Learning is Changing: Four Modest Little MOOC Studies to Help Save the Planet

Curtis J. Bonk, Professor, IST, IU, cjbonk@Indiana.edu
Meina Zhu, Doctoral Candidate, IST, IU, meinzhu@iu.edu

Presentation to class at the University of West Florida
Instructor: Dr. Minkyoung Kim
February 21, 2019

Bonk’s Last Principles of Teaching/Instruction (Education 4.0?)

Bonk’s 20 "Last" Principles of Instruction (LAST = Learning Activation System Template)

20 New Roles of the Instructor
September 26, 2018
Remember Education 2.0?
The rise and fall of the company behind ‘Reader Rabbit’ and all your favorite educational games
Abigail Cain, The Outline

Rocky’s Boots:
https://www.youtube.com/watch?v=aNLh58bIIk
Project YES (Curt Bonk):
https://youtu.be/bZD5mQH4Ups

Fast Forward 30+ More Years...
"Anyone can now learn anything from anyone at any time."

30+ Ways Learning is Changing:
The Mega Trends

How Learning is Changing:
Mega Trend #1. Learner Engagement
**January 3, 2018**

**Learning is More Mobile**

CES 2018: Your guide to the biggest consumer electronics show

USA Today

The Octopus watch from Joy, an icon-based watch for kids to have good habits is on display during CES.

**May 1, 2018**

**Learning is More Hands-on**

3 ways districts can use AR and AI

Justin Anglio, eSchool News

Earthquake, the first educational game for the NoREILLA system, teaches early physics principles through hands-on learning.

**May 1, 2018**

**Learning is More Immersive**

3 ways districts can use AR and AI

Justin Anglio, eSchool News

When a teacher glances around her classroom, Lumilo allows her to see real-time analytics (in the form of icons) floating directly above each student’s head. The teacher can glance directly at a student or “click” on a student’s icon to see more detailed information about where and how that student might be struggling.

**July 19, 2017**

**Learning is More Immersive**

HoloLens Assists in Live Surgery

Tommy Palladino, Next Reality

Numerous examples exist of doctors and surgeons using HoloLens to plan surgeries. The device has even been used to view reference images during a procedure and stream it to a remote audience. Until recently, it has not been used to augment the surgeon’s view of the patient during a live surgery.

**November 1, 2017**

**Learning is More Online (Access)**

Indiana University, Office of Online Education

How Learning is Changing: Mega Trend #2. Pervasive Access

- free
- global
- open
- video-based
- ubiquitous
- direct from experts
- online
- immediate
December 19, 2017
OER Adoptions on the Rise
Lindsay McKenzie, Inside Higher Ed
https://www.insidehighered.com/news/2017/12/19/more-faculty-members-are-using-open-resources

March 27, 2017 (Access)
Learning is More Free and Open
Beyond Free: Harnessing the resonant value in open and collaborative practices for the public good
David Porter, CEO, eCampus Ontario,
Open Education Ontario Summit
https://www.slideshare.net/David_Porter
https://www.ocls.ca/events/open-education-ontario-summit

May 7, 2014 (Access)
Learning is More Global
CNA - Speaking Exchange (video chats)
FBG Brazil and the CNA language school network are launching the Speaking Exchange project, which connects CNA students in Brazil with Americans living in retirement homes.

July 29, 2018
Learning is More Synchronous
Why Silicon Valley is teaming up with San Quentin to train young people to code
Jessica Guynn and Megan Diskin, USA TODAY

January 5, 2017
Learning is More Immediate...
Move over T. rex, new dinosaur unveiled, Amanda Jackson, CNN
http://www.cnn.com/2016/01/14/living/titanosaur-new-dinosaur-on-display-new-york-met/

September 27, 2018
Learning is More Immediate...
Dinosaur Discoveries
New 26,000-pound dinosaur discovery was Earth’s largest land animal
Ashley Strickland, CNN
How Learning is Changing: Mega Trend #3. Customization

Learning is More Blended
Universities tap growth of craft beer, offer classes, Chicago Tribune

