welcome to the moocspace

a proposed theory and taxonomy for massive open online courses

emily schneider
moocshop, 9 july 2013
The Year of the MOOC

By LAURA PAPPANO
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Clockwise, from top left: an online course in circuits and electronics with an M.I.T. professor (edX), statistics, Stanford (Udacity); machine learning, Stanford (Coursera); organic chemistry, University of Illinois, Urbana (Coursera).

Massive Open Online Courses -- A Threat Or Opportunity To Universities?

The March of the MOOCs: Monstrous Open Online Courses
© July 23, 2012 | Filed in: Open Education
But what do we mean when we talk about MOOCs?

MOOCs are still such a moving target that the gaps in knowledge and direction aren’t really yet clear. And news reporting thrives on a heady mix of sensationalism and actual change, both of which are beginning to wear thin.

Because the biggest obstacle to effective conversation about MOOCs is that none of us IN the conversation – even the biggest names – appear to be clear yet on what MOOCs are or can be, or on where they begin and end.

theory.cribchronicles.com/2013/01/04/the-mooc-is-dead-long-live-the-mooc/
Massive enrolls thousands, if not tens of thousands, of students

Open no cost to participation, access to elite institutions, opportunities to explore new topics

Online uses the internet to connect learners with information and with each other

Courses provides structured learning opportunities with feedback about progress, usually time-delimited

~~~each of these can be brought into question~~~
Outline

1. Theory
2. Taxonomy
3. Applications
Outline

1. Theory
2. Taxonomy
3. Applications
How should we design MOOCs?

- Participatory Culture
- Personalization
- Collective Intelligence
Participatory Culture
Personalization
Collective Intelligence
What makes a learning environment?

<table>
<thead>
<tr>
<th>knowledge</th>
<th>learners</th>
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- learners
- knowledge
What makes a learning environment?
Epistemological Stances

What assumptions about learning and knowledge are embodied in instructional and interface design choices?

• Provide guidance for designers and for analytics
Instructionist-Participatory

Does knowledge live purely with the instructor and other expert participants or in the broad universe of participants? Is the learning experience created solely by the course designers or is it co-created by learners?

Examples

**Instructionist**: Video lectures, course readings

**Participatory**: Discussion forum, peer assessment, social annotations of readings
Are learners cognitively and culturally unique beings, or members of a network? Do the learning opportunities in the course focus on the individual learner or on the interactions of the group?

Examples

**Personalized**: Individual homework assignments, adaptive content

**Collectivist**: group projects, discussion forum
What opportunities are provided for learners to make explicit their progress in knowledge construction? Are assessments designed to tell learners if they’re right or to give them guidance for improvement?

Examples

**Evaluation:** Autograded homework assignments

**Feedback:** in-video quizzes, multiple submission attempts
Outline

1. Theory
2. Taxonomy
3. Applications
proposed taxonomy

• Standardized metadata
• Multiple entry points for different goals and cross-referencing criteria

Level 1: General Structure

Level 2: Features of interactive learning environment
Level 1: General Structure
General Structure: Goals

• Capture the broad scope of opportunities available
  o MOOCs are a vessel for knowledge sharing beyond traditional institutional and age-related boundaries

• Build on other efforts where possible: Learning Resources Metadata Initiative (LRMI), OERCommons/Connexions/MERLOT
  o Easily searchable, accepted terminology
General Structure

- Name (LRMI)
- Numeric ID (auto-generated)
- Author (LRMI)
  - Faculty member
- Publisher (LRMI)
  - University or other institution of provenance
- Platform
- inLanguage (LRMI)
  - primary language of resource
General Structure, continued

• Domain (LRMI: about)
  – Computational – CS, math, science, computational social sciences
  – Humanist – humanities, non-computational social sciences
  – Professional – business, medicine, law
  – Personal – health, thinking, speaking, writing, art, music

• Level (LRMI: typicalAgeRange? educationalRole?)
  – Pre-collegiate; basic skills (i.e. gatekeeper courses, college/career-ready);
    undergraduate; graduate; professional development; life skills

• Target audience (LRMI: educationalRole)
  – Current students, current professionals, lifelong learners

• Use (LRMI: educationalUse, educationalEvent)
  – Public course (date(s) offered), content for “wrapped” in-person course (location and
