FROM FLIPPED COURSE TO OPEN INSTRUCTION

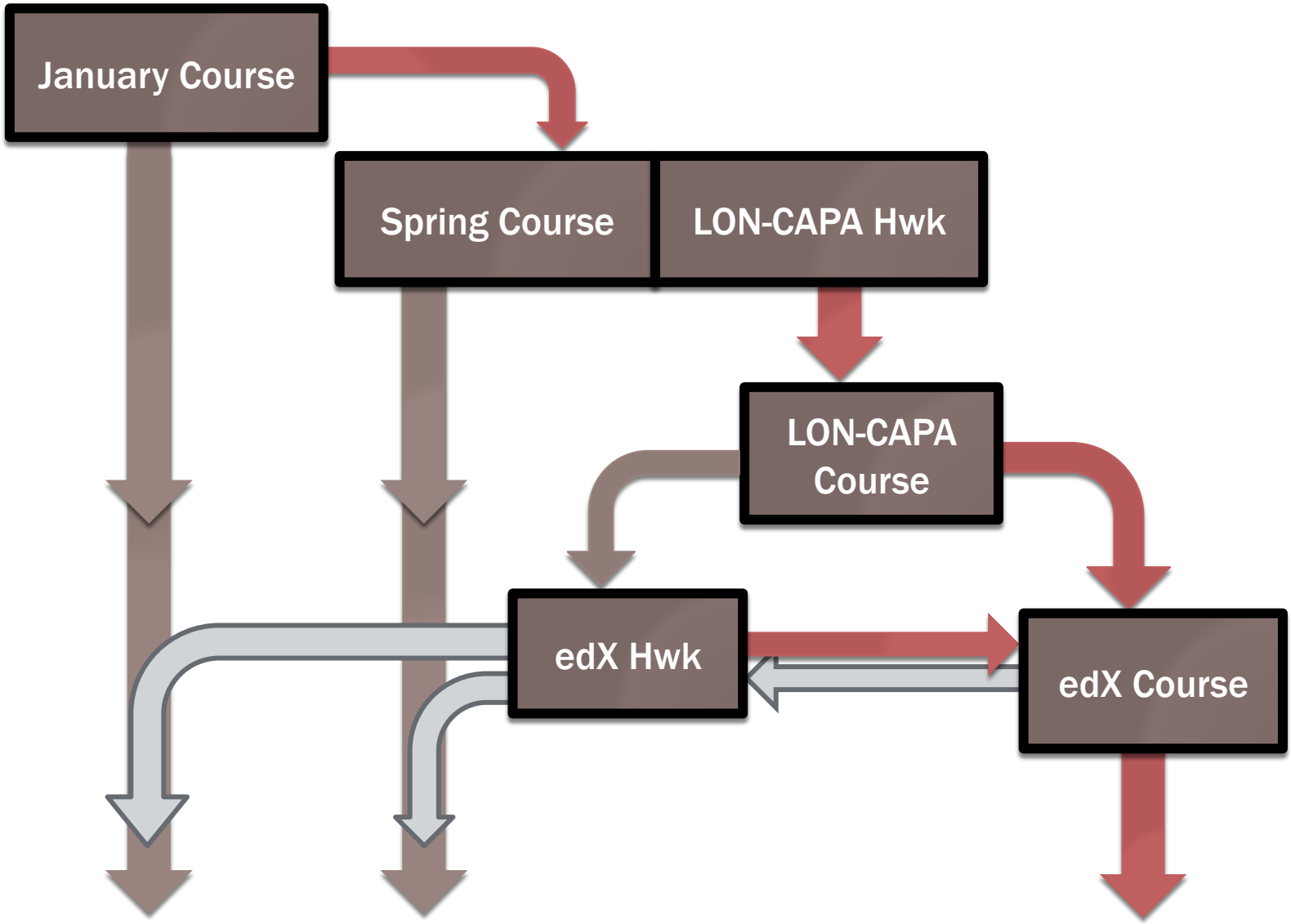
MECHANICS REVIEW

Colin Fredericks

RELATE group

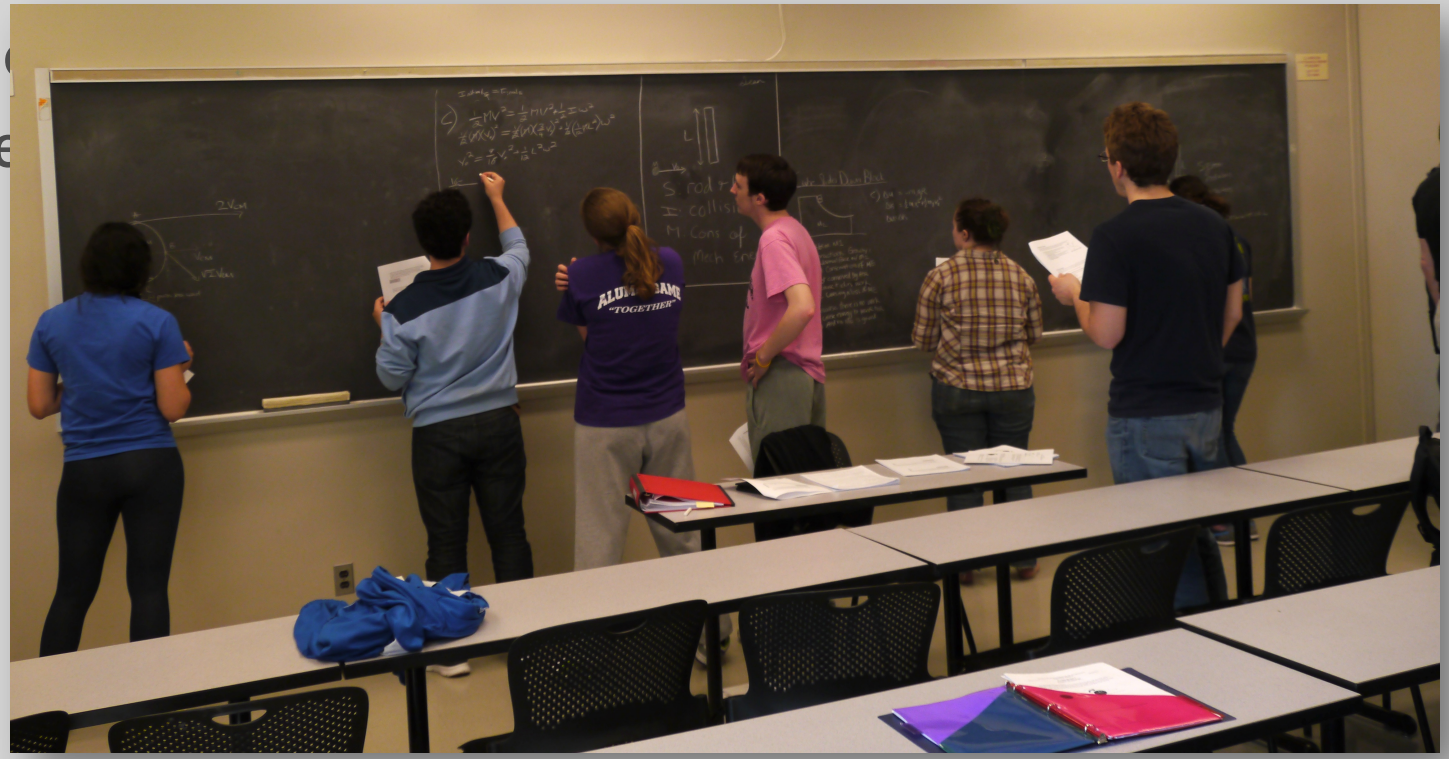
MIT

THE EVOLUTION OF THE COURSE



RESEARCH-DRIVEN COMPONENTS

- Active students (on-campus)
- Explicit homework levels
- Frequent assessment
- Embedde
- MAPS pe