Learning is More On Demand (PDAs)
Hey, Alexa, Should We Bring Virtual Assistants to Campus? These Colleges Gave Them a Shot

Learning is More On Demand
Jill Watson, Round Three, Georgia Tech course prepares for third semester with virtual teaching assistants,

The Terribly Thin Conception of Ethics in Digital Technology, David Golumbia

Chapter 18: Changing the Tune: MOOCs for Human Development? A Case Study (agMOOCs in India)

MOOCs are Like Library Books...
MOOCs and Open Education Around the World
http://routledge-ny.com/books/details/9781138807419/

Talk Outline
1. MOOC Weird Stuff
2. MOOC Systematic Literature Review
3. MOOC ID Considerations and Challenges
4. MOOC ID for Self-directed Learning
5. Others

Polls
Poll #1: Who in here has taken a MOOC?
Poll #2: Are you happy or frustrated when you take a MOOC?

Weirdness #1...We’re Teaching the World
October, 2018
Sarah Fister Gale, CLO

Weirdness #2: Your Friends are doing MOOCs
June 15, 2017
Massive List of MOOC Providers Around The World, Class Central
JMOC, K-MOOC, and T-MOOC?
https://www.class-central.com/report/mooc-providers-list/
Weirdness #3: Summer MOOC Discounts
Email inbox: June 10, 2018
https://www.edx.org/course

Weirdness #4: Cyber Monday Discounts
Email inbox: November 26, 2018
edX (Summer discounts)

Weirdness #5...The MOOC Wave
May 21, 2018
The Second Ave of MOOC Hype Is Here, and It’s Online Degrees
Dhawal Shah, Class Central

September 12, 2018
Coursera's CEO on the Evolving Meaning of 'MOOC'
Dian Schaffhauser, Campus Technology

Jeff Maggioncalda, Coursera CEO

October 12, 2018
Weirdness #6...Degrees Via the MOOC
EdX: From MicroMasters to Online Master's Degrees
Lindsey McKenzie, Inside Higher Ed

Weirdness #7...MOOCs in Wedding Announcements
September 26, 2018
The Future of Professional Credentialing ... in an Engagement Announcement
Joshua Kim, Inside Higher Ed

The future bride graduated from the University of Vermont with a bachelor’s degree in anthropology and is currently pursuing a master’s degree in public health. She is employed as a care navigator with Apple.

The future groom graduated from Worcester Polytechnic Institute with a bachelor’s degree in mechanical engineering and is currently pursuing a master’s degree in mechanical engineering. He has been accepted into the Harvard Business School Co-op program and plans to start in November. He is currently working as a technical program manager at Apple.

They are planning on a summer wedding in 2020.
Weirdness #8...Master’s of Accountancy MOOCs?
Email inbox: June 11, 2018
Coursera

Weirdness #9...Discounted MOOC-based MBAs
August 7, 2017
FutureLearn and Coventry University to Roll Out 50 Online Degrees (Last year Deakin University announced a similar partnership with FutureLearn)
Class Central, Dhawal Shah

<table>
<thead>
<tr>
<th>Degree</th>
<th>Provider</th>
<th>University</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS Computer Science</td>
<td>Udacity</td>
<td>Georgia Tech</td>
<td>$36,000</td>
</tr>
<tr>
<td>MS Analytics</td>
<td>e4dx</td>
<td>Georgia Tech</td>
<td>$18k</td>
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<tr>
<td>MBA</td>
<td>Coursera</td>
<td>University of Illinois</td>
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</tr>
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<td>MS CS Data Science</td>
<td>Coursera</td>
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<td>MS Accounting</td>
<td>Coursera</td>
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<tr>
<td>Masters in Innovation and Entrepreneurship</td>
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<td>HEC Paris</td>
<td>£26k</td>
</tr>
<tr>
<td>Cyber Security (Masters)</td>
<td>FutureLearn</td>
<td>Deakin University</td>
<td>£24k</td>
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<tr>
<td>Development and Humanitarian Action (Masters)</td>
<td>FutureLearn</td>
<td>Deakin University</td>
<td>£24k</td>
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<td>Professional Practice Information Technology (Masters)</td>
<td>FutureLearn</td>
<td>Deakin University</td>
<td>£24k</td>
</tr>
</tbody>
</table>

