



# welcome to the moocspace

*a proposed theory and taxonomy  
for massive open online courses*

emily schneider

moocshop, 9 july 2013



The New York Times

## The Year of the MOOC



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).

By LAURA PAPPANO

Published: November 2, 2012

BUSINESS | 9/06/2012

**Forbes**

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

**HYBRID  
PEDAGOGY**  
A Digital Journal of  
Teaching & Technology



## 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.

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[theory.cribchronicles.com/2013/01/04/the-mooc-is-dead-long-live-the-mooc/](http://theory.cribchronicles.com/2013/01/04/the-mooc-is-dead-long-live-the-mooc/)

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start with the acronym, but don't end with it

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

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3. Applications



# How should we design MOOCs?



the Web is

- Participatory Culture
- Personalization
- Collective Intelligence





# Participatory Culture







# Personalization



**Your Amazon.com**

Your Browsing History

Recommended For You

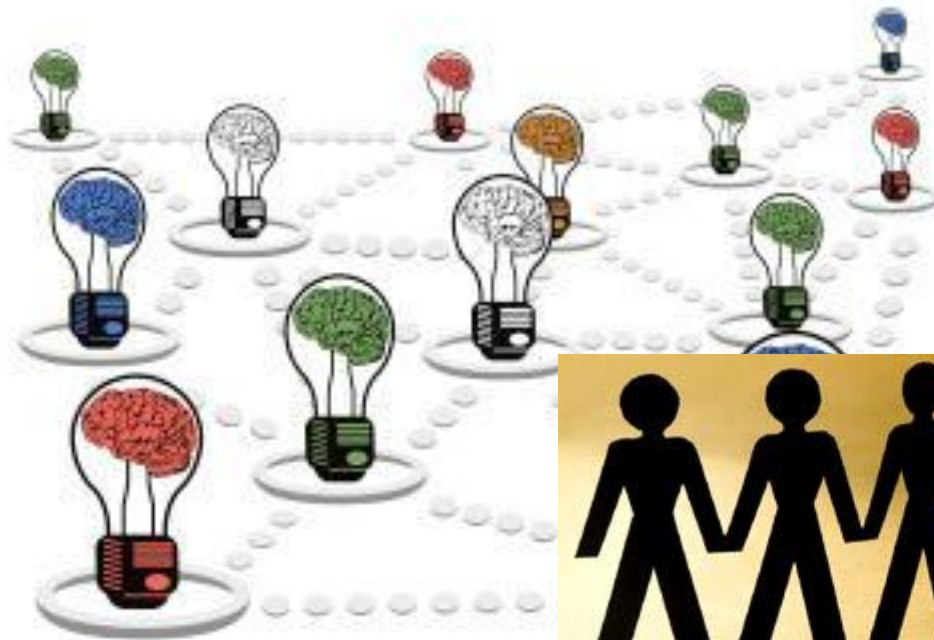
Amazon Betterizer

Improve Your Recommendations

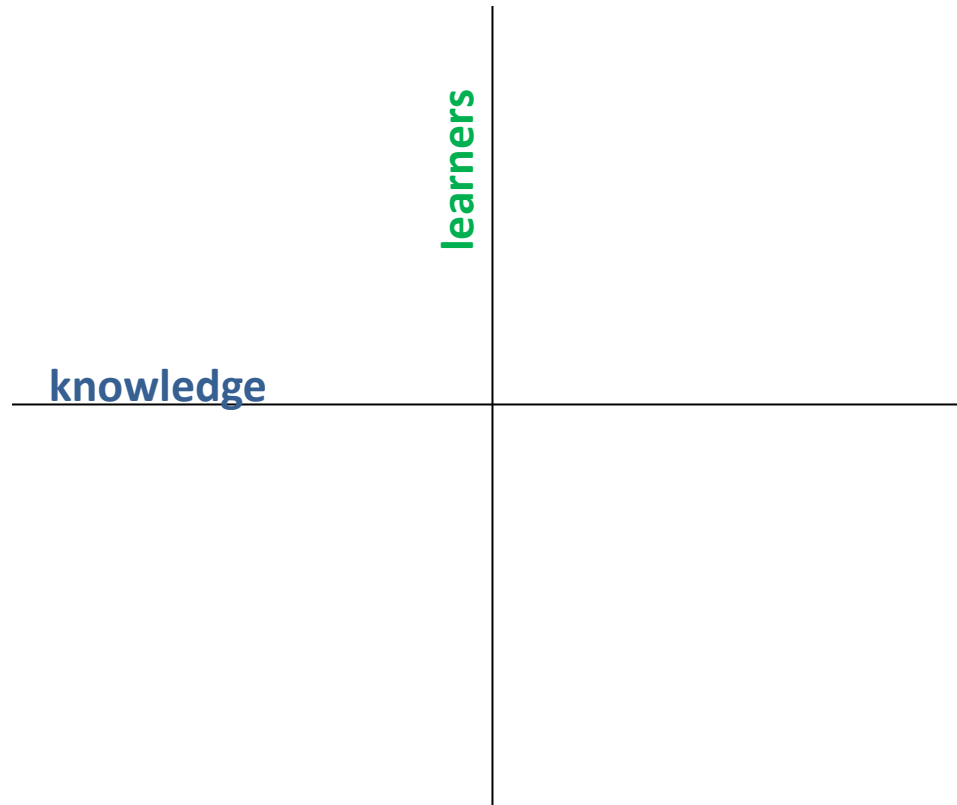
Your Profile



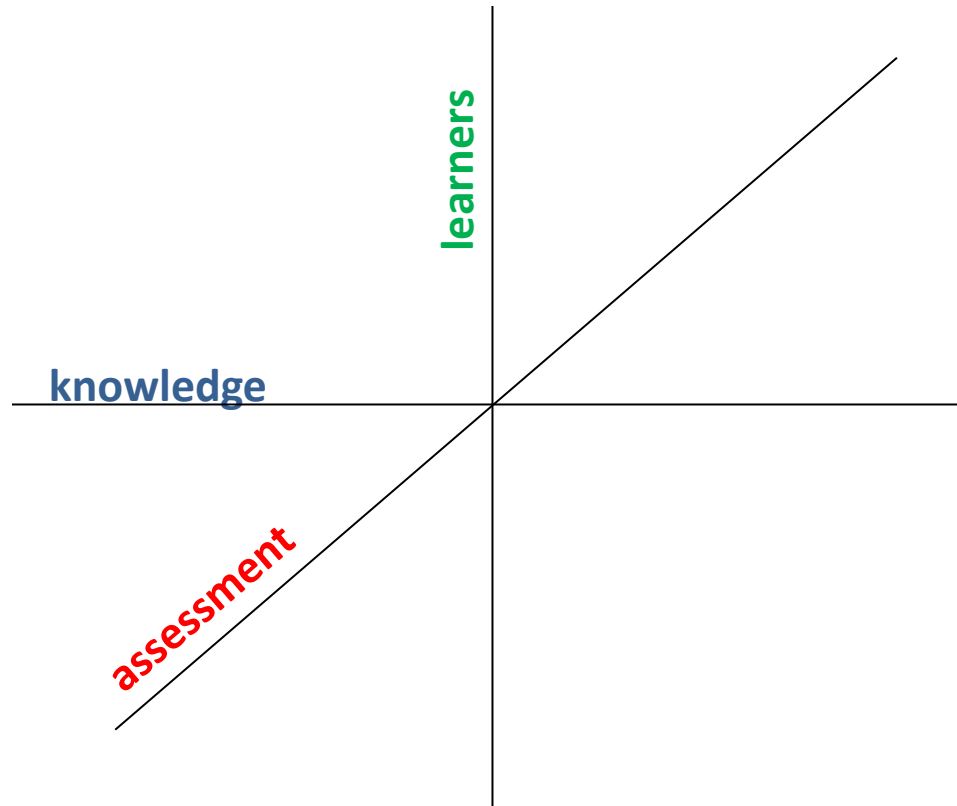
