

Flipped classroom experiences

Background: I've been teaching economics classes for the last few years that have been "flipped" to some degree or another. I offered to share some of what I've found effective and how it worked in the remote environment in the spring. My experience is in principles, intermediate micro, and upper level micro electives, so some of this may not translate fully to other fields.

The big caveat is that this has been in the context of a teaching at a small-class liberal arts college (15-25 students per class, no GSIs or discussion sections) so I've tried to focus on things that I think can translate to larger classes. Some of this is probably very close to the model for discussion sections, although in my case I've been using it as the first and only pass at the material in the classroom.

Key lessons I've learned:

I'll give some details below but some big lessons I've taken from my experience are:

1. Discussion must have a clear prompt and either immediate, physical deliverables or a very clear link to future graded assessment for it to be effective.
2. In practice, demonstrating math problems conveys as much of the underlying material as "lecturing".
3. Class attendance goes up.
4. Most of this scales up and does not have to be left to discussion sections.
5. Flipped classroom effects can be achieved with asynchronous Zoom, despite the obvious difficulties.

Preparation:

- I distribute a "course pack" on day 1 with (i) links to readings, (ii) concepts, (iii) practice problems, and (iv) discussion questions for each topic. The implicit deal is that we work through the pack in class and once we understand it we can do the assessments. **Having something concrete and written down in front of the students for each "active learning" activity is necessary to get buy-in.** For example, writing down discussion prompts in advance makes discussion activities seem more purposeful and serious.
- I assess learning goals with **specific assessments that are tailored to correspond to each active learning task.** For example, practice problems and concepts correspond to quizzes, reading tasks to presentations, and discussion questions and big-picture ideas to an essay-based final exam.
- Reading is expected in advance. Students self-select as usual here, but **the in-class design will try to reach both the reader type and the non-reader type.** For accessibility reasons, I strongly prefer the advance reading to be freely available (e.g. open textbooks, journal articles). Otherwise I'd be worried that without "lectures" students who couldn't afford the textbook would never see the material. I also post my own lecture notes from the traditional lecture-style version of the course.
- I don't usually record lectures in advance with this approach. Partly that's due to the differences in workload and logistics at a liberal arts college, but partly just that student demand has not been that high relative to the value they report from class meetings. I think **the flipped approach is viable whether or not you choose to record lectures** to supplement what is being done in class time.

Class structure:

- I split class time about **50/30/20 between practice math problems and analytical questions/discussion/student presentations on readings.** I've tried two ways: mixing modes within

each class meeting and having each class meeting entirely math or discussion / readings. Both work, but the second method helps create discipline to not neglect the discussion portion.

- **The discussion portion *must* get its due time in week 1 and every single week**, even if it's not going how you'd hoped, or else the students won't do it.
- It feels like there's a lot of "dead air" with a flipped classroom. In particular, I had to learn patience to **let students do their own thing** instead of feeling like I had to direct or control everything.

Math / analytical work:

- I solve out a practice problem first, often an old exam problem. The **math, graphical, or analytical demonstration acts as a quasi-lecture** because any issues get aired out---this means doing one practice problem takes a *long time* because I'm implicitly reviewing theory and concepts.
- Next I have them **split in to small groups to try a simpler version of a problem** and help each other. Visiting with some of the groups for a minute is a must. Then reconvene to talk about common issues.
- Typically I get through about 2 exam-style problems in one class, which covers a lot of theoretical ground but leaves leftover problems and theory for the students to try on their own. This means **giving up some control** over how much is being said out loud in class and how much is on the students.
- This **scales trivially over Zoom but requires a stylus and touchscreen**. Stopping the recording while in the "try it yourself" mode is fine, but I like having a bit of dead air that really nudges the viewer to do it.

