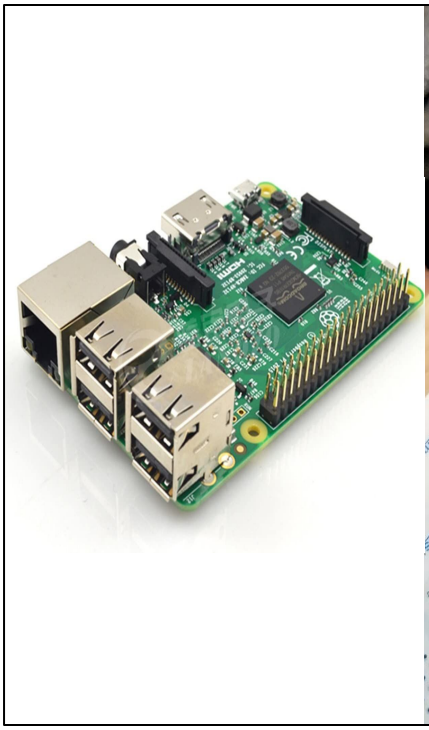


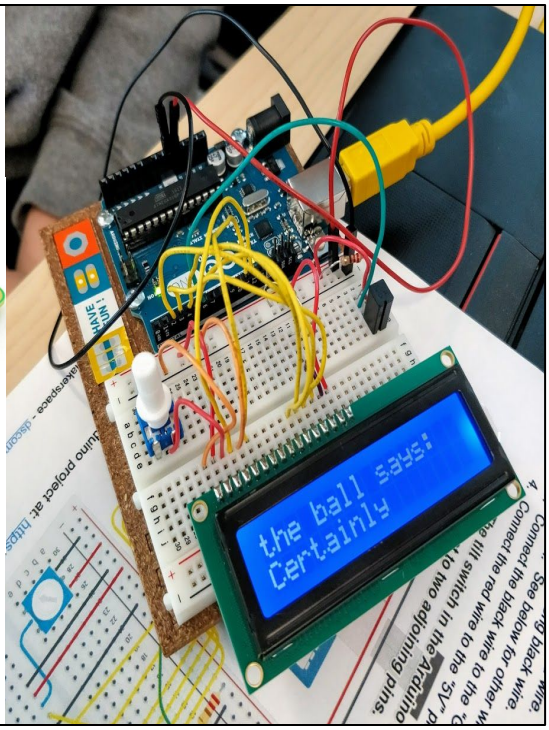
- infographics,

- Augmented and virtual reality,



- 3D design, as well as hardware-based workshops for 3D printers, and





- electronics kits.

- We also teach these workshops in for-credit classes at the invitation of professors, typically in support of a new assignment.

Outline

1. Introduction
2. Outline of the problems
3. How Zoom can help
4. Limitations
5. Conclusions

- Here’s an outline of what we will cover in this video...

