

Building a learning community in remote classrooms

Maria Chierichetti, PhD
Dep. Of Aerospace Engineering
San Jose State University
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How my teaching method evolved in time...

- Worcester Polytechnic Institute – 2012-2014 – got started
 - Mostly lecturing for entire time in class
 - Lab/hands-on experiences included in teaching when possible
 - Often end of semester project
- University of Cincinnati – 2015-2018
 - Great faculty community that exposed me to practical active learning strategies
 - Benefits of

What I'll talk about

- Results of surveys/interviews about transition to online
- Active learning in an online setting
- Fostering a remote learning community through group work

Students' survey/interviews: key points

- Key points
 - Socialization with peers and friends is an issue
 - Students gave some suggestions on how online instruction could be improved.
 - record lectures and post online,
 - use active learning in online classes,
 - utilize better online teaching methods,
 - use Canvas and Zoom more effectively,
 - better communication with students,
 - give/use more practice problems,
 - be more organized
 - Controlled testing environments
 - increases students' stress when taking an exam.
 - increases the time it took to finish an exam

From:
<https://www.sjsu.edu/engineering/resources/instructional-design/covid-student->_____

Faculty's survey/interviews: key points

- Key points
 - Increased workload
 - ~~Changed~~ pedagogy very quickly
 - Overall positive experience, seamless transition
 - Many tried to incorporate activities to promote *luinonivinn*

Active learning

- In class (recorder + posted on youtube with private link)
 - Start class with 10-15 minutes of conceptual review
 - Assign 1-3 problems for students to solve (similar difficulty as formal assessment)
 - Assign to breakout room
 - Join students in breakout rooms for a few minutes
 - Answer questions
 - Check on how students were doing
 - Easier to discuss with students in smaller groups
 - If class is large, maybe ISA/TA can help with this
 - Be mindful of time
 - Solution (quick) together
- Assessment
 - Weekly or bi-weekly homework
 - Weekly 15 min quizzes (classes with lots of short problems) on the weekly topic (create question banks in canvas that are randomly shuffled)
 - If no quizzes, midterm
 - End of semester project
 - Final exam

Benefits

- Students more engaged
- Students practice what they are taught multiple times
- Informal coaching
- Helps form a community of learners
- Helps keep tracking of students & proactive contact

Difficulties/cons

- Dysfunctional group
- Some students prefer to work individually
- Easy to loose track of time

Let's try to be students

- Breakout rooms
- Questions to be discussed
 - How is your break going? What has been challenging and what relaxing/refreshing?
 - Have you tried active learning (or a more students' centered approach) before?
 - If yes, discuss one aspect that you like
 - If not, discuss one aspect that discourages you from trying it in one of your classes
- One of you will report for 1 minute to the group
- You have 5-6 minutes

Breakout room experience

- Share your reflections about your experience in the breakout room
 - How was the interaction?
 - What helped? What made it challenging?

Active learning thoughts

- Can you report your discussion about active learning?

Initial ice-breaker activity

- Might be simple topics/often disregarded, but help to create a personal touch in a virtual environment, reduces the distance
- It is more difficult to be connected and form a learning community in a virtual environment
- Students need a Topic >> BDC /TT2 2-0.6 (u)-0.6 (c)3.9.6 (c)3.n3.2 308.7ma38.

Examples

- Introduce yourself to your classmates. What do you do outside of school? What do you enjoy?
- How was your break? What was your favorite activity?
- Discuss the most joyful/rewarding/easiest and most challenging situation that the covid-19 pandemic created for you. Report as a group.
- Find some quotes for the groups to discuss
- After a few class: what are some aspects of the class that are working well and some that you would change?

Semester

End of semester project ideas

How I came up with a list of projects for the students

- Ask each group to come up with a hands-on demonstration of a topic in the syllabus (or assign a topic to each group – budget constrained; students can meet outdoor to assemble)
 - I used it for my junior year class “Aircraft Structures I” – part of service learning activities
 - Students had a deliverable each 2-3 weeks starting from project proposal, literature review, initial design, construction, re-design if necessary, demonstration, final write-up/presentation
- Create a list of projects and each group will choose based on interest
 - I used it for my senior class (individual project) – “Aircraft Structures II”
 - Most of my projects required students to analyze aircraft/spacecraft crashes that happened in the last 30 years due to structural failure
 - A few projects gave the option to work on advanced topics/additional skills not presented in class, such as FEM
 - Some students proposed a different topic (usually pretty advanced) and I looked into it on a case by case
 - Very positive feedback, highly engaging, students could choose how much to challenge themselves

Other ideas

- Have students implement in Matlab (or similar) the model of a system with added complexity (i.e. rigid body motion, image processing, motion detection from short video they create, data analysis, etc)
 - Free full-license Matlab for students/faculties
 - Open source libraries for data analysis
 - Can the students collect data from smartphones/tablet/laptop sensors? If not, faculty can provide raw data

Thank you!