# Collective Intelligence



# What makes a learning environment?



# What makes a learning environment?

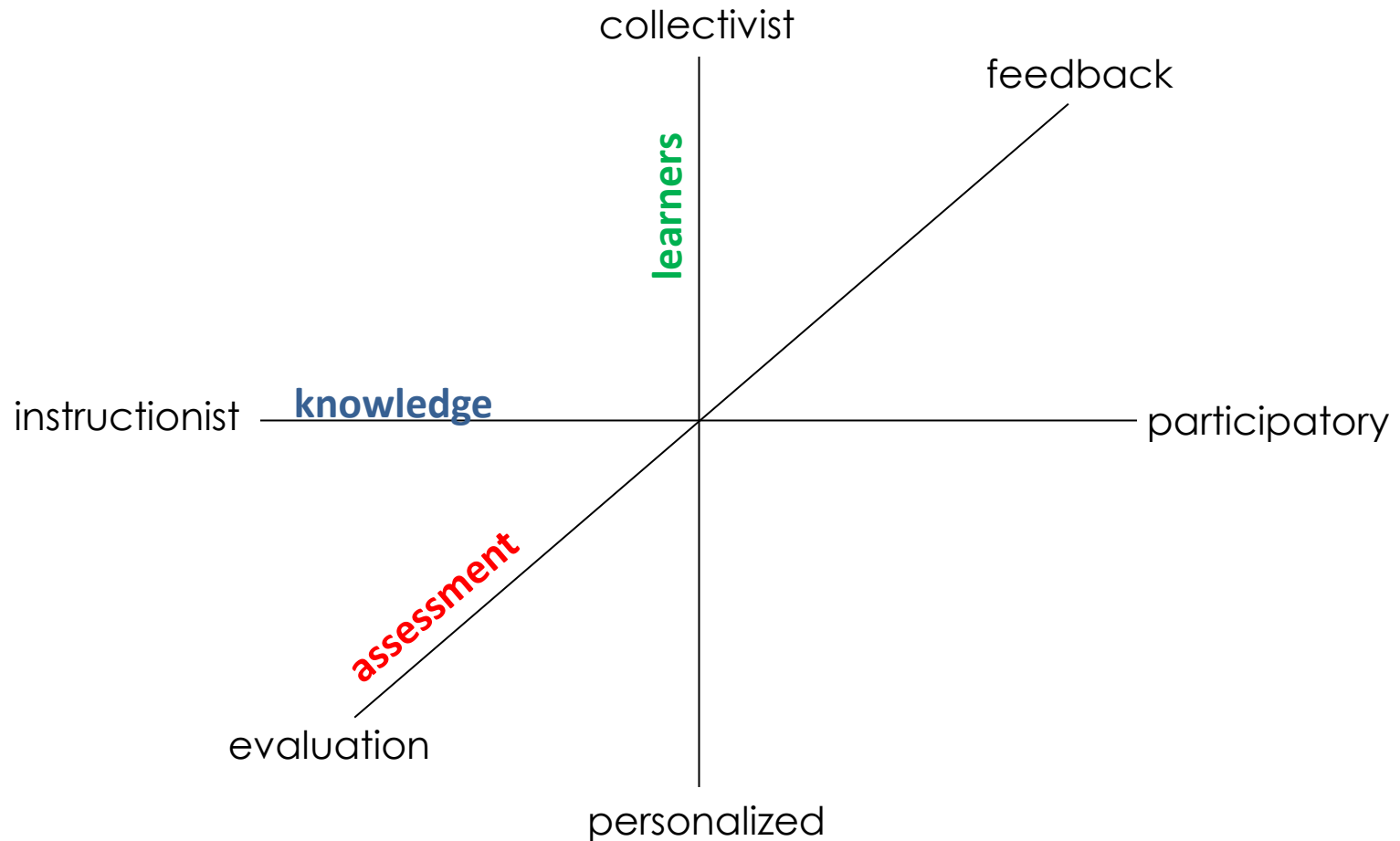


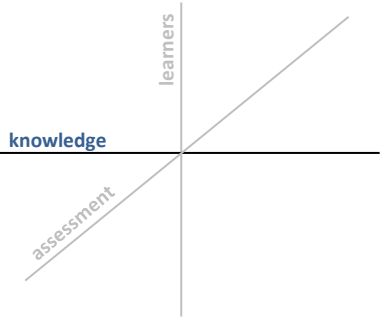
# Epistemological Stances

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

- Provide guidance for designers and for analytics

# Epistemological Stances





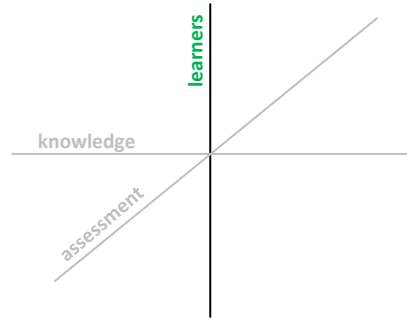
# Instructionist-Participatory

*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



# Personalized-Collectivist

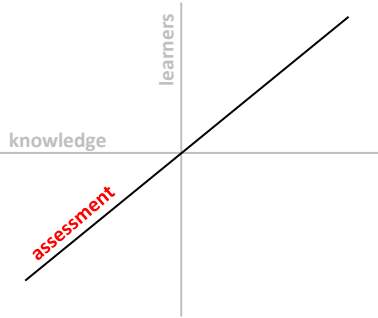
*Are learners cognitively and culturally unique beings, or members of a network? Do the learning opportunities in the course focus on the individual learner or on the interactions of the group?*