Outline of the Problem

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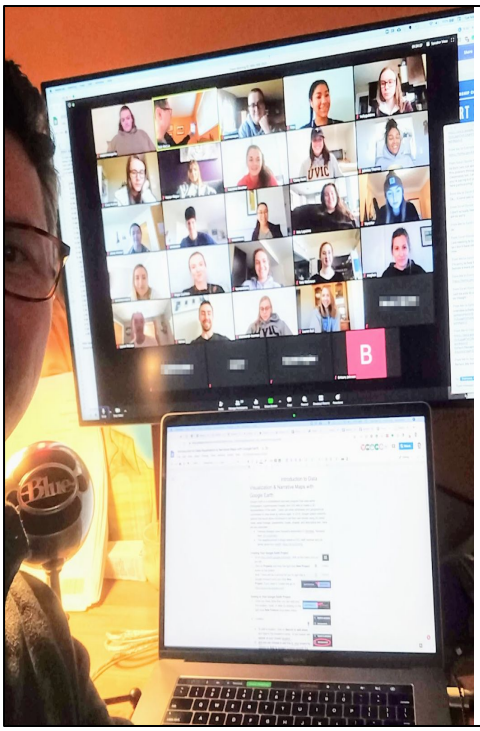
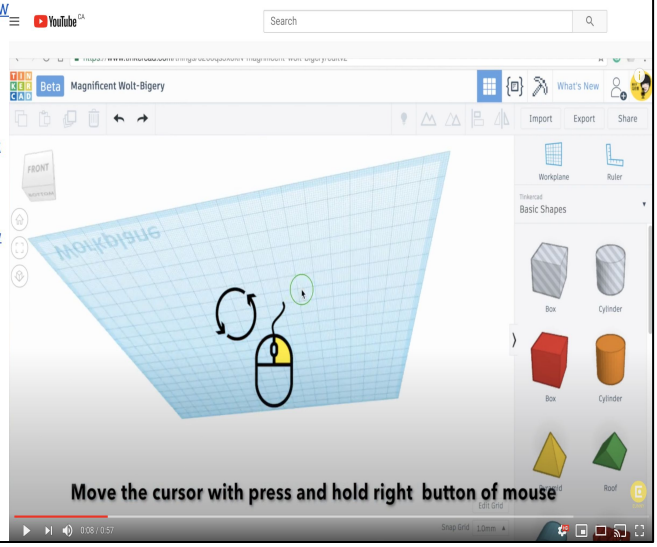


- The fundamental problem that I will be addressing is: How can we as instructors provide high-quality support for software-based skill development in an online environment similar to what we are accustomed to providing in face-to-face classes or labs?
- By software-based, I mean any software package or web application that can be run on a computer screen.

Step 1: Pre-Class Videos, Readings, & Exercises

25 minutes or less.

- [A, B] What is 3D printing and how does it work? (2 min) - https://www.youtube.com/watch?v=Vx0Z6LplaMU
- Setup an account at http://tinkercad.com & follow along with at least the 2nd through 4th videos.
- [A, B, C, D] Introduction to TinkerCad (just watch, don't try to follow along) (3 min) - https://www.youtube.com/watch?v=MwjW
- [A, B] How to move around in TinkerCad (1 min) - https://www.youtube.com/watch?v=wa37nrj0pH0
- [C] Move objects & change the grid (2 min) - https://www.youtube.com/watch?v=Prpjk8dgf9I
- [C] Resize and Rotate objects (4 min) - https://www.youtube.com/watch?v=o-bGROLcrMg
- [F,H] Copy, Paste, and Group (3 min) - https://www.youtube.com/watch?v=r5jP0c7rLSU
- [G] Align and Flip (2 min) - https://www.youtube.com/watch?v=rgnvNXCh-mw



- Up until March the way we taught all our workshops in the Digital Scholarship Commons was a blend of online and face-to-face instruction.
- The online instruction consisted of pre-class videos and readings to prepare students for taking part in hands-on activities during face-to-face class time.

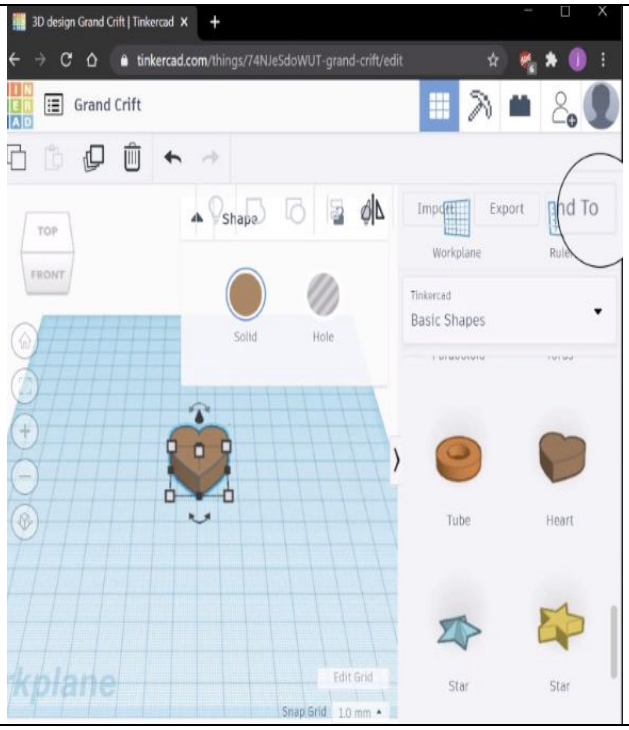
- In our first few face-to-face Zoom sessions we found two major problems,
- so, over one weekend in March, we began updating our face-to-face class materials by reformatting our activity handouts to be easier to use on a screen.

