Teaching Math and Stats in “Alternate Delivery” Format

A=\{\text{things that are working}\},
B=\{\text{things that aren’t working}\}^*

Andrea Hyde
College of the Rockies
Cranbrook, BC
ahyde@cotr.bc.ca

^*n(A \cap B)\neq 0
What classes are we talking about?

• Math 105 – Math for Elementary Teachers
  • Aimed at students who want to transfer to education programs
  • Students are generally engaged, hard workers
  • Students need to earn high grades for acceptance

• Stat 106 – Statistics (non-calculus)
  • Taken by a wide variety of students – kinesiology, social work, etc., but primarily business students
  • The course is mandatory in many degrees and students are only motivated to obtain a minimum grade for their program
What’s the set up?

• All of my classes have pre-recorded videos that students watch on their own time – no synchronous lecturing
• Homework is online, algorithmically generated, from Pearson (Math 105) or Lyryx (Stat 106)
• We have twice weekly synchronous Zoom meeting where students get to engage with me and the material in ways I’m about to discuss
• My goal was to create a flipped classroom in hopes that it would ward off some degree of Zoom fatigue
• Sample schedule:
  • Week 3 – watch videos about addition models and algorithms
  • Week 4 – do activities over Zoom about addition models and algorithms
A: What’s working? Exploratory small group activities

**Activity 1 – Set Definitions, Cardinal Numbers, Equal and Equivalent Sets**

- Grab a bunch of snap cubes, maybe 10 or so including a few colours, as well as your assorted items. Choose a way to classify them – colours or shapes or size or whatever you like.
- Name each of your sets using the letters A, B, C etc. and write out the set in two ways: list the objects in the set and use words to describe the set.
- Find the cardinal number of each of your sets. Are any of the sets equal? Are any equivalent?

Example from Math 105
A∩B: What’s working and not working?
Homework groups

• One synchronous class per week is dedicated to questions and homework
• Students are somewhat randomly assigned to breakout groups to work on the homework
• Students collaborate to solve their unique homework problems
• The groups that are most collaborative are using the screen share and whiteboard tools in Zoom to work together
• I often don’t get to do much in these classes when the students are working well
• Sometimes students don’t show up and don’t care
B: What’s not working? Statistics in Society assignment

• Students are assigned weeks to find items such as news stories, infographics, graphs, or other items that convey statistical information of some kind
• Posts are done using a forum on the LMS (Moodle)
• Students are to use some provided critical analysis questions to analyze the posted items, and to tie concepts to course work
• Students will provide a self reflection at the end of the semester on their participation and the depth of their contributions
What’s not working? Statistics in Society assignment

• Students are doing the bare minimum when posting items – graphs with no context from random websites

• I provide students with the opportunity to discuss the items in small groups in our weekly Zoom meetings so that they can work together and generate ideas before posting – attendance is minimal and participation seems to be essentially zero

• Don’t students read the news?? There are at least three elections happening they could talk about!!!
Conclusions...

• Unsurprisingly, groups of students who tend to be more engaged face to face are also more engaged online.
• Critical thinking is hard to do and hard to teach. In the future I may need to change the assignment to make it work better for the students I have instead of wishing the students were different.
• Students give positive feedback about the pre-recorded videos in both classes.
• It’s not easy to come up with good synchronous activities!
• I have lots of learning to do 😊