Weirdness #10...MOOC-based Pricing Charts
December 30, 2018
MOOC-Based Degrees, Pricing Chart
IBL News

August 12, 2016
A Life of Happiness and Fulfillment
Indian School of Business, Rajagopal Raghanathan

June 14, 2016 (Customization)
Chapter 15: Learning About MOOCs by Talking to Students
Charles Severance, Univ. of Michigan
Anuar Lequerica, Class Central

MOOC Trends and Recent Data
MOOCs are not dead
August 19, 2018
Cumulative Growth in Number of MOOCs, 2011-18
Almanac: 2018, Chronicle of Higher Education
https://www.chronicle.com/article/Top-5-MOOC-Providers-by-Number/244090?cid=cp216

MOOCs Trends

MOOCs Stats

October 12, 2018
Microcredentials and Nanodegrees
Learning is More on Modular
edX Expands MicroMasters Programs With Data Science (“nanodegrees”) Digital Leadership and More, Sridhar Ravi, Campus Technology

January 9, 2018
MicroMaster’s Degrees
Learning is More on Modular
MIT launches MITx MicroMasters in Principles of Manufacturing, MIT Open Learning

December 7, 2018
Reinventing the College Degree: A Future with Modular Credentials
IBL News
January 20, 2016
Coursera Specializations
https://www.coursera.org/browse?utm_medium=email&utm_source=marketing&utm_campaign=aUAR4L-fEeW6i-NodUB9Qw&languages=en

October 30, 2017
MOOCs ramp up new fields
Report: 59% of employed data scientists learned skills on their own or via a MOOC
Alison DeNisco Raymone

Khe Foon (Timothy) Hew (2018)
https://www.coursetalk.com/

Quotes: Veletsianos et al. (2015-2016)
“To gain a deeper and more diverse understanding of the MOOC phenomenon, researchers need to use multiple research approaches (e.g., ethnography, phenomenology, discourse analysis) and add content to them.” (p. 583)
Veletsianos, Collier, & Schneider (2015, May), Digging deeper into learners’ experiences in MOOCs: Participation in social networks outside of MOOCs, note-taking and contexts surrounding content consumption. BJET, 46(3), 570-587.
“Dependence on Particular Research Methods May Restrict our Understanding of MOOCs.”

Three Studies
Study #1
• MOOC Literature Review
Study #2
• MOOC Design Considerations and Challenges
Study #3
• MOOC Design for SDL

Study #1
MOOCs Literature Review (2014-2016)
The purpose was to gain a deeper and more diverse understanding of the current MOOC phenomenon and identify the gap in MOOC empirical studies.

1. What are the research methods researchers employed in empirical MOOC studies?
2. What are the research topics or focuses in MOOC studies?
3. How are researchers of empirical MOOC studies geographically distributed?
4. In terms of the delivery of the MOOC, what are the countries which are attracting the most research?

**Journals of the Articles**

<table>
<thead>
<tr>
<th>No.</th>
<th>Journal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>International Review of Research in Open and Distance Learning (IRRODL)</td>
<td>31</td>
</tr>
<tr>
<td>2</td>
<td>Computers &amp; Education</td>
<td>15</td>
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<td>3</td>
<td>British Journal of Educational Technology</td>
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<td>Online Learning</td>
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<td>Distance Education</td>
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</tr>
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<td>6</td>
<td>Educational Media International</td>
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</tr>
<tr>
<td>7</td>
<td>Internet and Higher Education</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Journal of Computer Assisted Learning</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Computers in Human Behavior</td>
<td>3</td>
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<td>10</td>
<td>Open Learning</td>
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<tr>
<td>11</td>
<td>Journal of Online Learning and Teaching</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Journal of Asynchronous Learning Network</td>
<td>2</td>
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**MOOC research focuses and methods**

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<tr>
<th></th>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Mixed methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student-focused</td>
<td>39</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Design-focused</td>
<td>19</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Context and impact</td>
<td>9</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Instructor-focused</td>
<td>0</td>
<td>3</td>
<td>2</td>
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</tbody>
</table>