- In my first few classes, students were very reluctant to ask questions in the Zoom classroom.
- Even students who were quite talkative in my Education classroom did not ask nearly as many questions in our virtual classroom for some reason.

- Secondly, once the students started working on their in-class activities, while I could see most of their faces, I was completely blind to how they were progressing with their work as I was not able to wander around a classroom and look over their shoulders to check-in and offer to help those who were struggling as I was used to doing.

Other Online Teaching Options

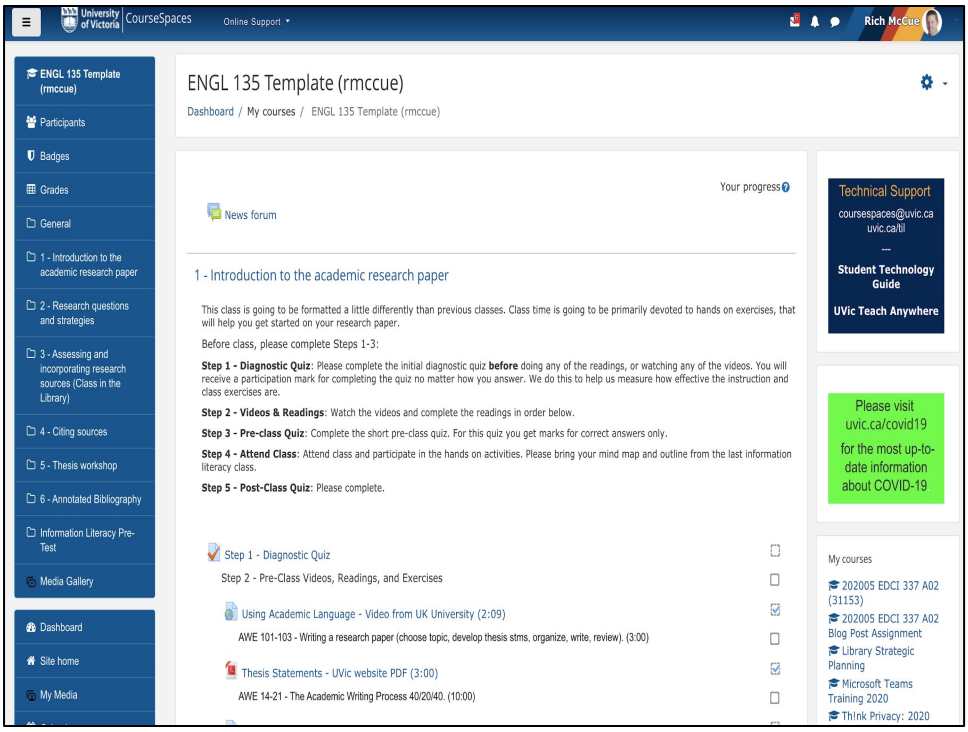
- Before I get into the specifics of best practices for using Zoom to support software-based skills development, let's review two other frequently used teaching methods for online skills development instruction:



- One alternative to Zoom would be a standard lecture format using a video conference service where the instructor demonstrates how to use the software.
- While this is arguably the easiest way for an instructor to teach learners how to use a software tool, it has some significant drawbacks:

- First, everyone in the class has to learn at the pace that the instructor is teaching.
- For some that will be too fast, and they will get behind. If the instructor slows down to the speed of the slowest learner, then the pace will be too slow for most of the class ().
- In the traditional lecture format, there is typically little learner choice as the class follows along with an instructor's demonstration ().