## Examples

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

**Collectivist:** group projects, discussion forum





# Evaluation-Feedback

*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
  - *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
  - 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

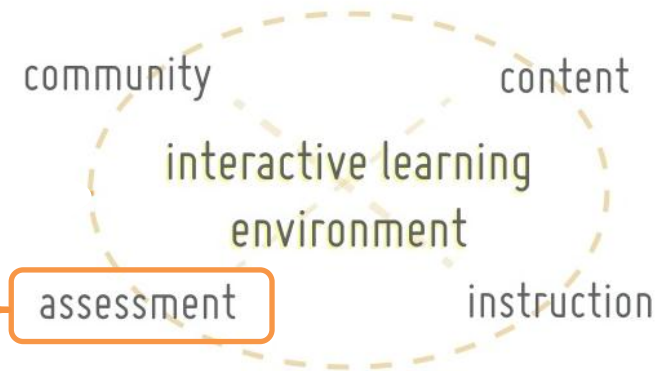
- In-video quizzes
- Homework or Practice Problems
  - Multiple-choice
  - Performance assessments – writing, programming, multimedia
  - Simulations and virtual labs
- Group projects

## Grading Structure

- Autograded
- Peer assessment, self-assessment, or peer-self hybrid

## Grading Form

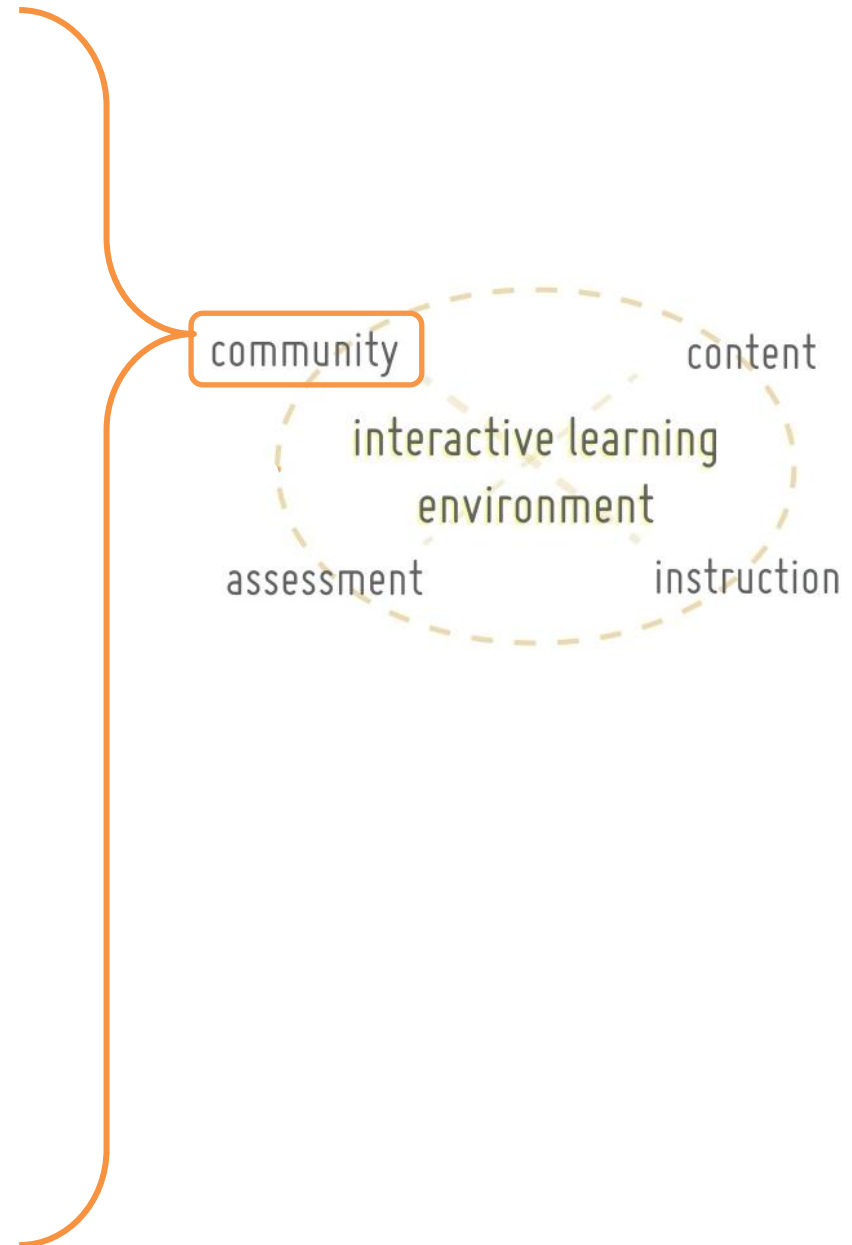
- Quantitative vs. qualitative





## 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



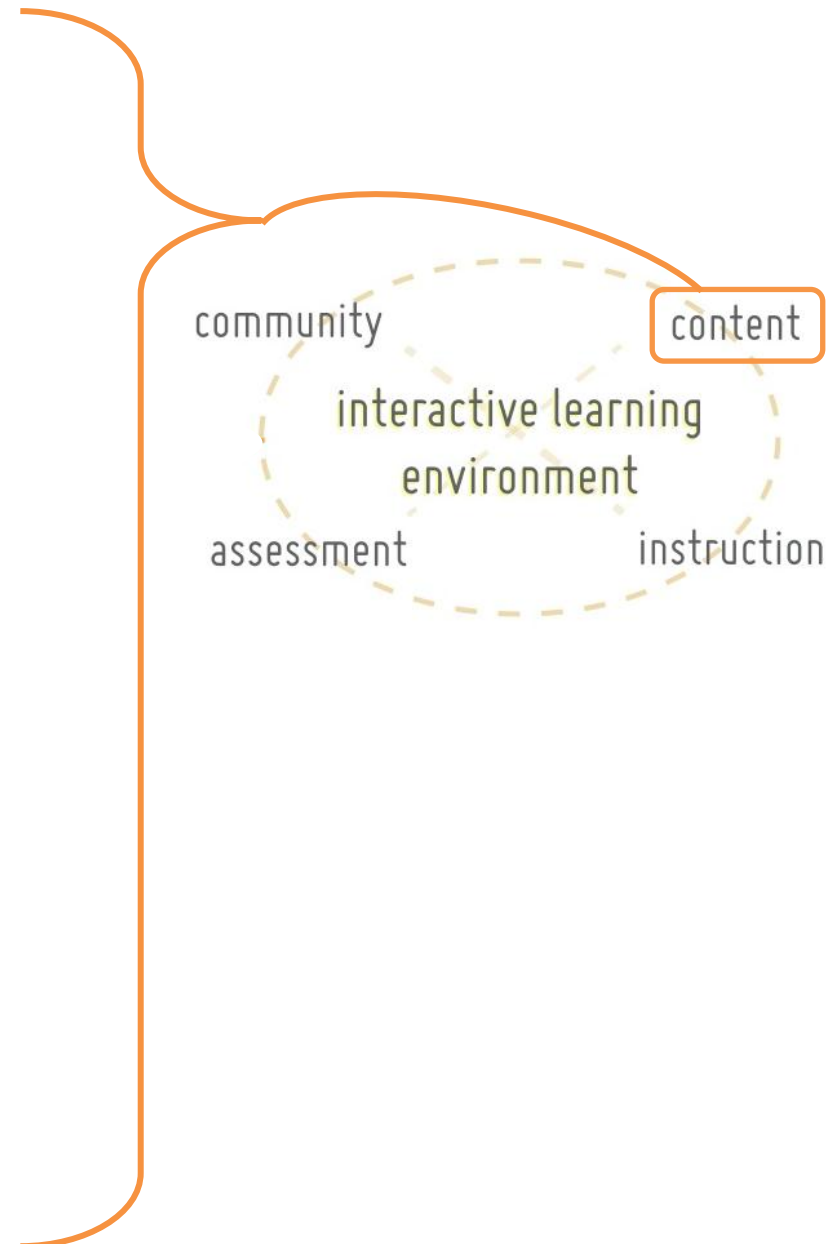


## Characteristics

- Domain – computational, humanist, professional, etc.
- Level

## Structure

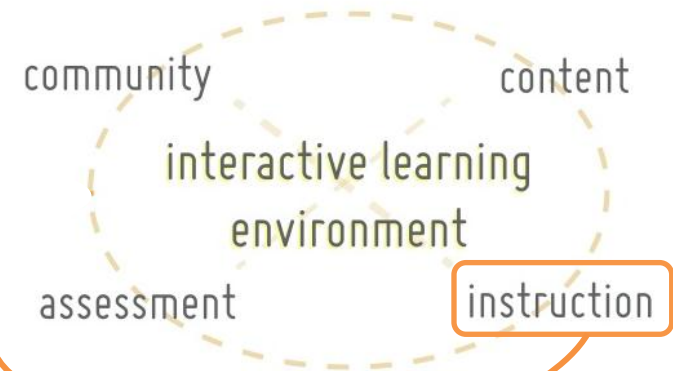
- Modularized
  - Within the course
  - Connected with other MOOCs/OER
- Pacing
  - Self-paced
  - Cohort-based enrollment
  - Hybrid