**Specific Focus of MOOC Research (2014-2016)**

- Self-regulated learning
- Cheating
- Social learning
- Engagement
- Motivation
- Assessment/measurement/evaluation
- Professional development
- Learners’ experience
- Quality of MOOC
- Instructional/MOOC design
- K-12/pre-college
- Communication/interaction
- Retention and completion/dropout
- Performance/outcome

**Implications**

- A continuous expansion of methodological approaches in MOOCs research is needed.
- More empirical MOOC research focusing on instructors’ perspective might provide more comprehensive picture of MOOC phenomenon.

(Note: Data collection is continuing...
The study expanded!

<table>
<thead>
<tr>
<th>Journals</th>
<th>Number of empirical studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Review of Research in Open</td>
<td>54</td>
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<tr>
<td>and Distributed Learning</td>
<td></td>
</tr>
<tr>
<td>Computers &amp; Education</td>
<td>22</td>
</tr>
<tr>
<td>British Journal of Educational Technology</td>
<td>15</td>
</tr>
<tr>
<td>Online Learning</td>
<td>12</td>
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<tr>
<td>Distance Education</td>
<td>11</td>
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<tr>
<td>Journal of Online Learning and Teaching</td>
<td>11</td>
</tr>
<tr>
<td>The Internet and Higher Education</td>
<td>10</td>
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<tr>
<td>Computers in Human Behavior</td>
<td>8</td>
</tr>
<tr>
<td>Open Learning</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 1 (Note: the table only includes the top nine journals in terms of the number of empirical MOOC studies)

Research Methods

![Bar chart showing distribution of research methods](image)

- Qualitative: 51
- Mixed methods: 22
- Quantitative: 15

Figure 2. Research methods used in empirical MOOCs studies from 2013-2018 (N=321 studies)

Data Collection Methods

- Survey: 117
- Platform data: 60
- Interview: 41
- Assessment: 27
- Discussion forum: 20
- Observation: 19
- Focus group interview: 19

![Bar chart showing distribution of data collection methods](image)

Figure 5. Data collection methods used in empirical MOOCs studies from 2013-2018 (N = 321 studies)

(Note: some studies contain more than one data collection method and this figure only includes the main data collection methods)

Study #2
MOOCs Design Considerations and Challenges


- MOOCs can be beneficial to both learners and instructors (Hew & Cheung, 2014).
- *Instructional design is critical for online learning* (Johnson & Aragon, 2003; Phelps & Hemmott, 1999).
- Instructors are one of the five main components of MOOCs (Kop, 2011).
- Few studies have examined instructional design from MOOC instructors' perspectives (Margaryan et al., 2015; Watson et al., 2016).
The purpose of this study is to provide suggestions for future MOOC instructors and instructional designers in higher education through exploring MOOC design considerations and challenges from the instructor’s perspective.

Research Questions

1. What are the design considerations of instructors when designing MOOCs?
2. What challenges do instructors perceive when designing MOOCs?
3. How do instructors address the challenges that they perceive related to MOOCs?

Research Design

• Sequential mixed methods design (Creswell & Clark, 2017)

Data Collection

• Data Collection:
  - Survey, interview, and course review
• Participants:
  - 143 survey participants (10% response rate)
  - 12 interviewees

12 Interviewees

<table>
<thead>
<tr>
<th>No.</th>
<th>Countries</th>
<th>Subject areas</th>
<th>Platforms</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>The U.S.</td>
<td>Language and literacy</td>
<td>Coursera</td>
</tr>
<tr>
<td>2</td>
<td>The U.S.</td>
<td>Education</td>
<td>Coursera</td>
</tr>
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<td>3</td>
<td>The U.S.</td>
<td>Education</td>
<td>Coursera</td>
</tr>
<tr>
<td>4</td>
<td>The U.S.</td>
<td>Chemistry</td>
<td>Coursera</td>
</tr>
<tr>
<td>5</td>
<td>U.K.</td>
<td>Medicine and health</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>6</td>
<td>U.K.</td>
<td>Language and literacy</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>7</td>
<td>Hong Kong (China)</td>
<td>Math</td>
<td>Coursera</td>
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<td>8</td>
<td>Malaysia/China</td>
<td>Math</td>
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<td>9</td>
<td>Canada</td>
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<td>Coursera</td>
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<td>10</td>
<td>Australia</td>
<td>Medicine and health</td>
<td>Open2Study</td>
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<td>11</td>
<td>Sweden</td>
<td>Computer Science</td>
<td>edX</td>
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<td>12</td>
<td>India</td>
<td>Management</td>
<td>edX</td>
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Data Analysis