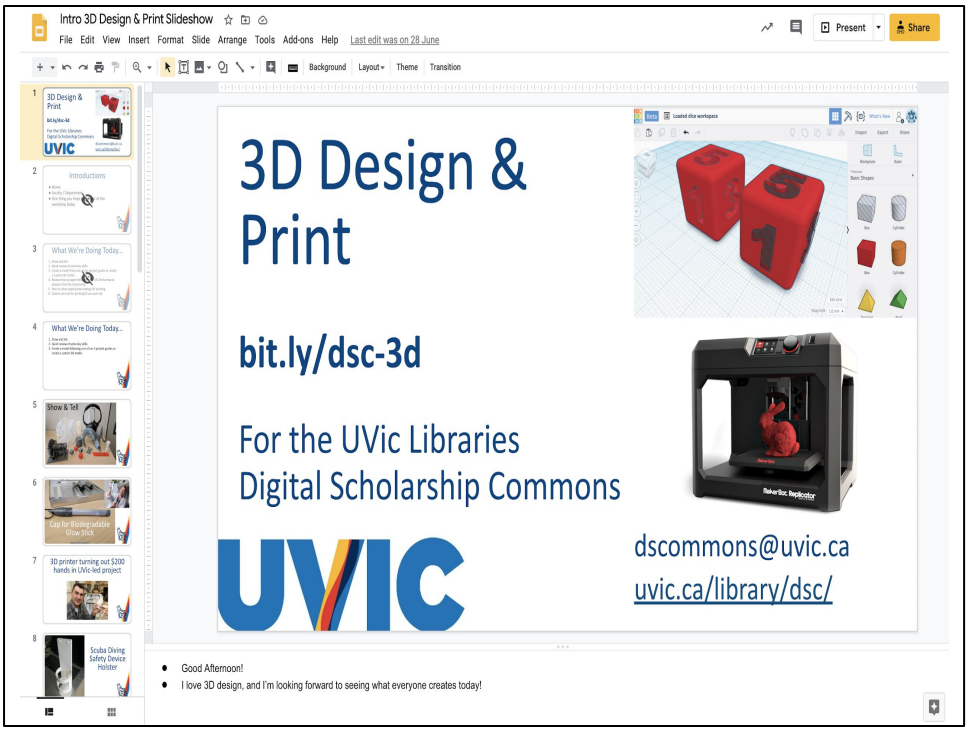
- Hopefully there will be enough time after the lecture for hands-on time so that students can learn by doing, which is generally more engaging and effective than learning by watching ().
- On the positive side, instructors who lecture are available to answer questions during the lecture and during any active learning time that remains.



- A second option to Zoom would be to move to a completely asynchronous instructional model traditionally used by online classes where students work through materials online at their own pace without any real-time interactions with their classmates or instructors.
    - Asynchronous classes are typically very flexible and are usually desirable for students who work or who have family responsibilities. Online discussion boards can also facilitate peer-to-peer interactions to explore concepts, however, typically don't offer real-time interaction or support for students who have immediate questions that need to be answered in order to progress through an learning assignment. This makes traditional discussion boards less useful for technical skill development ().
    - While some struggling can be helpful in the learning process, skills-building activities that a student finds too challenging, without just-in-time support, can be demotivating and a barrier to learning ().

How Zoom Can Help

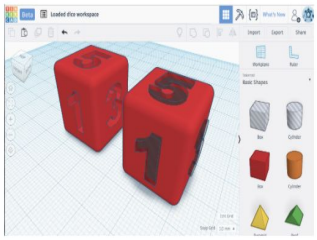
- The online option we chose for our software skills development classes was an active learning Zoom classroom in an attempt to replicate as much as possible our hands-on face-to-face classroom or lab experience with just-in-time support for students.