    date(s) offered)

• Pace
  – Cohort-based vs. self-paced (LRMI: learningResourceType? interactivityType?)
  – Expected workload for full course (total hours, hours/week) (LRMI: timeRequired)

• Accreditation possibilities
  – Certificate available – defined on grades or engagement or … ?
  – Transfer credit
Level 2: Features of Interactive Learning Environment
Details are based on **current** MOOC feature set--can and should be expanded in the future!

Grover, Franz, Schneider, Pea (CSCL’13)
http://goo.gl/phXba
Assessment Type
• In-video quizzes
• Homework or Practice Problems
  • Multiple-choice
  • Performance assessments – writing, programming, multimedia
  • Simulations and virtual labs
• Group projects

Grading Structure
• Autograded
• Peer assessment, self-assessment, or peer-self hybrid

Grading Form
• Quantitative vs. qualitative
Tools
• Discussion board
• Social Media - Facebook group, Google+ community, twitter, reddit
• Blogs / student journals (inside or outside of platform)
• Video chat (G+ hangout, Skype)
• Text chat
• Study groups – virtual or in-person
Characteristics
• Domain – computational, humanist, professional, etc.
• Level

Structure
• Modularized
  • Within the course
  • Connected with other MOOCs/OER
• Pacing
  • Self-paced
  • Cohort-based enrollment
  • Hybrid
**Tools**

- Video lectures
  - “traditional”: 1-3 hrs/wk, 20+ mins each
  - “segmented”: 1-3 hrs/wk, 5-20 mins each
  - “minimal”: <1 hr/wk
- Readings
- Simulations / inquiry environment / virtual labs
- Instructor involvement – range from highly interactive to “just press play”
Outline

1. Theory
2. Taxonomy
3. Applications
**theory + ...**

**design**

use to guide instructional and interface design decisions

- e.g. principles of multimedia learning for instructionist lecture videos

**analytics**

use to select metrics

- e.g. group-level outcomes for collectivist courses
theory + ...

taxonomy

map the features to the stances
Instruction

• Lecture – instructionist, individualist
  – “traditional”: 1-3 hrs/wk, 20+ mins each
  – “segmented”: 1-3 hrs/wk, 5-20 mins each
  – “minimal”: <1 hr/wk

• Readings – instructionist, individualist

• Simulations / inquiry environment / virtual labs
  – participatory, collectivist (if social features built in, otherwise individualist)
Community

- Discussion board – collectivist, participatory
- Social Media - Facebook group, Google+ community, twitter hashtag, reddit, LinkedIn, etc. – collectivist, participatory
- Video chat (G+ hangout, Skype) – collectivist, participatory
- Text chat – collectivist, participatory
# Example: Crash Course in Creativity

## General
- **Domain:** personal-thinking
- **Level:** life skills
- **Target audience:** lifelong learners
- **Use:** public course (fall 2012), timeRequired = 60 hours
- **Pace:** cohort-based
- **Accreditation:** certificate
- **Author:** Tina Seelig
- **Publisher:** Stanford
- **Platform:** Venture Labs
- **inLanguage:** English

## ILE and Stances

### Instruction
- Lecture: minimal – 5-10 mins/wk to inspire group projects – **participatory**
- Readings: free, from her book - **instructionist**

### Content
- Not modularized – **instructionist**
- Cohort-based pacing - **collectivist**

### Assessment
- One individual creative projects – **participatory, individualist**
- Three group creative projects – **participatory, collectivist**
- Peer grading with qualitative comments—**participatory, feedback, collectivist**

### Community
- Discussion board – **participatory, collectivist**
taxonomy + distributed science

“the moocspace”

*a centralized, crowdsourced digital repository for knowledge about mooc research and production*
goals

• Organizing collective knowledge
  o Need shared framework / language

• Distributed science and sensemaking
  o Multiple entry points into available knowledge

• Synthesizing and translating research into design guidelines
MOOC metadata

- Standard metrics
- Research using the MOOC
- Open datasets
  - medium-term (depending on decisions about learner privacy and licensing)
- Course content (OER)
MOOC metadata

Standard metrics

Research using the MOOC

Open datasets

Course content (OER)

short-term (work currently underway)

Learner subpopulations, completion rates debate, etc.

AB tests on noncognitive factors, instructional design choices, etc.
distributed science and sensemaking

Standard metric: learners who watched 80% or more of videos

mooc A: 39%
mooc B: 65%
mooc C: 35%
mooc D: 20%
mooc E: 10%
mooc F: 13%
mooc G: 25%
mooc H: 22%
mooc I: 12%
mooc J: 8%

Is this variation related to similar features of the courses or stances taken by designers?
Thank You!

Stanford ONLINE
Office of the Vice Provost for Online Learning

Kimberly Hayworth, Roy Pea, Zach Pardos, moocshop reviewers

Lytics Lab
lytics.stanford.edu