<table>
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<tr>
<th>RQs</th>
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<th>Data analysis</th>
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<tr>
<td>RQ1</td>
<td>Survey-multiple-choice questions</td>
<td>Descriptive statistics</td>
<td>Content analysis (Ez &amp; Angeli, 2008)</td>
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<td>Survey-open-ended questions</td>
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<td>Interview</td>
<td>Descriptive statistics</td>
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</tr>
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<td>MOOC review</td>
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<td>RQ2</td>
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<td>Interview</td>
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<td>RQ3</td>
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<tr>
<td></td>
<td>Interview</td>
<td>Descriptive statistics</td>
<td>Content analysis</td>
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</table>
Research Context

The Number of MOOCs the Instructor has Designed

<table>
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<tr>
<th>Number of MOOCs</th>
<th>Frequency</th>
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<tbody>
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<td>1</td>
<td>83</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
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<tr>
<td>4 or more</td>
<td>15</td>
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</table>

Research Context

MOOC Subject Areas

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Medicine and Health</td>
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<tr>
<td>Computer Science</td>
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<tr>
<td>Education</td>
<td>9</td>
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<tr>
<td>Languages and Literacy</td>
<td>8</td>
</tr>
<tr>
<td>Business</td>
<td>7</td>
</tr>
<tr>
<td>Engineering and Technology</td>
<td>6</td>
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<td>Math</td>
<td>6</td>
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<td>History</td>
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<td>Physics</td>
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<td>Biology</td>
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<td>Geography</td>
<td>2</td>
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<tr>
<td>Geophysics</td>
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<tr>
<td>Visual arts</td>
<td>2</td>
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<tr>
<td>Agriculture</td>
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</tbody>
</table>

Research Context

The Number of Learners Enrolled in Recent MOOC

- Less than 5,000: 23%
- 5,000-10,000: 38%
- 10,000-15,000: 13%
- 15,000-20,000: 21%
- More than 20,000: 5%

Findings RQ1

RQ #1. What are the design considerations of instructors when designing MOOCs?

- Learning objectives
- Assessment
- Time for designing MOOC
- Engaging learners

An example of learning objectives:

- Learning Objectives:
  - Describe the nature of sampling in scientific investigations
  - Describe the steps of sampling techniques available
  - Explain minimal sample size required
  - Identify the factors that can affect the sampling
  - Summarize the ways in which sampling can be used to reduce the sampling error
  - Describe the comparison of methods such as stratified sampling and simple random sampling

- MOOC Design Considerations

RQ1 Survey Results

RQ1 Interview Results

Engage learners

One instructor from US mentioned:

“I engaged people in the forum. So each week I would write a message that would be the new welcome page for the week that would say, ‘hey come to the forum and ask questions about this or come to the forum introduce yourself... Of course, I tried to get students to feel like I was engaged with them during the videos by asking them questions and telling them to do things during the video.’"
Findings RQ2

RQ #2. What challenges do instructors perceive when designing MOOCs?
• Assessment methods
• Engaging students’ learning
• Time limitation

(Note: Above is an example of peer-assessment.)

