**ALPhA Zoom Conversation**

**June 26, 2020**

[**https://cuboulder.zoom.us/j/93644972121**](https://cuboulder.zoom.us/j/93644972121)

**Hybrid and in-person labs**

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**Attendees: Name, affiliation:**

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**Discussion questions**

1. As you think about teaching hybrid and in-person labs in Fall 2020, what are the challenges or issues that you want to consider?
   1. Physical distancing + Physical barriers
   2. Part of semester online
   3. Students in class vs remote simultaneously
   4. Sick students needing to quarantine
   5. Enabling students to grapple with questions individually
   6. How to have notebooks - physical or digital?
   7. Cutting back content/changing learning objectives?
   8. Does anyone have to compress their semester (less weeks?)
2. For each of the issues identified above, what are some solutions or options? Why might these options work or not work?
   1. Physical distancing + Physical barriers
      1. Students present/remote: Shields for students; flexible lab hours for students to use equipment; one team member can present to others by zoom. Hard with large lab sections; Alternating attendance on different days by team members in smaller upper level labs. User facility approach - set up for remote operation.
   2. Part of semester online
      1. Have instructors carry out student guidance on procedure
      2. Sudden shift off-line, Quarantine - find something valuable for students to do,; SImple/rich projects to do at home (build radio, need parts; students buy, vs mail parts out)
      3. Collect data for students, focus on analysis, writing when things are totally remote for advanced lab; student short-changed in experimental skills in modern/electronics courses if remote. Record bouncing ball multiple times, work out coeff. Restitution, mathematical modeling, give freedom to use different tools - excel, R, …
      4. CHEAP SPAD experiments: <https://sun.iwu.edu/~gspaldin/207L.html#Schedule>
      5. If anyone needs freshman lab ideas, I recommend: [tinkercad.com](http://tinkercad.com) (electronics prototyping)
      6. And for mechanics etc there is a "[Physics Toolbox Suite](https://apps.apple.com/us/app/physics-toolbox-sensor-suite/id1128914250)" app for apple/android
      7. Stay plugged into ALPhA list for ideas from local meetings
   3. Students in class vs remote simultaneously
      1. Zoom breakout rooms
      2. Cheap cell phone holder to share lab activity; cell phone availability seems to be good, but may vary by community.
      3. Security issues - wireless accessibility and hacking issues? Institutional approval?
   4. Sick students needing to quarantine
   5. Enabling students to grapple with questions individually
   6. How to have notebooks - physical or digital?
      1. Electronic notebooks, less writing, better with stylus/tablet; hard to emulate physical notebook.
      2. Students tend to write less. Do physical notebooks get collected? OneNote. Photo notebooks.
      3. Reduced expectations/ altered expectations for notebooks. Writing up projects/reports vs notebook.
      4. [Evernote](https://evernote.com/) is an easy-to-use notebook; free version for students.
      5. Jupyter notebooks.
      6. [Perusall](https://perusall.com/)
3. How can we make our hybrid or in-person lab environments more equitable and inclusive?
   1. Remote participation, together from different places.
   2. Keep in mind the most challenging circumstances students may face. Ask neutral questions, draw out challenges students face.
   3. Listen to your students. Start class with opportunity to talk about where they are (mentally, physically) in groups or as class;
   4. Students respond via whiteboard (anonymously feel safe) via zoom , or other tools; Acknowledge effects of larger social movements.
   5. Are faculty equipped to facilitate these discussions? Institutional training may be available.
   6. Build teamwork and trust among students with such discussions. Invite students at the start of class to share experience; cultural opportunities; think about outreach activities that can be done online.
   7. Walk through syllabus details and see what problems they foresee, allow flexibility.
4. What are some resources that are useful for teaching hybrid and in-person labs that haven't yet been discussed? Are there recommendations in support of these resources?
5. In what ways can we help each other moving forward?

Share examples, code, links. Expertise on cell phone sensors- share resources. PhyPhox