VALIDATING AND IMPLEMENTING COURSE SUCCESS MEASURES IN COMPUTER SCIENCE MOOCS

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4 courses + capstone
Each course is 4 weeks
1st course started Sept. 2015
Beginner level series
Let's start with the first set of slides.
The Challenge: How to Measure “Success”
Course Goals:

1. Teach coding/programming
2. Attract women & people of color to computer science
3. Increase confidence writing code
Decrypt Without Eyeball/Human

- Rely on letter frequencies in English
  - Use frequencies in other languages as needed
  - We will find the maximally occurring character
  - Assume this is 'e', find shift!

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Why Use Java

Java

Other Languages

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What Genome Scientists Think: Strings
Climbing stairs is hard when you’re first learning to walk.
1. Value doing X
2. Believe I can do X
3. Make plans to do X

The Planning Process

Theory of planned behaviour

- Attitude
- Subjective Norm
- Perceived Behavioral Control
- Intention
- Behavior

The diagram illustrates the flow of influence from attitude to intention and ultimately to behavior, with subjective norm and perceived behavioral control influencing the intention.
“My pursuing work or education in the field of computer science would be good”

“I feel confident I can pursue work or education in computer science”
Goal: Increase confidence writing code
Efficacy

A person’s belief they can do a task
One of the most powerful predictors of how well someone will do at a task
“Generally I have felt confident programming”

“Even though I work hard at it, programming seems difficult for me”
Efficacy Scale Chronbach’s Alpha

Undergraduate pilot sample: 0.71 (n=20)
Course 1 pre-course survey: 0.80 (n=1,618)
Course 1 post-course survey: 0.80 (n=256)
Challenges

Data collection delayed
Response rate
Missing data
Results

Significant (p<0.05) increase in planfulness
Caveat: n=24

Significant (p<0.05) yet smaller (1 point) increase in efficacy
Next Steps
THANKS!

Any questions?
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