RQ2 Survey Results

Design challenges faced by the MOOC instructors

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment methods</td>
<td>91%</td>
</tr>
<tr>
<td>Engaging students’ learning</td>
<td>70%</td>
</tr>
<tr>
<td>Strategies to engage students’ active participation</td>
<td>66%</td>
</tr>
<tr>
<td>Time limitation of designing MOOCs</td>
<td>65%</td>
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<tr>
<td>Strategies to engage students’ interaction</td>
<td>62%</td>
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<tr>
<td>Compressing the content into short videos</td>
<td>58%</td>
</tr>
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<td>Personalizing students’ learning</td>
<td>46%</td>
</tr>
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<td>Recording videos</td>
<td>34%</td>
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<tr>
<td>Tracking students’ learning progress</td>
<td>33%</td>
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<tr>
<td>Technology support</td>
<td>33%</td>
</tr>
<tr>
<td>Strategies to encourage students’ team collaboration</td>
<td>23%</td>
</tr>
</tbody>
</table>

RQ2 Interview Results

Time limitation
One instructor from education subject mentioned:
“I think one of the challenges is time. It does take a lot of time to get the videos done. I did not get a course release when I was doing, and it was a side project at the same time as my regular load.”

Findings RQ3

RQ #3. How do instructors address the challenges that they perceive related to MOOCs?
• Explore other MOOC examples
• Seek help from the platform/collaborations/institutions

RQ3 Survey Results

Ways to Address Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsing other MOOCs for ideas, examples, and benchmarks</td>
<td>39%</td>
</tr>
<tr>
<td>Seeking help from the platform</td>
<td>81%</td>
</tr>
<tr>
<td>Seeking help from colleagues</td>
<td>71%</td>
</tr>
<tr>
<td>Seeking help from institution (e.g., administrator)</td>
<td>67%</td>
</tr>
<tr>
<td>Seeking help from other MOOCs instructors</td>
<td>51%</td>
</tr>
<tr>
<td>Reading books or articles related to MOOCs</td>
<td>49%</td>
</tr>
<tr>
<td>Seeking help through online searching</td>
<td>43%</td>
</tr>
<tr>
<td>Attending training sessions or workshops</td>
<td>41%</td>
</tr>
<tr>
<td>Reading news related to MOOCs</td>
<td>34%</td>
</tr>
<tr>
<td>Attending conferences or other professional events on MOOCs</td>
<td>29%</td>
</tr>
</tbody>
</table>

RQ3 Interview Results

Explore other MOOC examples
One MOOC instructor from the US mentioned:
“When I started making the MOOC, I could see MOOCs that other people had made. So I could see what other people did in terms of having videos with questions embedded in the videos, which I really liked.”
Discussion

• The time limitation of creating MOOCs was the primary logistical consideration (Hew & Chung, 2014; Watson et al., 2016) and challenges.
• The pedagogical factors were the primary design considerations (Watson et al., 2016) and challenges in MOOC design.
• The assessment and engagement strategies are the main considerations as well as challenges.

Implications

• For MOOC instructors
  o May inform them about what other instructors are most concerned with and tend to target in MOOC design as well as their efforts in addressing the possible design challenges.
• For instructional designers
  o Guide attention to ID in the areas that MOOC instructors might need them to help in consultation.

Key Terms

Self-directed learning (SDL) (Garrison, 1997)
(1) self-management
(2) self-monitoring
(3) motivation

Research Background

• Learners need self-directed learning skills and strategies to be successful in MOOCs (Halawa, Greene, & Mitchell, 2014; Littlejohn & Milligan, 2016), as there is a lack of personalized interaction with teachers.
• Self-directness of a learner might vary in different learning environments which means that the learners could be more self-directed in one learning environment than another (Hiemstra, 1994).

Research Background

• Instructional design can greatly influence students’ interaction and engagement (Garrison & Cleveland-Innes, 2005) and success in online learning (Song, Singleton, Hill, & Koh, 2004; Swan, 2001).
• However, few studies have examined instructional design and the delivery of instruction using MOOCs from instructor perspectives (Margaryan et al., 2015; Watson et al., 2016); especially lacking is research on instructors’ perception of SDL and how they design MOOCs to facilitate students’ SDL.
Research Purpose

The purpose is to inform instructors or instructional designers and MOOC providers of the current practices of designing MOOCs to facilitate learners’ SDL.

