## MOOC Panel Discussion

**SESAPS, Bowling Green, KY, Nov 22, 2013**

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MOOCs - What are they?

- Massive, Open, Online, Courses
- Nearly unlimited participation.
- Uses online video, problem sets, etc to deliver content.
- Physics Labs are a mixture of video analysis, simulation, computation, and at-home activities.
- Social media, internet forums, used to build community.
A Disruptive Technology - Issues and Questions

- Participation - many start, but completion rates $\approx 10\%$.
- Assessment - claims of modest improvement online.\(^1\)
- Costs - MOOCs cheaper, but price far from zero.
- How do you do physics labs?
  - Hands-on and online difficult to combine.
  - Rely on computation, video, at-home labs, ...
- Grading - has to be automated.
- Cheating.
- How do you make money?
  - Core content is usually free.
  - Fee for ‘premium’ services.

\(^1\) Evaluation of Evidence-Based Practices in Online Learning, US Dept. of Ed., 2010.
Who Takes Them?

- Still early so the demographics likely to change.
- Many (often a majority) are working.
- Many (often a majority) already hold a degree.
- They are older - average age in the 30’s.
- Many (sometimes a majority) are international.
- Gender balance varies, averages $\approx 60\%$ male.
- Graduate students.
- Undergrads.
- Intellectual curiosity.
Focus on Student-Teacher interactions.

- Small classes ($\leq 24$).
- Intensive, hands-on, collaborative, lab experience.
- Environment hard to create in MOOCs.

Some changes

- Flipped classrooms.
  - Video lectures done before class.
  - Class used for problem solving, ...
  - Students watch video; don’t read.
- T. Nordlund (UAB) talk earlier today.
- Data collection on student work.
- Based on my experience, discussions with Richmond deans and provost.

How often do you read the text before attending class?

- Algebra-based physics ($N = 609$)
- Calculus-based physics ($N = 632$)

How often do you watch the MLM’s before attending class?

T. Hodapp, MPTL, 2013
Thoughts

- Successful students better prepared and work harder!!!
- Potentially large impact on institutions with large lecture sections in introductory courses.
- Limited impact at liberal arts places - flipped classrooms.
- Possibly fewer faculty positions necessary at some institutions, but greater access to physics at others.
- Potential access for underrepresented groups to physics.
- Recruiting tool for elite institutions and students.
Places to Start

- Recent APS conference - Distance Education and Online Learning in Physics Workshop.
  


- MIT’s Learning International Networks Consortium,