## 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
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# 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	<p>Domain: personal-thinking</p> <p>Level: life skills</p> <p>Target audience: lifelong learners</p> <p>Use: public course (fall 2012), timeRequired = 60 hours</p> <p>Pace: cohort-based</p> <p>Accreditation: certificate</p> <p>Author: Tina Seelig</p> <p>Publisher: Stanford</p> <p>Platform: Venture Labs</p> <p>inLanguage: English</p>
<b>ILE and Stances</b>	
Instruction	<p>Lecture: minimal – 5-10 mins/wk to inspire group projects – <b>participatory</b></p> <p>Readings: free, from her book - <b>instructionist</b></p>
Content	<p>Not modularized – <b>instructionist</b></p> <p>Cohort-based pacing - <b>collectivist</b></p>
Assessment	<p>One individual creative projects – <b>participatory, individualist</b></p> <p>Three group creative projects – <b>participatory, collectivist</b></p> <p>Peer grading with qualitative comments– <b>participatory, feedback, collectivist</b></p>
Community	<p>Discussion board – <b>participatory, collectivist</b></p>



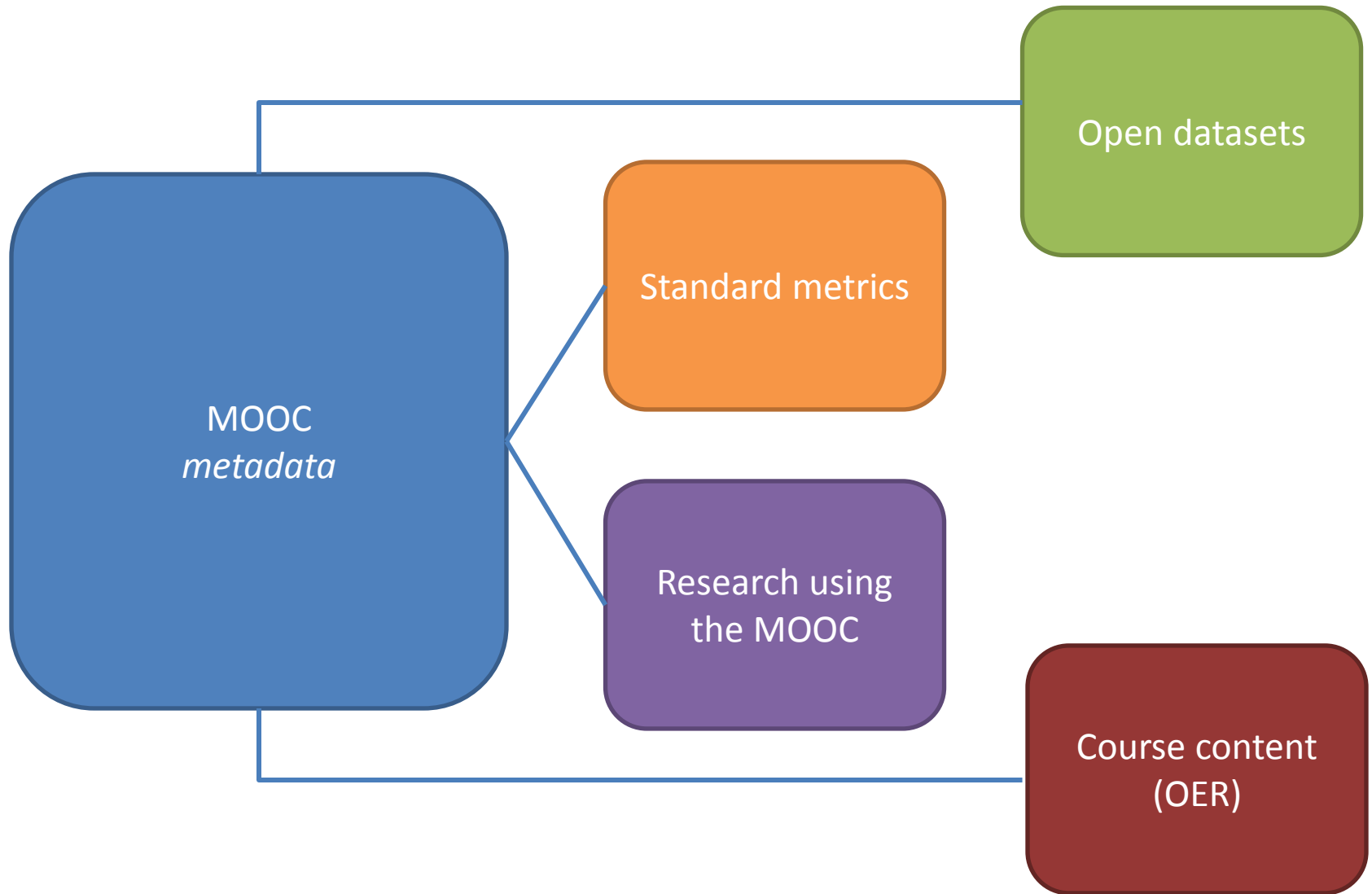
# taxonomy + distributed science

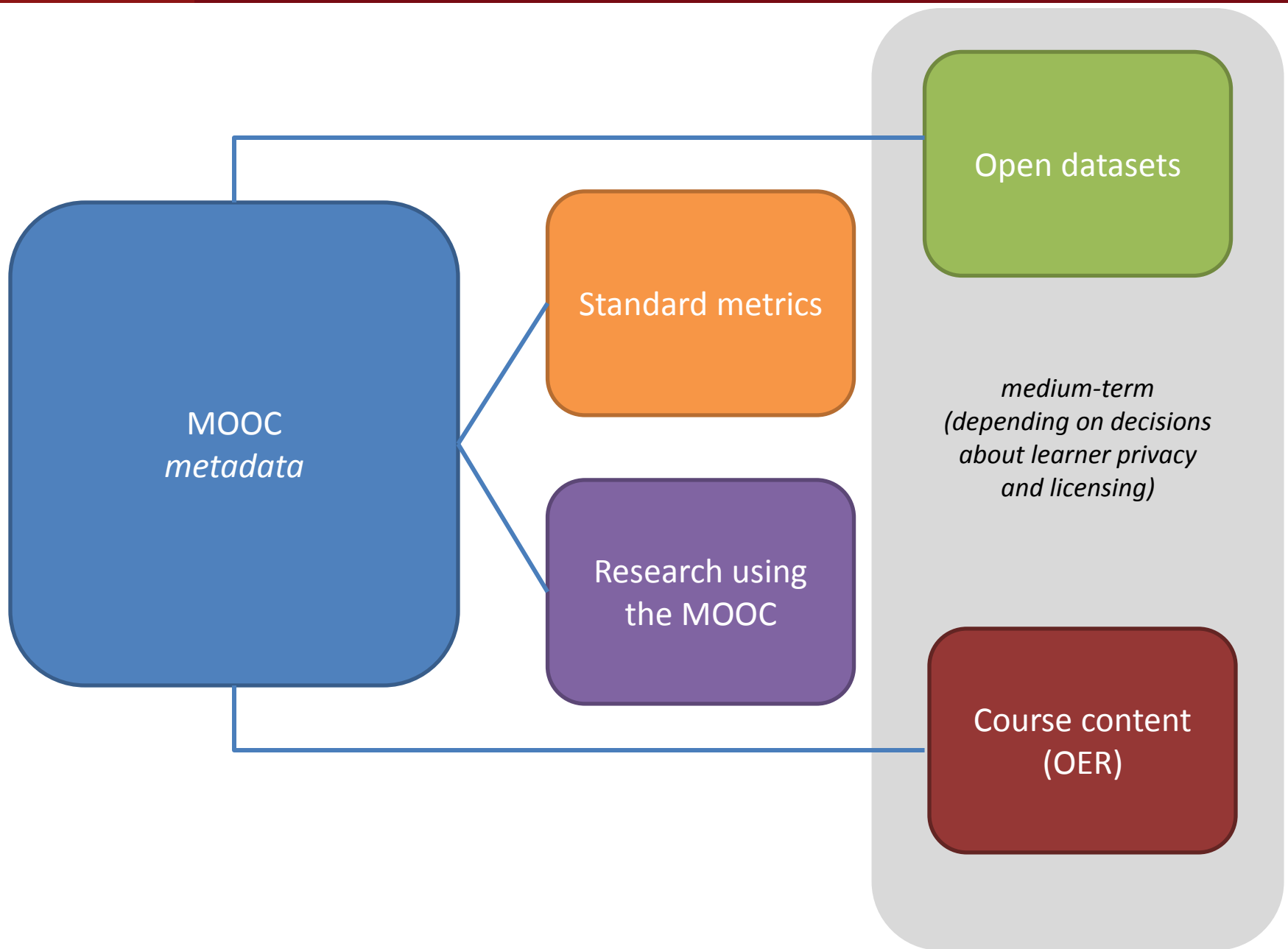
“the moocspace”

