Strategies for Increasing Student Engagement in Synchronous Instruction:
a guided discussion of problems and potential solutions

Eric M. Edlund

Assistant Professor of Physics

A summer discussion session hosted by
The Institute for College Teaching
SUNY Cortland

August 10, 2020

Points of interest raised by you

- Keeping students engaged and actively participating

- Use of breakout rooms

- Peer-to-peer interactions

- Online delivery in the STEM fields

- Teaching writing and critical reading

- Building a sense of community

- Creating opportunities for spontaneity

What we know

- Faculty and students both found that online teaching presented difficulties and learning generally suffered during the Spring 2020 semester.

- SUNY Cortland policy now mandates that online instruction for the Fall 2020 semester must use synchronous instruction.
  - Exceptions can be granted but must be requested and justified.

What we will cover today

1. Establishing expectations
2. Scaffolding to build participation
3. Structuring assignments for effective in-class participation
4. In-class dynamics
5. Use of breakout rooms

Concluding with open discussion

Hybrid versus fully-online instruction

- Hybrid classes will present unique challenges for engagement due the split nature of the interaction.

- Fully online teaching is much simpler in this regard – we need only learn strategies for a single medium.

- This presentation and discussion will focus exclusively on synchronous online instruction.

1. Establishing the expectations

- Faculty and students are still learning how to use these platforms.
- Therefore, we need to take time to establish fluency in the medium.

- Be consistent and use a single platform if possible (Webex, Teams, or Bb).
- Give a thorough guided tour of the platform features you will use.
- Keep auxiliary tools to a minimum (approximately 4).
  - For example: course notebook, video recordings, Wiki, and external gradebook
- Demonstrate participation in a low-risk setting (e.g. ice breakers).
- Clearly communicate your expectations for participation.
  - Some faculty like to let students establish the rules for participation and interaction regarding things like rules for discussion, debate, and cell-phone policy.

2. Scaffolding small-group discussions

- Generating discussion is essential for a positive experience.

- Much like we need to bring students up to speed on specific concepts or knowledge, we need to introduce them to how to have a conversation.

- One strategy: provide students with a combination of questions and prompts to guide small-group discussion.

Overall goal: how can we determine the acceleration due to gravity in an experiment?
1. Describe two different experiments you could conduct at home to measure the acceleration due to gravity.
2. Choose one and define the equipment and measurement tools would you need for this experiment.
3. Identify the equations that might be useful later on as you go to solve.
4. Identify which quantities in these equations you could measure and which are unknown.
5. How can you assemble these equations to derive a solution for this problem?

3. Structuring assignments for sharing

- Willing participation in sharing can only be effective after we create a welcoming environment and build confidence.

- Option 1: sharing of a group product
  - Pro: The burden of individual accountability is largely removed.
  - Con: Some students can remain anonymous or not participate at all.

- Option 2: staged assignments
  - Students first work part-way toward the goal privately (week 1).
  - You might provide private feedback after the first stage.
  - The second stage of the assignment is an extension of the first where students have to add something new.

# 4. In-class dynamics (Part I)

- Flipped classroom strategy:
  - This is new to me, but many people on campus have been using this approach:
    - Karen Downey (Chemistry)
    - Helena Baert (Physical Education)
    - …
- Idea is that students come to class prepared by having studied the theory and class time is used for practice.
  - Reading the textbook.
  - Often involves creating short video lectures to be watched at home.

- Introduce problems in class, discuss, practice, discuss.

4. In-class dynamics (Part III)

- Flipped classroom strategy:
  - This is new to me, but many people on campus have been using this approach:
    - Karen Downey (Chemistry)
    - Helena Baert (Physical Education)
    - …
- Idea is that students come to class prepared by having studied the theory and class time is used for practice.
  - Reading the textbook.
  - Often involves creating short video lectures to be watched at home.

- Introduce problems in class, discuss, practice, discuss.

4. In-class dynamics (Part II)

- How to do to encourage/stimulate/force conversation?

- Call on students directly. Make this a practice early on (day 2 perhaps).

- Establish this as an aspect of the cultural experience of the class.

- Lower the bar to entry by using speculative & open ended questions:
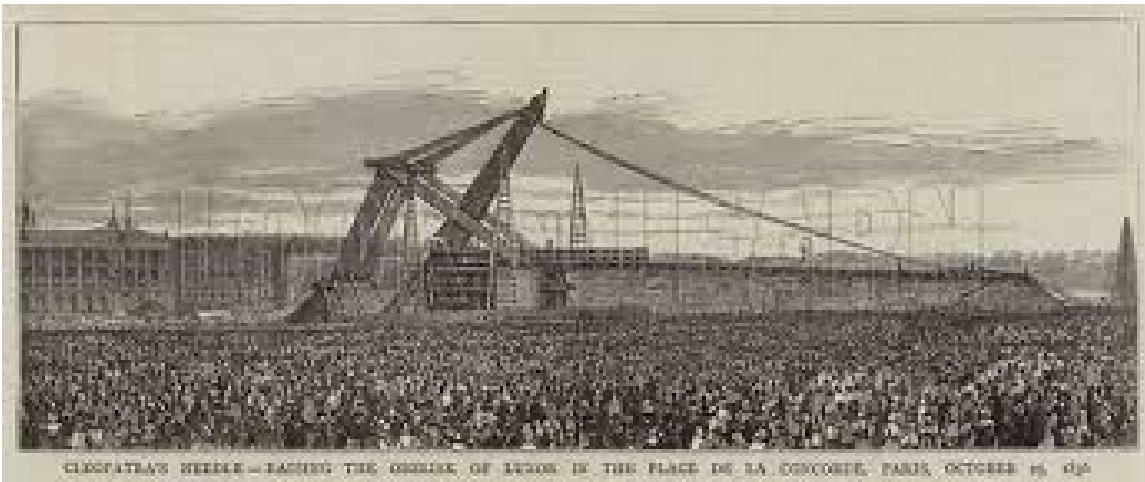
What is going on in this picture and what physics might we need to understand in order to analyze this situation?

5. Breakout groups

- Use breakout groups for small-group discussion.

- Available in Zoom.
- Microsoft Teams allows you to create channels.
- Will be available in Webex mid-September.

- Provide structured questions and a time limit.
- You can also make the rounds to stop in and briefly join the conversations.

Concluding thoughts

- We need to look for the opportunities that the new media afford us.

- These platforms offer us the potential to make our class environments more democratic by allowing students to more easily share their work and decenter us from the class.
  - This only works with strong guidance and modeling of expectations.

- We need to establish a culture of participation from Day 1:
  - Communicate expectations
  - Model interactions
  - Scaffold discussions
  - Require and encourage active participation

- Build student study groups:
  - Establish a set number of groups at pre-determined times (maybe use a Doodle poll).
  - Build that structure for them so that all they need to do is show up.
  - Recruit senior students to participate as mentors in these sessions.

Open Discussion