- The first few minutes of our classes are spent introducing the topic, orienting students to the activities, and pointing out supports available to them both during and after class. Supports and guides are especially helpful for students who for whatever reason did not complete all of the pre-class activities, or struggle learning software skills.

Introduction to 3D Design & Print with TinkerCad

Pre-class activities: 12 minutes
Face-to-face presentation: 10 min
Face-to-face activities: 70 min



Activities & Instructions

- Resize Handouts for Your Laptop Screen (2 min) - https://youtu.be/Igk5hZUfzN0
- Enabling Desktop Sharing in Zoom & Privately Request Assistance during the workshop (2 min) - https://youtu.be/TWb-bms3R2Y
- Design & Print Tips: http://bit.ly/2Vwp4Vb

- Keychain activity: http://bit.ly/2ZDgT6M
- Cellphone keychain stand: http://bit.ly/2CE3VU
- Game piece activity: http://bit.ly/2CVHDpO
- Dice activity: http://bit.ly/33ZMVg3
- Heart-shaped box activity: http://bit.ly/2GzsNax
- Snowperson ornament activity: http://bit.ly/372mWGu
- Snowflake ornament activity: http://bit.ly/33YD7r

- We try to provide students with a range of activists in order to give students as much choice as possible. This also allows them to start working on an activity that challenges them but does not overwhelm them, and then they can work through as many activities as they need to master the skills they will need to successfully complete course assignments.

- Allowing students to choose what activity they want to start with also allows them to move at their own pace whether that be fast or slow.
- There is no forced-march through the curriculum which for some is overwhelmingly fast and others tediously slow.

- Lastly, and very importantly, we provide learners with just-in-time support and guidance from an expert instructor or teaching assistant, either at their request or if we notice someone struggling. The just-in-time support was the most difficult aspect of our classroom-based labs to replicate in Zoom because of students' reluctance to ask questions, and our initial inability to unobtrusively check in with them to see how they were doing (which in the classroom meant physically looking over their shoulders).

Key Zoom Features

- Which Zoom features support active learning in an online environment?

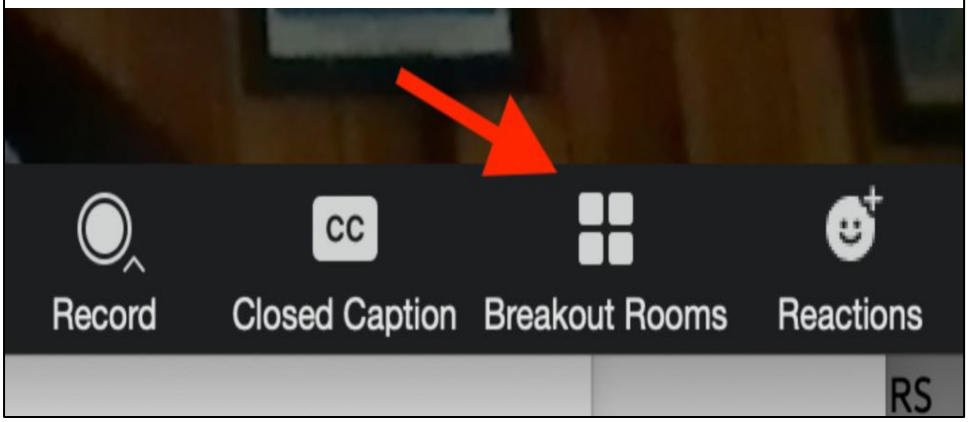
Simultaneous Desktop Sharing

- The most helpful Zoom feature I use that no other major video platform currently offers is its Simultaneous Desktop Sharing.
- It enables us to unobtrusively check-in on our students' progress and provide just-in-time support in a very similar way to what we were accustomed to doing in our physical classroom.
- At the beginning of each class, I spend a few minutes introducing and orienting students to the software skills to be learned. After that, I quickly walkthrough with the class how to share their computer screen so that I can more easily check in with them during the class.
- I also talk about how helpful this is to me as an instructor, and to them as a learner in an online classroom.
- I have not made desktop sharing mandatory during the hands-on activities in my Education classes, but almost all the students share their screens with me after I explain how it can help them.

