Instructor Experiences in Designing and Delivering Interactive MOOCs in Higher Education

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IST Department, Indiana University
E-Learn, Vancouver, Oct 19th, 2017

October 2015
Predictors of Retention and Achievement in a Massive Open Online Course


"If MOOCs are to fulfill their promise as a way of providing all learners with opportunities to obtain education at a low cost, much more research is needed regarding how to engage these students and help them to be successful in these environments.” (p. 952)

September 2016
MOOCs, Graduate Skills Gaps, and Employability: A Qualitative Systematic Review of the Literature


"In 2013, research had already indicated that MOOCs offered unprecedented choice, customization and gave thousands of participants the possibility to have greater ownership and control over their learning experiences “rather than being constrained by centralized, instructor-controlled learning based on delivery of pre-fabricated curriculum (McLoughlin, 2013).” (p. 78.)

2015
Digging deeper into learners’ experiences in MOOCs: Participation in social networks outside of MOOCs, notetaking and contexts surrounding content consumption
Veletsianos, Collier, & Schneider, BJET, 46(3), 570-587.


"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) add content to them.” (p. 583.)

Research Background
The Numbers: MOOCs in 2016 (Dec 25th, Class Central)

Growth of MOOCs

- 58M Students
- 700+ Universities
- 6,850 Courses
August 17, 2017
By the Numbers: MOOCs in 2016
Class Central, Dhawal Shah

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

June 15, 2017
Massive List of MOOC Providers Around The World, China and Korea
(Where to find MOOCs: The Definitive Guide to MOOC Providers)
University of China MOOC — icourse163.org / China
Class Central, Dhawal Shah
https://www.class-central.com/report/mooc-providers-list/
**June 15, 2017**
Massive List of MOOC Providers Around The World
IndonesiaX
(Where to Find MOOCs: The Definitive Guide to MOOC Providers)
Class Central, Dhawal Shah

**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

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**Research Background**

- MOOCs have grown during the past few years to over 7,000 courses (Shah, 2016, 2017)
- MOOCs can be beneficial to both learners and instructors (Hew & Cheung, 2014)
- Design and final delivery greatly influence students' interaction and engagement in online learning (Garrison & Cleveland-Innes, 2005).

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**Research Background**

- MOOCs have faced criticisms, including insufficient and low quality instructional design (Ferreira, 2014; Margaryan, Bianco, & Littlejohn, 2015) and low online interaction.
- Instructional design is critical for online learning (MOOC) (Johnson & Aragon, 2003; Phipps & Merisotis, 1999)

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**Research Background**

- Most research on MOOCs has mainly focused on enrollment, perspectives, behaviors, completion rates, and participation patterns in MOOC environments from a learner perspective (Breslow et al., 2013; Liyanagunawardena, Adams, & Williams, 2013)
- A scarcity of studies that focus specifically on MOOC design and delivery (Margaryan, Bianco, & Littlejohn, 2015); especially online interaction and engagement (Wang, Anderson, Chen, & Barbera, 2017)

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**Research Background**

A Systematic Review of Research Methods and Topics of the Empirical MOOC Literature (2014-2016)
Zhu, M., Sari, A., & Lee, M.
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?
Research Background (Zhu, M., Sari, A., & Lee, M. study)

<table>
<thead>
<tr>
<th>No.</th>
<th>Journal</th>
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<tr>
<td>1</td>
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<td>Educational Media International</td>
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- UNITED STATES
- CANADA
- TAIWAN
- UNITED KINGDOM
- SOUTH KOREA
- SWEDEN
- RUANDA
- NETHERLANDS
- CHILE
- EGYPT
- AUSTRIA
- FINLAND
- SPAIN
- TURKEY
- MEXICO
- IRELAND
- HONG KONG
- GERMANY
- SWITZERLAND
- ISRAEL
- ISRAEL
- SCOTLAND
- ISRAEL

Research Background (Zhu, M., Sari, A., & Lee, M. study)