RESEARCH-DRIVEN COMPONENTS

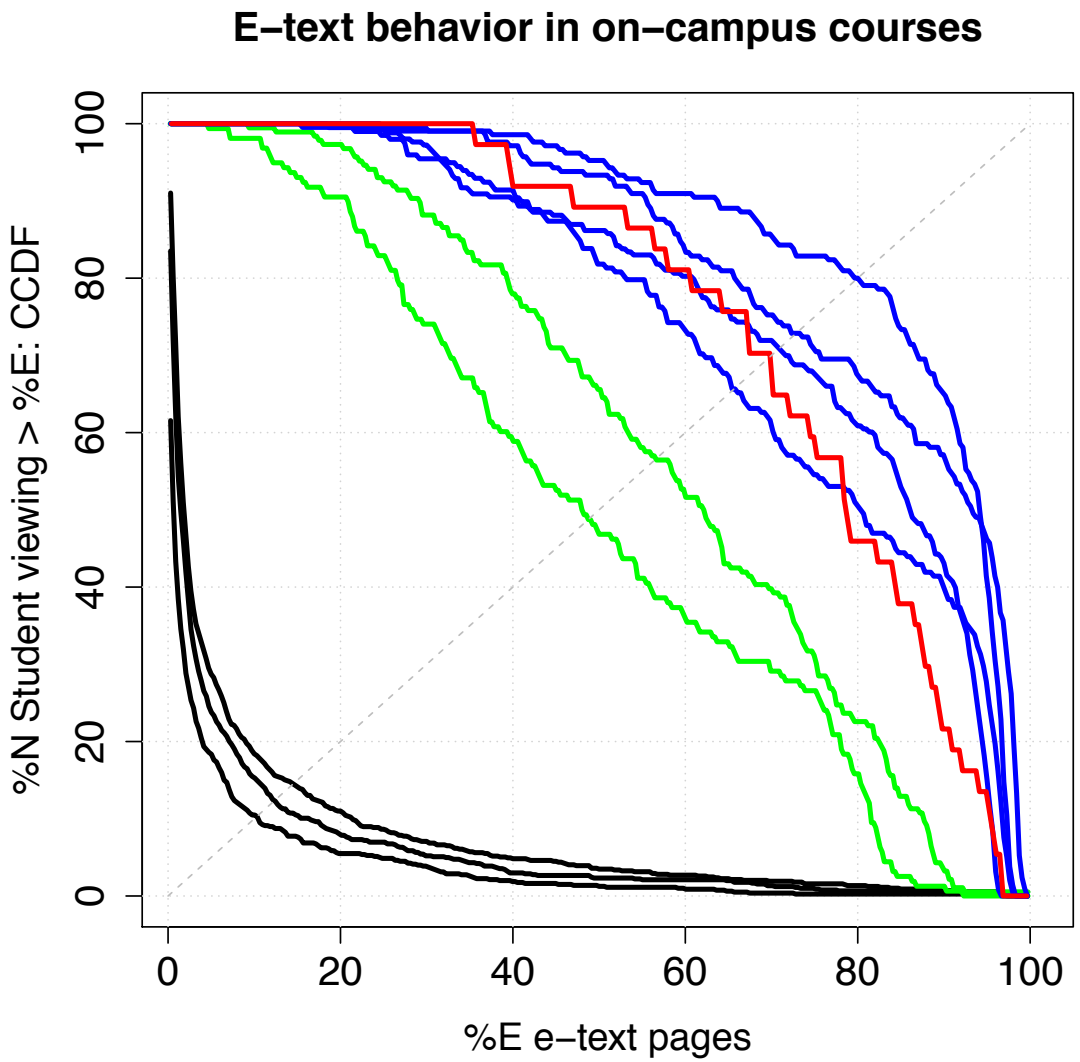
- Active students (on-campus)
- Explicit homework levels
- Frequent assessment
- Embedded assessment
- MAPS pedagogy

R. Teodorescu, D. Seaton, C. Cardamone, S. Rayyan, J. Abbott, A. Barrantes, A. Pawl, and D. Pritchard, ***When students can choose easy, medium, or hard homework problems***, presented at the Physics Education Research Conference 2011, Omaha, Nebraska, 2011