Research Questions

1. How do MOOC instructors perceive participant SDL skills?
2. How do MOOC instructors perceive their facilitation of participant SDL skills?
3. How do instructors design and deliver MOOCs to facilitate participant SDL skills?
   a. How is technology being used by MOOC instructors to support the development of participant SDL skills?
   b. What technology features or functions do MOOC instructors want to have to improve their facilitation of MOOC participant SDL skills?

Research Design

Explanatory sequential mixed methods design
(Creswell & Clark, 2017)

Data Collections

Survey:
- Volunteer sampling (Creswell & Clark, 2017)
- 198 instructors responded to the survey (10% response rate)

Interview:
- Homogeneous purposeful sampling (Creswell & Clark, 2017; Patton, 2002)
- Maximal variation sampling (Creswell & Clark, 2017)
- 22 interviewees

MOOC review:
- Reviewed 22 interviewees’ MOOCs

Data Analysis
Trustworthiness

1. **Validity** survey: Experts review, think-aloud interview, and pilot test (EFA)
2. **Reliability** survey: Pilot test and internal consistency reliability (Cronbach alpha)
3. **Triangulation**: Data sources, researchers, and methods
4. **Member checks**: Interview transcriptions
5. **Peer debriefing**: Committee and colleagues
6. **Researcher reflexivity**: Constant reflection and be forthright with our positions
7. **Thick description**: Report the context, data sources, and analyses in detail
8. **Prolonged engagement**: Immerse in instructors' MOOCs before the interview and continue reviewing the MOOCs after the interview

Research Context

<table>
<thead>
<tr>
<th>MOOC Subject Areas</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Science</td>
<td>45</td>
</tr>
<tr>
<td>Medicine and Health</td>
<td>27</td>
</tr>
<tr>
<td>Language and Literacy</td>
<td>24</td>
</tr>
<tr>
<td>Business and Management</td>
<td>22</td>
</tr>
<tr>
<td>Art and Humanity</td>
<td>14</td>
</tr>
<tr>
<td>Physical Science</td>
<td>13</td>
</tr>
<tr>
<td>Data Science</td>
<td>12</td>
</tr>
<tr>
<td>Computer Science</td>
<td>12</td>
</tr>
<tr>
<td>Biology</td>
<td>10</td>
</tr>
<tr>
<td>Math</td>
<td>9</td>
</tr>
<tr>
<td>Engineering</td>
<td>5</td>
</tr>
<tr>
<td>N/A</td>
<td>5</td>
</tr>
</tbody>
</table>

RQ1 Perceptions of SDL

- A majority of the MOOC instructors thought that these skills or attributes are not static, and that SDL as a set of skills can be educated or students' personal attributes that can be changed.

![MOOC Instructors' Perceptions of SDL](chart)

- Most of MOOC instructors thought that they can intentionally or unintentionally facilitate students' SDL.

![Participants' Perceptions of Their Role in Facilitating Students' SDL](chart)

RQ1 Interview Results

- Emma's understanding of SDL is more related to self-management and motivation. She said:

  When I think about self-directed learning, I think about students managing their time and managing the coursework on their own, and how it fits into their schedules and their lives, how they interact with materials, what's going to keep them engaged.

RQ2 Perceptions of Facilitation of SDL

- Ashely emphasized the importance of both instructors' facilitation and students' SDL skills. She said:

  The participant has a lot of flexibility on how they approach the content. I mean, obviously, we have things like assignments. We have things like online forums. And there're ways that we scaffold the learning experience. But there still is a lot of choice for the learner.
RQ3 Strategies to Facilitate SDL

- Students' intrinsic motivation plays an important role. However, extrinsic motivation provided by the MOOCs might help transfer extrinsic motivation to intrinsic motivation.

<table>
<thead>
<tr>
<th>Motivations</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering motivation</td>
<td>MOOC instructors helped students <strong>identify the needs and goals of learning</strong> and sense of achievement.</td>
</tr>
<tr>
<td>Task motivation</td>
<td>MOOC instructors motivated students through instruction, learning materials, feedback, and learning community.</td>
</tr>
</tbody>
</table>

RQ3 Learning Community

- Both internal feedback and external feedback were provided to help students' self-monitoring.