MOOC Research Methods Employed

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<thead>
<tr>
<th>Method</th>
<th>Number</th>
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<tbody>
<tr>
<td>Qualitative</td>
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</tr>
<tr>
<td>Mixed</td>
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</tr>
<tr>
<td>Quantitative</td>
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Primary Data Sources for MOOC Research (2014-2017)

<table>
<thead>
<tr>
<th>Source</th>
<th>Total</th>
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<td>Survey</td>
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<tr>
<td>Interview</td>
<td>24</td>
</tr>
<tr>
<td>Quiz, Test (Grade)</td>
<td>17</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>11</td>
</tr>
<tr>
<td>Content Analysis</td>
<td>8</td>
</tr>
<tr>
<td>Database</td>
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</tr>
</tbody>
</table>

Results-RQ1-Data Collection Methods

- RQ1: What are the research methods researchers employed in empirical MOOC studies?

Number of Data Collection Methods Employed in MOOC Research

- 1: 42.85%
- 2: 31.57%
- 3: 16.44%
- More than 3: 9.22%
Research Background

(Zhu, M., Sari, A., & Lee, M. study)

Research focuses of empirical MOOC studies

<table>
<thead>
<tr>
<th>Focus</th>
<th>Number</th>
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<td>Student-focused</td>
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<tr>
<td>Design-focused</td>
<td>48</td>
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<tr>
<td>Context and impact</td>
<td>20</td>
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<tr>
<td>Others</td>
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<tr>
<td>Instructor-focused</td>
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Primary/secondary focus of MOOC delivery (out of 146 studies)

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<th>Focus</th>
<th>Number</th>
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<td>Student-focused</td>
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<td>Design-focused</td>
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<td>Context and impact</td>
<td>12</td>
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<tr>
<td>Instructor-focused</td>
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Research methods used in each research topic (out of 146 studies)

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<tr>
<th>Focus</th>
<th>Quantitative</th>
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<th>Mixed methods</th>
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<td>26</td>
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<td>Design-focused</td>
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<td>17</td>
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<td>Context and impact</td>
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<td>Instructor-focused</td>
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Specific Data Sources for MOOC Research (2014–2017)

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<tr>
<th>Category</th>
<th>Sources</th>
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<td>Course data</td>
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<td>Microblogging content analysis</td>
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<td>Weekly quizzes</td>
<td>Weekly quizzes</td>
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<tr>
<td>Learners' comments</td>
<td>Learners' comments</td>
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<tr>
<td>Learners' views</td>
<td>Learners' views</td>
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<tr>
<td>Student interactions</td>
<td>Student interactions</td>
</tr>
<tr>
<td>Twitter-based network interactions</td>
<td>Twitter-based network interactions</td>
</tr>
<tr>
<td>Content analysis</td>
<td>Content analysis</td>
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<tr>
<td>Analytic methods</td>
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</table>

Data Sources of MOOC Research

(Note: when part of 2 or more data sources)

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<thead>
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<th>Category</th>
<th>Sources</th>
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<tbody>
<tr>
<td>Design narratives</td>
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<tr>
<td>Discussion forum data</td>
<td>Discussion forum data</td>
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<tr>
<td>Survey</td>
<td>Survey</td>
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<td>Platform data</td>
<td>Platform data</td>
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<td>Assignment</td>
<td>Assignment</td>
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<td>Learning analytics</td>
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<td>Focus group interview</td>
<td>Focus group interview</td>
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<td>Observations</td>
<td>Observations</td>
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<td>Social media</td>
<td>Social media</td>
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<tr>
<td>Online journals</td>
<td>Online journals</td>
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<td>Observation</td>
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</table>


<table>
<thead>
<tr>
<th>Category</th>
<th>Methods</th>
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<td>Causal research</td>
<td>Causal research</td>
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<tr>
<td>Comparative research design</td>
<td>Comparative research design</td>
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<tr>
<td>Experimental design</td>
<td>Experimental design</td>
</tr>
<tr>
<td>Interpretive case study</td>
<td>Interpretive case study</td>
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<tr>
<td>Qualitative thematic analysis</td>
<td>Qualitative thematic analysis</td>
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<tr>
<td>Autobiography</td>
<td>Autobiography</td>
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<tr>
<td>Cluster analysis and curricular analysis</td>
<td>Cluster analysis and curricular analysis</td>
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<tr>
<td>Comparative study</td>
<td>Comparative study</td>
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<tr>
<td>Design-based research approach</td>
<td>Design-based research approach</td>
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Specific Focus of MOOC Research (2014–2017)