FREQUENT, EMBEDDED ASSESSMENT

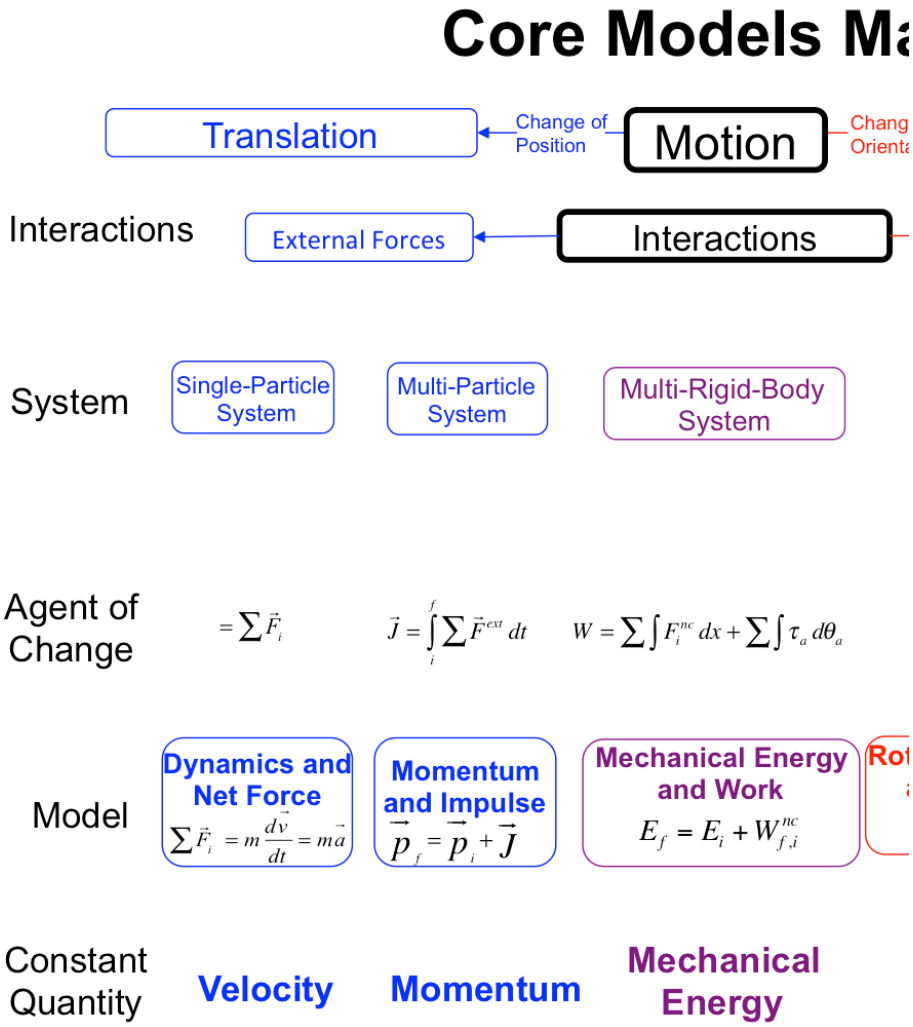
- Greater textbook use
- Gather more data from more questions

The Impact of Course Structure on eText Use in Introductory Physics Courses, Seaton, Kortemeyer, Bergner, Chuang, Pritchard (Submitted to PERC Conference 2013)