Checking In with Students

- Once everyone is engaged in hands-on activities, we check-in with students by toggling through their shared screens. For small problems, I might address the whole class and say that I've noticed an issue and tell everyone how to solve the problem as I watch the screen of the person with the problem go about fixing it. I can then see if my explanation is clear enough for the student to fix it.

Breakout Rooms For Unique Complex Problems

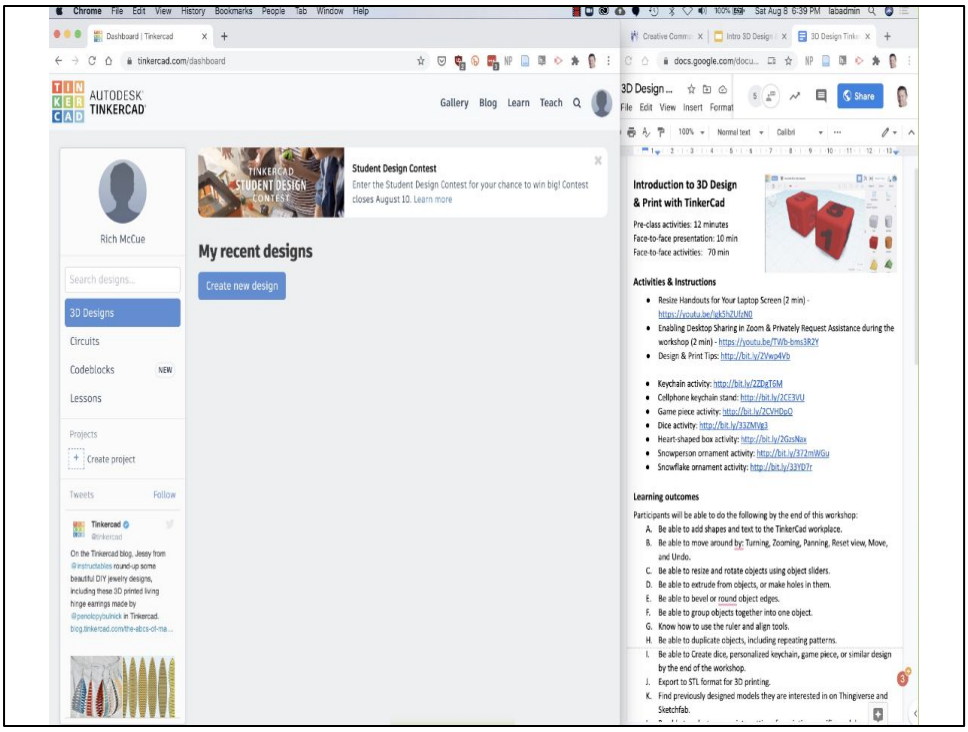


- If a student asks for help for a complex problem either via voice or chat, and I don't think any other students are experiencing a similar problem, I will ask the student if they'd like to go to a private breakout room to get some help.
- This allows me to help the student without distracting others in the Zoom room.
- Once in the breakout room, I verbally walk them through how to solve the problem. Occasionally I will ask the student to give me control of their desktop to do some testing or show them a solution, but I only do this as a last resort as students learn skills more effectively when they fix a problem themselves.
- Please keep in mind that I usually have a Teaching Assistant (TA) to monitor the main classroom while I am in a breakout room.

Limitations

- So what are some of the limitations of Zoom for software skills development?