<table>
<thead>
<tr>
<th>Category</th>
<th>Focus</th>
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<tbody>
<tr>
<td>Self-regulated learning</td>
<td>Self-regulated learning</td>
</tr>
<tr>
<td>Cheating</td>
<td>Cheating</td>
</tr>
<tr>
<td>Social learning</td>
<td>Social learning</td>
</tr>
<tr>
<td>Motivation</td>
<td>Motivation</td>
</tr>
<tr>
<td>Engagement</td>
<td>Engagement</td>
</tr>
<tr>
<td>Professional development</td>
<td>Professional development</td>
</tr>
<tr>
<td>Learners' experience</td>
<td>Learners' experience</td>
</tr>
<tr>
<td>Quality of MOOC</td>
<td>Quality of MOOC</td>
</tr>
<tr>
<td>Instructional/MOOC design</td>
<td>Instructional/MOOC design</td>
</tr>
<tr>
<td>K-12/pre-college</td>
<td>K-12/pre-college</td>
</tr>
<tr>
<td>Retention and completion/dropout</td>
<td>Retention and completion/dropout</td>
</tr>
<tr>
<td>Communication/interaction</td>
<td>Communication/interaction</td>
</tr>
<tr>
<td>Performance outcomes</td>
<td>Performance outcomes</td>
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</tbody>
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10/16/2017
Research Purpose & Questions

Help reveal common and successful instructional design and delivery practices in terms of online interaction within MOOCs.

Research Questions:
1. How do MOOC instructors design their courses to encourage interaction among learners?
2. How do MOOC instructors design their courses to encourage interaction between instructor and learners?
3. How do MOOC instructors design their courses to encourage learner-content interaction?

Research Methods

- Research Design: sequential mixed methods design (Creswell & Clark, 2007)
- Data Collection: survey, interview, and course review
- Participants: 143 survey participants (10% response rate) and 12 interviewees

Qualitative Research Methods

<table>
<thead>
<tr>
<th>MOOC instructors interviewed</th>
<th>Platform</th>
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<tbody>
<tr>
<td>No. 1. English</td>
<td>Language and Literacy Coursera</td>
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<tr>
<td>2. The U.S.</td>
<td>Education Coursera</td>
</tr>
<tr>
<td>3. The U.S.</td>
<td>Education Canvas</td>
</tr>
<tr>
<td>4. The U.S.</td>
<td>Chemistry Coursera</td>
</tr>
<tr>
<td>5. UK Public Health</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>6. UK Language and Literacy</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>7. Hong Kong</td>
<td>Mathematics Coursera</td>
</tr>
<tr>
<td>8. Mainland China</td>
<td>Mathematics Coursera</td>
</tr>
<tr>
<td>9. Canada Psychology</td>
<td>Coursera</td>
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<tr>
<td>10. Australia Public Health</td>
<td>Open2Study</td>
</tr>
<tr>
<td>11. Canada Computer Science</td>
<td>edX</td>
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<tr>
<td>12. India Management</td>
<td>edX</td>
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Data Analysis

<table>
<thead>
<tr>
<th>RQs</th>
<th>Data Sources</th>
<th>Data analysis</th>
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<tbody>
<tr>
<td>Survey-multiple-choice questions</td>
<td>Descriptive statistics</td>
<td></td>
</tr>
<tr>
<td>Interview</td>
<td>Content analysis (Elo &amp; Kyngäs, 2008)</td>
<td></td>
</tr>
<tr>
<td>MOOC review</td>
<td>Content Analysis</td>
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</tr>
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</table>

Analytical Framework

Moore’s (1989) Three types of interactions

<table>
<thead>
<tr>
<th>Interactions</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Learner-learner</td>
<td>Peer-feedback</td>
</tr>
<tr>
<td>Learner-instructor</td>
<td>Instructors’ facilitation</td>
</tr>
<tr>
<td>Learner-content</td>
<td>Learn from online resources</td>
</tr>
</tbody>
</table>

Context

The Number of MOOCs the Instructor has Designed
Findings

RQ #1. How do MOOC instructors design the course to encourage interaction among learners?