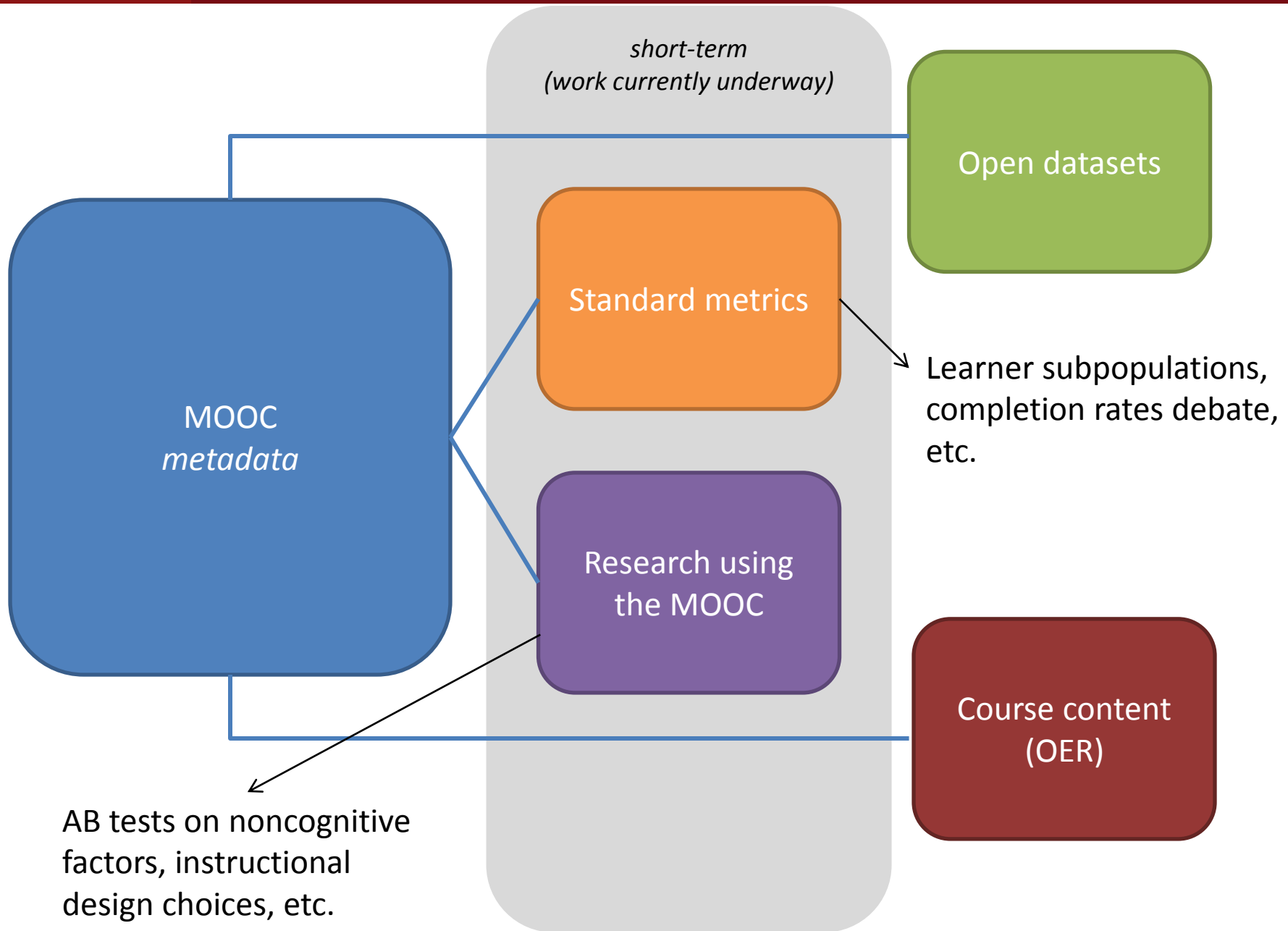
*a centralized, crowdsourced digital repository for  
knowledge about mooc research and production*

# goals

- Organizing collective knowledge
  - Need shared framework / language
- Distributed science and sensemaking
  - Multiple entry points into available knowledge
- Synthesizing and translating research into design guidelines











# 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](http://lytics.stanford.edu)