<table>
<thead>
<tr>
<th>Self-monitor</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal feedback</td>
<td>Cognition MOOC instructors provided quizzes for self-assessment, tutorial on technology use, learning advice, navigation of the course, progress indicators, resources, and instructional modeling, etc.</td>
</tr>
<tr>
<td></td>
<td>Meta-cog MOOC instructors encouraged students to reflect and think critically by providing reflection questions and building learning community.</td>
</tr>
<tr>
<td>External feedback</td>
<td>MOOC instructors, teaching assistants, and peers were involved in providing external feedback.</td>
</tr>
</tbody>
</table>

RQ3 Self-assessment

- Both self-assessment and external feedback were provided to help students' self-monitoring.

RQ3 Progress Indicators

- Course progress for student

RQ3 External Feedback-Peer-assessment

- External feedback and peer-assessment

- Peer-reviewed assignment

- Review your peers
RQ3 Strategies to Facilitate SDL

- They helped students’ self-management concerning setting learning goals, time management, resources and support management although among the three elements of SDL, MOOC instructors had less control over students’ management.

<table>
<thead>
<tr>
<th>Self-management</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enactment of learning goals</td>
<td>Providing discussion questions, reflections, survey, and appreciation students’ learning goals.</td>
</tr>
<tr>
<td>Time management</td>
<td>Providing time frame, progress indicator, short learning units, and flexible timeline.</td>
</tr>
<tr>
<td>Management of resources and support</td>
<td>Providing flexible learning resources, peer-assessment, accessibilities, clear expectations, and short learning units.</td>
</tr>
</tbody>
</table>

RQ3 Time Management

- Synchronous communication technologies
  - Google Hangouts
  - YouTube Live

- Asynchronous communication technologies
  - Discussion forum
  - Blog
  - Slackbot
  - Flickr

- Multimedia (e.g., video and graphics)
- Feedback technologies

RQ3-a Tech Use for SDL

- Adaptive learning systems
- Artificial intelligent systems
- Learning analytics
- Interactive technologies
  - Interaction between learners and content
  - Interaction among learners and other participants
- Tools embedded in platforms

RQ3-b Tech Expectations for SDL

- SDL can be Changed
- MOOC Instructors can Facilitate SDL
- Strategies to Facilitate SDL: A variety of strategies can be used to facilitate student SDL skills in terms of motivation, self-monitor, and self-management.
- Tech for SDL: Tech plays an important role in facilitating SDL skills.
- Tech expectations: Adaptive learning systems, artificial intelligent systems, and learning analytics were expected to have to support SDL.

Discussion

For MOOC instructors and Instructional Designers
- Build learning community
- Inspire intrinsic motivation
- Personalize learning

For MOOC providers
- Create a personalized learning environment
- Provide learning analytics to support learning and teaching

Implications
Top 10 Strategies to Facilitate SDL in MOOCs

1. Helping students set their own learning goals;
2. Building learning community;
3. Offering immediate feedback;
4. Embedding quizzes for self-assessment;
5. Providing progress indicators;
6. Providing reflection questions;
7. Designing short learning units;
8. Providing flexible timelines;
9. Highlighting estimated time frames;

Other Related MOOC Studies


Do we have time for another study?

Other Related MOOC Studies

Figure 1. MOOC instructor departmental or primary discipline affiliations (n=150)
Figure 3 and 4. Effort placed on meeting unique learner needs when designing and delivering most recent MOOC (Note: on a scale of 1 (low) to 10 (high) (n=144)

Figure 6. Number of MOOCs that offer different types of learning system automation and adaptation (n=127)

Figure 9: MOOC instructors (n=133) instructional practices to address cultural diversity

Table 1. Instructional Practices of MOOC Instructors to Address the Variety of Student Competencies and Needs (n=142)

Discussion, Significance, and Conclusion
30+ Ways Learning is Changing: Recapping the Three Mega Trends: Engagement, Access, and Customization

Any Questions?
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Slides and Proceedings Paper at TrainingShare.com:
http://www.trainingshare.com (go to "Archived Talks")