• Asynchronous discussion forums
• Pair-based types of tasks
• Social media
Findings

RQ #2. How do MOOC instructors design the course to encourage interaction between instructor and learners?

- Online discussion forums
- Platform messages
- Social media connections

Findings

• Asynchronous discussion forums
  One instructor mentioned:
  “And then there’s also an asynchronous discussion board within each module. So there will be prompt...And then there were a lot of discussions back and forth with students about suggestions on things they could consider, or maybe there were stuck on something and so they would like help...Within discussion forum, there’s a showcase and that is the opportunity to get feedback from peers.”

Findings

• Not much instructor-learner interaction
  One instructor mentioned:
  “Because there’s not much interaction, even between me and students. When I first launched this MOOC, I paid closer attention. Maybe I replied to some students. Now I think Coursera somehow grabs some students to be mentors or something. There are other people commenting. It seems like I do not have to do anything. Every week, perhaps three hundred more students register. Nobody bothers me.”
Findings

• Not much instructor-learner interaction
  One instructor from the U.S. mentioned:
  "In the classroom there's more of an interaction at least a
  reaction between like the instructor and the students,
  students and student, and you can't really simulate that in
  this kind of MOOC format."

Findings

Discussion forum
• Embedded video lectures and tutorials
• Article or book readings

Findings

Ways to monitor learners' learning

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Modular or unit based progress</td>
<td>64%</td>
</tr>
<tr>
<td>Weekly or daily reports offered by learning</td>
<td>40%</td>
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<tr>
<td>Self-monitoring and self-evaluation</td>
<td>21%</td>
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<tr>
<td>Moderator, tutor, or teaching assistants feedback</td>
<td>24%</td>
</tr>
<tr>
<td>Not applicable (learner progress is not monitored)</td>
<td>14%</td>
</tr>
<tr>
<td>Peer or group member reports</td>
<td>14%</td>
</tr>
<tr>
<td>Personal tracking from tutors, moderators, and</td>
<td></td>
</tr>
<tr>
<td>Personal tracking from instructor</td>
<td>14%</td>
</tr>
</tbody>
</table>

Findings

An instructor from the US mentioned
"Within discussion form, there's a showcase and that is the
opportunity to get feedback from peers. And also we have
facilitators, who are volunteers, who go in and offer
feedback."
Findings

One professor from the U.S. stated that:
"Besides videos, there was a suggested book."

Another instructor noted that she used visuals in her MOOC "I had a whole lot of graphical material that I used in class. And I had got them from one of the texts that were published in the area and had been allowed to use them, because I was recommended the textbook."

Discussion

• Most MOOC instructors emphasized a variety of strategies to encourage learner-learner interaction by using asynchronous discussion forums, pair-based assignments or peer reviews, and social media to encourage peer interaction.

• Learner-instructor interaction were encouraged through online discussion forum, platform messages, and social media connections.

• Learner-content interaction: discussion forums or threads, video lectures and tutorials in the MOOC, readings, practice quizzes and exams were primarily used in MOOCs.

Conclusions

• This study indicated that MOOC instructors are trying to encourage online interaction in MOOC; however, there is no universal understanding of strategies of encouraging online interaction and instructor-learner interaction is still not optimal.

Future Directions

• Further observations and analyses are needed to better understand how MOOC instructor design and deliver their MOOCs to encourage online interaction and learner success.

Limitations

• Limited to MOOCs which are mainly delivered in English

• Volunteer bias

• Only review 12 MOOC Courses

Thank you!

Questions and Comments...

E-Learn, Vancouver, October 19th, 2017
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