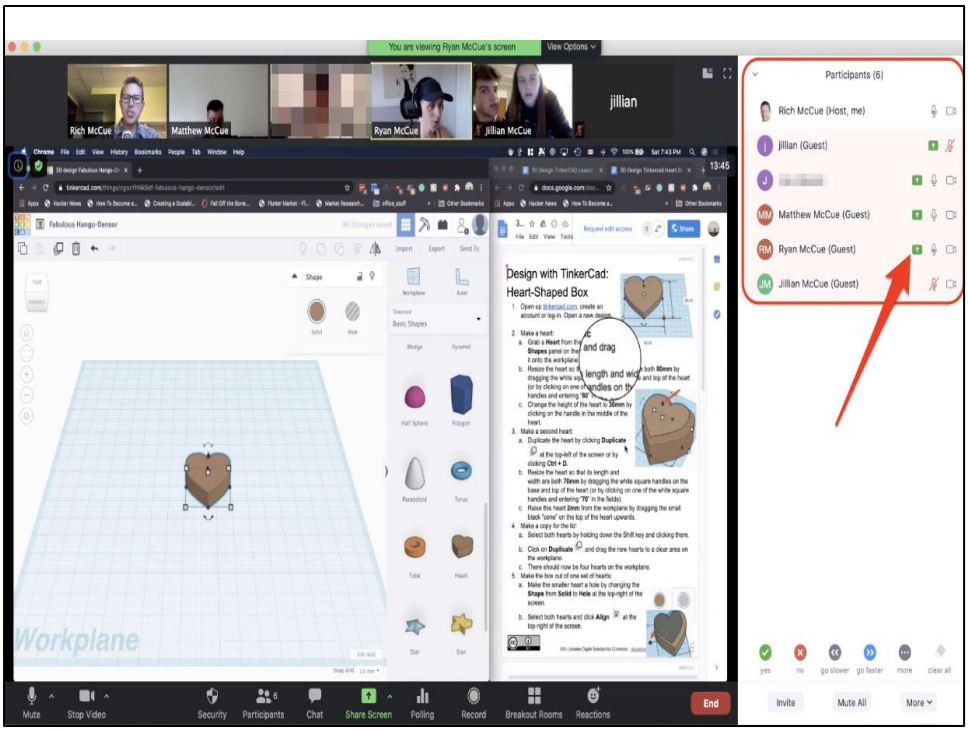
- Without extra hardware we cannot use Zoom effectively for our electronics classes or labs.
- One way around this would be to purchase inexpensive cameras on a flexible arm so that students could share what they were working. These cameras cost about $80, however they are currently in short supply.



- I've found that if in the middle of class I want to demonstrate something by sharing my screen, students have to stop sharing their own screen in order to see my screen.
- In my experience with DSC workshops, many students will not start sharing their screens again after the instructor's demonstration.
- In an ongoing class where students are used to sharing their screen and are familiar with the process of screen sharing this should not be as big a problem as it is in our drop-in DSC workshops.

- Some students are not comfortable knowing that their peers could look at their screens during class time. While students could just look over their shoulder at their screen in a face-to-face classroom, in Zoom they would have no idea someone was watching them at any given time.
- There are two solutions I've found to get around this:

- 1. Before the class starts, especially at the beginning of the semester, I welcome each student as they arrive in my online classroom, and chat with them in order to build a rapport. This seems to help them become more comfortable sharing.



- 2. If everyone in the class is sharing their screens, then only the instructor can see the student screens being shared.
- That said, one idea I've toyed with for next semester is to make it mandatory for everyone to sharing their screens during lab activities. I will do a survey of my class in early September to get a feel for how my students would feel about this.

Conclusions

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Rich Talking Head…

- Zoom can help us to replicate a supportive lab environment for software-based skills-building activities with just-in-time assistance rather than making students wait until the next class or office hours time to get help with a skill they are struggling with.
- While Zoom is not a perfect tool, it is paid for and supported by the university, and is the best tool for facilitating high-quality support for software-based skill development in an online environment.

- Please don’t hesitate to contact me if you have any questions or would like to chat.
- Also if you’re interested in having one of our DSC experts into your class as a guest lecturer, please get in touch.