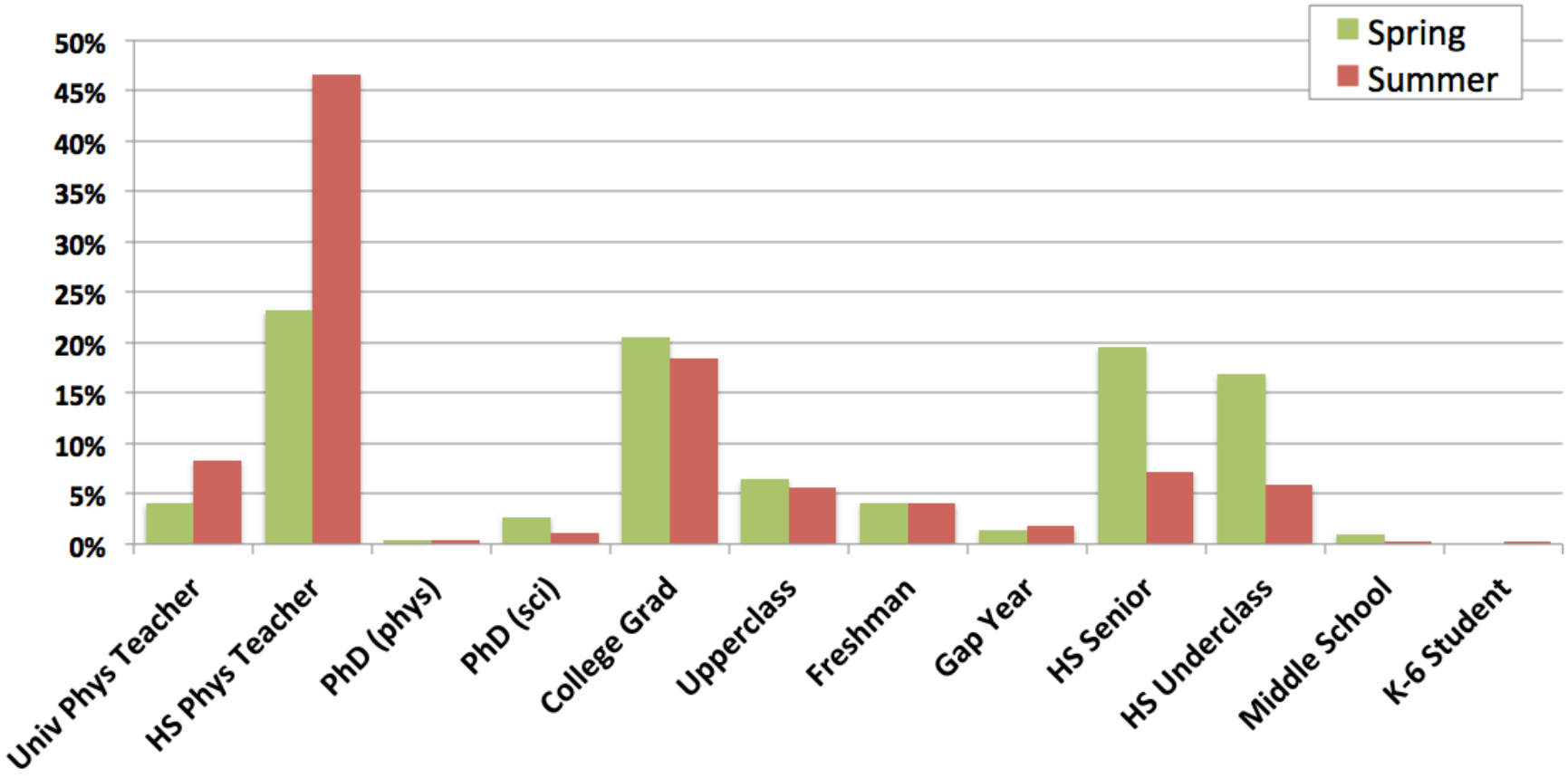


MODELING APPLIED TO PROBLEM SOLVING

- Science creates and uses models
- Mechanics-specific models →
- Analysis of System, Interactions, and Model as a problem-solving tool



