

Online Teaching Methods- Responses

I do short and not too hard 5 minutes quizzes (with 5 questions) at the beginning of each synchronous online lecture. The effect is I have a high attendance and the student are more engaged in the topics.

Random breakout rooms with relatively easy tasks during the first few class sessions, so students get to know each other.

<Domain> History Quest: Students in small teams investigate events related to the class topic for the following years: Their own average birth year, that of their parents, and of their grandparents. This has a personal touch for them and makes them realize (hopefully, but judging from the responses it is indeed the case) how different the technology was one or two generations ago.

Guest speakers: Much easier to arrange via Zoom, and while not all of them may be a success, it worked well for me with more than I expected.

Short student presentations. I've been doing this for years, and it works reasonably well via Zoom. Students pick a topic of their choice subject to my approval, and give a five- or ten-minute presentation. Last quarter, only two out of 76 bailed out, and most did a decent to excellent job. Occasionally I'm taking this one step further by also assigning "reviewers", but this also makes it quite a bit more complicated. If I do this, I have a first round of self-assignment (subject to some constraints, like not within their own team, and no cycles), and then I'll more or less randomly assign the rest. The main issue is the assessment of the reviews, since it adds another set of items to grade to my tasks ...

I punctuate the presentation with questions, asking the students to figure out the next step, or even just to guess, wherever feasible. And I make class participation a respectable part of the final grade, say 5-10%, and base this on responses to in-class questions. To reduce the intimidation factor on this, it helps to ask for raised hands, and then to call on whoever raised their hand and has answered the fewest questions thus far this term. However, I also just randomly call on people, and then I emphasize that any decent effort at a response is creditable, and the only wrong answer is something like "What was the question, again?". I also require cameras unless someone side-texts me with a good reason why not (e.g. I really feel ill and look lousy today but I don't want to skip lecture)

I've started including short quizzes due before lab to ensure that they've learned the lecture material before working on their lab.

I've found Canvas discussions to be really effective and surprisingly engaging. They are required to post one discussion point at the beginning of the week and come back and reply to one discussion at the end of the week. I kick off the discussion with some of my thoughts on the material and some questions I had, but they are encouraged to come up with their own questions to propose to the class.

I added lab project critiques to the course, so instead of me giving back all feedback, they now have

to pick one other project and follow a critique template to help other students improve their lab projects.

This quarter I'm trying something new - instead of writing a big paper about their project at the end of the quarter, I'm having them create a case study blog post where they write about their lab project in a concise way that they could put on a portfolio to show to potential employers. Rather than one deliverable, it's broken down into four deliverables, so by the end of the quarter they will have a nice write up with images and links to show what they created and what they learned. They will be writing the paper with future employers as their intended audience, so they can then use this project to help get a job, which will hopefully be more motivating than "you have to do this cause I said so" instead it's "more employers are expecting portfolios, you'll have a nice case study for your portfolio by the end of this class." We'll see how it goes

Lecture is a traditional PowerPoint presentation with copious code examples and whiteboard scribbles.

Small workshop exercises in breakout rooms to reinforce key concepts or skills.

It's fun to drop YouTube memes into lectures to keep things lively.

Lab classes are broken into random 4-6 student breakout rooms to create study groups.

Recorded lectures are posted after a delay to encourage class attendance.

Large midterms seem to encourage cheating so I replaced midterms with several quizzes.

I do a flipped-classroom model where I give pre-recorded lectures (or lectures on only one day), then make myself available on a class zoom chat channel where students can ask me and each other questions. They can also request a one-on-one zoom call with me during that time. This allows independent students to do their thing, while giving maximum 1-on-1 or small group attention to anyone who wants it.

Synchronous online with frequent Q&A and discussions and copyright notice on recordings to protect instructor's rights as much as possible.

Synchronous instruction with the opportunity for personal interaction in real time seems to be very much appreciated by most students. This is for a laboratory focused course in which active learning is a given and lectures support the lab work, so not as much effort to keep students active is required as in lecture focused courses.

As deletion of lecture recordings has been prevented, I feel a copyright notice is important to help protect against the potential use of recordings to replace direct instruction at some point in the future. The intention to replace some instruction with videos may not be there now, but with the mechanism having been established, the intention may change overnight.

Required Discussion posts on a topic and 2 replies. Minimal lectures and having students working on problems in breakout rooms. Students liked having something specific to work on in breakout rooms, not just discuss "something". Zoom polls.

Given the draining nature of the current situation, I do a Paid Time Off (PTO) assignment (similar to how they would get PTO in industry). It's 5% of their grade to do something for themselves. All I ask is that they tell me what they plan to do at the beginning of the quarter and what they ended up doing at the end of the quarter. Several students have told me this assignment has helped them

realize the power of self-care and ultimately made them feel more engaged and productive in the course.

Camtasia videos for content; IOTL Module framework (course taught at CTLT) for shell

On-line Synchronous lectures and labs. Use slides and writing tablet (walcom) to write on the slides. Very similar to normal in class delivery. I expect webcams to be on (unless they talk to me in advance). Attendance seems to be good but only a few students ask questions.