Discussions:

- I use **groups of 3-5 (changing composition each time)** and give a prompt, then regroup to report back to the class. This works as well in Zoom breakout rooms than in the classroom.
- **Discussions must have a specific prompt and specific output**. For example, sometimes I use this to prepare for essay-based final exams, so the output from a discussion is a one-page visualized essay plan for an (argumentative) essay. In other classes I've used it to generate ideas for research proposals. It really helps to **show them at the start of the semester an example of what they will use the output for** (e.g. here an example of a successful final essay or a research proposal).
- I tell them to **designate at least one scribe per group** who will produce written output for the whole group to keep and refer back to later.
- I **visit with a couple of groups each time**---I try to participate in their discussion rather than tell them stuff, but often they want help with concept X or where to start.
- Afterwards I **pick one group to share their work** with the rest of the class. I scribe for this on the chalkboard / on screen in Zoom to create a big, whole class "visual essay plan", mind map style.
- It's important to **call on specific groups** in turn to share their ideas rather than open it up freely. Ideally every group should get a chance to share their thoughts, even if similar to other groups.
- Zoom makes it slightly harder to **make sure that one voice doesn't consistently dominate the discussion**. Calling on groups is great, but it's also important to get each group member to speak. The Zoom chat box can really help people who are shy about speaking up. I encourage use of the chat box and read (anonymized) comments aloud for the benefit of those watching off tape.
- For people that can't attend live class, the next best option is to **require collaboration with other students to deliver a product**. Plenty of collaboration tools in bCourses and elsewhere work fine for this.

- What if people don't talk to each other? It's not the end of the world and in my experience not worse than someone spacing out during a "regular style" lecture. **Giving them a source to talk about is a good backup plan**---open-ended discussion of the source leads to accidentally insightful opinion-sharing.

Readings:

- I've had **very limited success trying to require a specific reading before class discussions**. Far too many people don't do the reading and it makes the discussion time way less effective. So if do want a specific reading to be discussed, then I make sure to have them actually read it in real time in the group in class.
- So to actually assess reading, I have **each student pick and present on one non-required reading** during the semester (e.g. JEP, JEL, or other non-intimidating articles). Everyone becomes an expert on one thing and are "on call" for that topic---if a class discussion lags they are responsible for helping me pick it up.
- I have also tried a **"create your own reading list" model** where every student picks a topic and then finds their own reading to present to the class (requires Google Scholar training and/or a very serious talk about what counts as "high quality"). This is super fun and it's truly gratifying to see what they pick. However: quality of the readings is naturally extremely variable. I really love this model but it's scary.
- Students take these readings extremely seriously.
- Another option to integrate reading that I've used is (graded) 300-500 word **open-ended written reading responses** (what confused you, surprised you, interested you) to refer back to in class.
- Reading presentations are fine over Zoom except for scaling up the time in a big class. An alternative: students **record a presentation** to either be uploaded to the course site, or create an annotated presentation to share. In spring I got some excellent prerecorded presentations, better than live.
- Post-presentation Q&A is required and can be implemented in real time or remotely. I've tried a model where **each person has a discussant** who leads the Q&A. This works and is fun but feels a bit fussy.

Assessment

- I choose to not assess for participation in discussion or active learning. I try to make participation pay off naturally in the assessments. But **some students log off Zoom as soon as discussion in breakout rooms is mentioned**. That's their choice, but worth noting that while the approach translates but the students' motivation may not. It might need a heavier hand in the remote world.
- In flipped classroom in-person classes I use **short, frequent testing that integrates in-line** into the usual flow. That is: it's not a whole class period devoted to a midterm, but a 15 or 20 minute block devoted to a quiz instead of something else. Remote this is less crucial since their assessments are online anyway.
- **Group projects become much easier** to integrate into the usual workflow. Group *exams* are an idea that exists but that I've never been brave enough to try.
- Anecdotally I think **students are less stressed and more confident** about assessments after so much explicit preparation in class than they were in my previous lecture style classes.

I'd be happy to chat more about this if it would be helpful for anyone!

Jim Campbell (jamescampbell@berkeley.edu)