ENROLLEES IN LON-CAPA COURSE

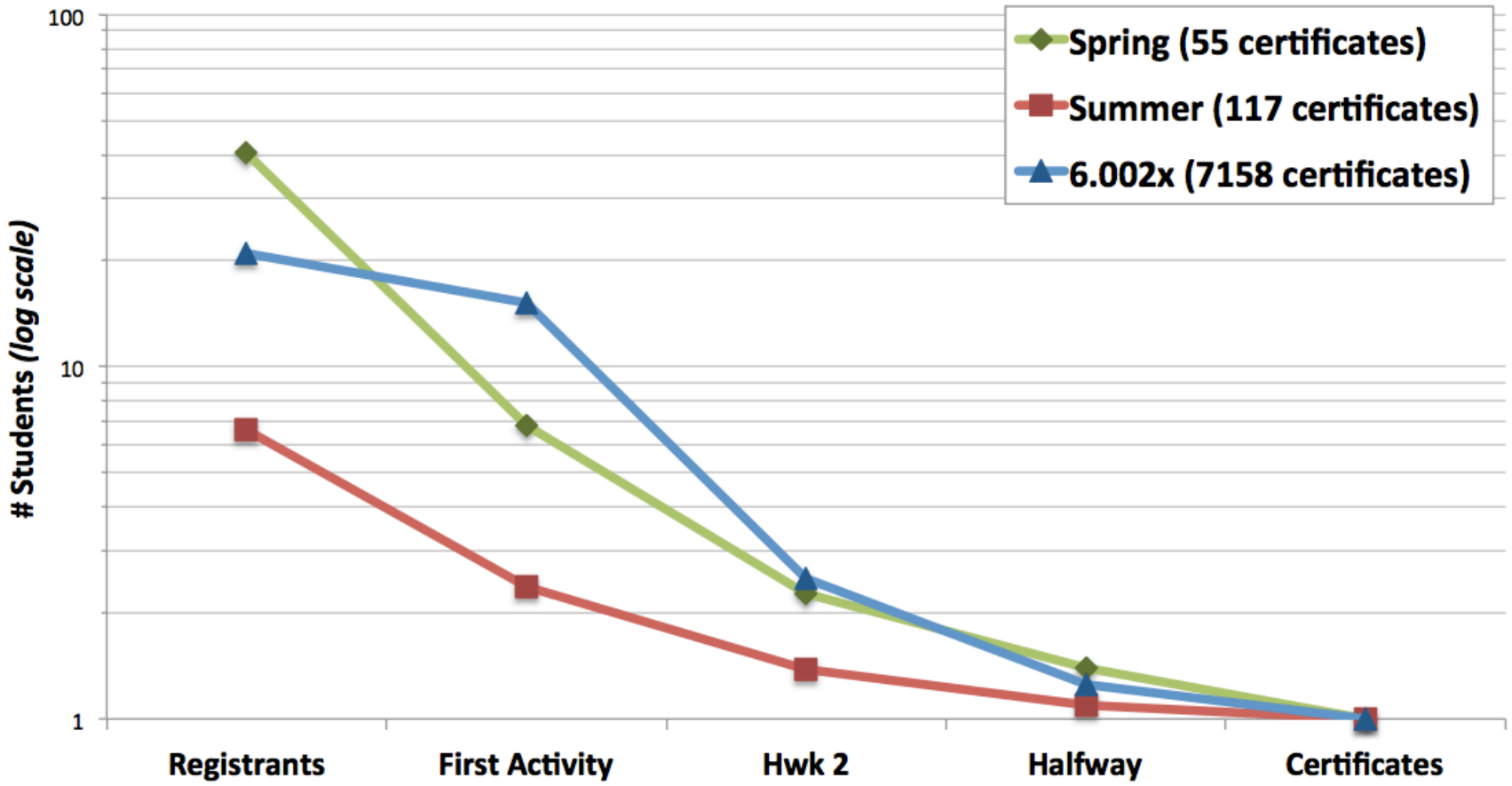


ATTRACTING TEACHERS

- Direct advertising, teacher communities, e-mail lists, and word of mouth
- Offering CEUs

- Likely to have…
  - Higher academic persistence
  - Greater average physics skill
- One likely cause of higher retention