To help get the students engaged, I sometimes use a zoom poll at the beginning of class with a question about the previous lecture. This allows me to spend 10 minutes reviewing the previous lecture with a formal example. I post the poll 5 minutes prior to the class starting and give them 5 more minutes after the class gets going. (In zoom I have a generic poll that just says pick A, B, C, D, and E and then on a slide ask a question and list the possible answers. This way I can use the same zoom poll all quarter with different questions.)

Lab - Attendance required for lab. I put them zoom breakout rooms of 4-5 students. This forces the students to be engaged in the lab since I jump into each breakout room multiple times and talk with the students. This also allows the students to interact with other students in their major. They clearly miss this aspect of normal in-person delivery.

Students work together on the labs but are required to turn in their own assignment. I continuously jumped around the rooms and talked with the students, asked/answered questions. I found this to be very effective. Even more effective than in person. In a classroom when a student asks a question (even when the class is broken up into groups distributed around the lab) the student asking the question knows everyone is listening. In zoom breakout rooms it's just the small group and the students seemed to be more open to talking with me and ask questions. It was easier to get even the quiet students to participate in this small group setting.

1-on-1 meetings with each student (for smaller classes) has been valuable for me in getting to know students, getting them more engaged, and making class more personable.

Short breakout room exercises at the beginning of each lecture to contextualize discussion, but also to provide an opportunity for students to socialize. These also serve as a regular activity to engage those students that are unable to attend live lectures (they must complete the activity within about 24 hours of the lecture).

Course appropriate flexible deadlines to automatically accommodate exceptional circumstances.

Low-risk/low-value, formative assessment quizzes that allow for multiple retakes.

I have been teaching my courses using a "live", synchronous approach, and I ask (but do not require) students to have videos on if they can. I explain that if they're able and willing to have video on, I believe it helps them feel more accountable and also creates a little more community to be able to see each other (usually more than 90% have them on). I greet them each by name as I let them into class from the waiting room, and I run class similar to how an in-person session would look. I use a combination of PPT slides (showing pictures, diagrams, etc) that go along with written notes. But instead of writing my notes on a white board as I would in-person, I use a doc cam. In

the student evaluations of my courses, this has been one of the most commonly mentioned thing they like - the fact that I am writing the notes in realtime like I would in a classroom helps them stay engaged, it helps with the pace, it makes it easier to interrupt with questions, etc. I also have many intentional pauses for questions, which I encourage them to ask either by unmuting, using the "hand raise" function, or using the chat box. The chat box has been a particularly nice addition to teaching, as numerous students have commented that they wouldn't usually raise their hand in class, but they're comfortable typing a question in. Throughout class, I also use breakout rooms to put them in small groups for activities or discussions - just as I would do activities in class. I try to do this at least once each lecture session. Additionally, I try to give at least one break - even if it is just a 2min "stand up and look away from your computer" break. Finally, I try to consistently bring up or address any of the challenges and realities that we are facing, to make sure they know I'm aware of how hard things are and I'm willing to work with students to be flexible and/or to come up with solutions for being successful. This seems to help with their stress and anxiety. (I'm also working with my own young kids at home, so I acknowledge my own challenges and talk about how I'm approaching things, so we can all try to understand and be patient with each other.)

Nearpod: If using Powerpoint or similar, this is a program that allows students to submit answers, draw on slides, and otherwise engage in the presentation, the faculty can see all of the students answers in real time and either share with the class, call on students with correct answers, etc. A great way to make sure students are paying attention, engaging with content, and understanding what you want them to know. Since it is in a separate window from zoom, they can also engage with the Nearpod while in breakout rooms and you can follow what they are doing. Super easy to use. Can import and modify existing slides if you have them.

I find that providing half of the lecture asynchronously through Edpuzzle (which allows embedded questions and prevents skipping) to provide basic content and information, worked examples, etc. and then meeting synchronously for the other half of the lecture for students to work together worked best and by survey my students really like it. It helps prevent zoom burnout. There is not much reason to be synchronous unless students are interacting with the faculty and each other during that time.

I provide three learning modes and allow students to choose between them each week: synchronous lecture, asynchronous lecture (Zoom recording), and a combination text/video version of the lesson delivered on Canvas. Students appreciate the autonomy that this approach provides. HW assignments are designed as formative assessment often providing immediate feedback and allowing multiple attempts.

My courses are all asynchronous. I record my screen using OBS Studio and use GIMP as a blackboard (both free software). Videos are uploaded to YouTube; I try to keep them between 10 to 15 minutes in length to make it easier for students to review specific subtopics. I am on Zoom 5 mornings a week to answer student questions; I effectively use these as one-on-one office hours. Up until Winter 2021 I used Piazza as a class forum but am now looking for alternatives since they started a payment model. I do not use Canvas and instead maintain my own site for course materials; students can view their current grade by running a command on the CSL servers.

Ask students to set up meetings with each other as part of the first lab so they get used to meeting in their groups.