What we know and what we would like to find out

A presentation for the International Symposium
Emerging Models of Learning and Teaching in Higher Education:
From Books to MOOCs?

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Graph courtesy of Professor Jennifer DeBoer, Purdue University
The book changed . . .
The computer changed . . .
More information, coming faster, from a more diverse group of people
From 154,000+ registrants to 7,000+ certificate earners in 6.002x (spring ’12)

Source: edX
Most survey respondents reported being in their 20s or 30s

88% were male

N = 1,116

Analysis by Dr. Jennifer DeBoer

Primary reason for enrolling

- The knowledge and skills gained as a result from taking the course: 55.4%
- The personal challenge: 25.6%
- Employment/job advancement opportunities: 8.3%
- The entertainment value of the course: 4.5%
- Preparation for advanced standing exam: 2.4%
- Social understanding and friends gained as a result of taking the course: 0.4%
- Other: 3.4%

N = 1,173 [matrix sample]
## Relations between background and achievement in full-points model

- **Reason for enrolling**: None
- **Age**: None
- **Gender**: None
- **Parental/home background**: None
- **Degree level**: Marginal
- **Level of calculus**: Positive
- **Work off line with someone else**: Positive
An outpouring of research

20 papers on ERIC before 2013

150-200 on MOOC Literature Browser in 2013

300+ in 2015

Learning@Scale, 2014 & 2015
http://learningatscale.acm.org
Student engagement & learning success

MOOC design & curriculum

Self-regulated learning & social learning

Social network analysis & networked learning

Motivation, attitude & success criteria

Breslow & DeBoer
Classification

- Persistence
- Pedagogy
- Discussion forums
- Analytics/methodologies
- The MOOC phenomena itself

Persistence

By a conventional understanding . . .

MISERABLE

- But what’s the denominator?
- Isn’t 7,157 still pretty impressive?

Most studies have been in the service of persistence:

- Assign students to small groups based on correct answers (Hearst, et al.)
- Intervene when students disappear (Krumm, et al.)
- Crowd source coding assignments (O’Reilly, et al.)
- Form co-located study groups (Li & Dillenbourg)
- Send messages to increase “stickiness” (Kotturi, et al.)
Discussion Forums

- What’s on them? (Cui & Wise)
- Who uses them? (Enyon, et al.)
- To what effect? (Huang, et al.; Shillair & Walsh)
- How can they be used to their best advantage? (Stump, et al.; Ertmer, et al.)
Analytics

```
{
  "username": "AAAAAA",
  "user_id": 99999999,
  "ip": "999.99.9.99",
  "time": "2014-03-03T16:19:05.584523+00:00",
  "problem_id": "i4x://edx/AN101/problem/a0effb954cca4759994f1ac9e9434bf4",
  "event_source": "server",
  "event_type": "problem_check",
  "event": {
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      "i4x-edx-AN101-problem-a0effb954cca4759994f1ac9e9434bf4_4_1": [
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        "choice_2"
      ]
    },
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    "correct_map": {
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        "correctness": "incorrect"
      },
      "i4x-edx-AN101-problem-a0effb954cca4759994f1ac9e9434bf4_4_1": {
        "correctness": "correct"
      }
    }
  },
  "grade": 2,
  "max_grade": 3,
}
```

Tracking log courtesy of Xin Chen
Predicting student success from
- Demographics (Brooks, et al.)
- Wheel-spinning (Gong & Beck)
- Navigation/activity patterns (Guo)
- Discussion forums (Yang, et al.)

Methods include
- Structural Topic Model (Reich)
- Latent Dirichlet Allocation (Coleman, et al.)
- A/B testing (Tomkin & Charlevoix)
- Text & graphic clustering (Yang & Rose)
The MOOC Phenomenon

MOOCs: Expectations and Reality
Full Report
May 2014

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What should we know?

Will MOOCs, as originally conceived, be viable in the future?
What should we know?

- **If yes**
  - How do we increase persistence?
  - How do we know what/if students are learning?
  - How can we make better use of technological affordances?

- **If no, data can still tell us about**
  - What are common misconceptions (in specific fields) & ways of addressing them?
  - How can we link concepts in different contexts?
  - What rhetorical moves can instructors & students make to improve social learning?
References


Guo, P. J. & Reinecke, K. (2014, March). *Demographic differences in how students navigate through MOOCs*. Learning at Scale, Atlanta, GA.
References