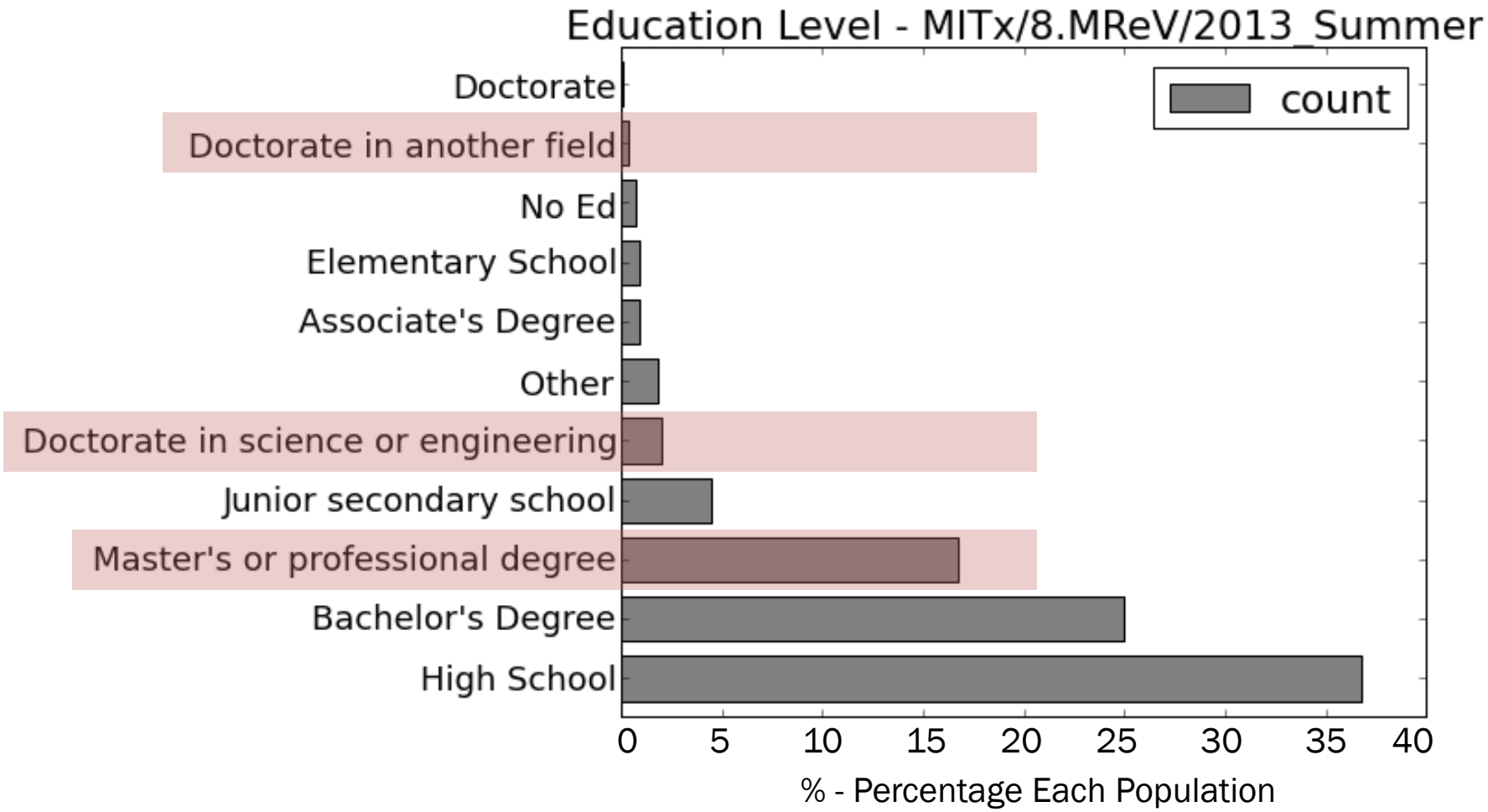
PARTICIPANTS PER CERTIFICATE



CHANGED AND UNCHANGED

Alterations		Effects?
▪ Change in audience ▪ Expanded timing ▪ Flexible structure	→	▪ Improved attrition ▪ Different reactions to being frustrated/stuck
	→	▪ No major survey differences

DO WE HAVE THE TEACHERS?



RESEARCH GOALS

- Measurables:
  - Attrition and Activity
  - Underlying Skills
- Research-Driven Alterations:
  - Target Audience
  - Analysis Questions
- The Long-Term Goal

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