Research Issues and Findings of MOOCs: Learning to Better Design Practices

Curtis J. Bonk | cjbok@Indiana.edu
Indiana University
Bloomington

Meina Zhu | meinazhu@wayne.edu
Wayne State University
May 27, 2020

Talk Outline
1. MOOC News and Trends
2. MOOC ID Considerations and Challenges
3. MOOC ID for Self-directed Learning
4. MOOC personalization.

April 29, 2020
Zoom Boom
Synchronous instruction is trending, but experts say a more intentional mix of live and asynchronous classwork is necessary for future remote terms.

Colleen Flaherty, Inside Higher Ed

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

MOOC Trends and Recent Data

March 19, 2020
Doors Open
The Commonwealth of Learning
https://www.col.org/resources/keeping-doors-learning-open-covid-19

Zoom Boom
Synchronous instruction is trending, but experts say a more intentional mix of live and asynchronous classwork is necessary for future remote terms.

Colleen Flaherty, Inside Higher Ed
December 16, 2019
2020 Impact Report, edX

April 30, 2020
New Udemy Report Shows Surge in Global Online Education in Response to COVID-19
People around the world are learning how to work from home and stay productive as the Future of Work arrives

Businesswire:

April 30, 2020
New Udemy Report Shows Surge in Global Online Education in Response to COVID-19
There has been an immense surge in enrollments in courses related to Telecommuting (21,398% increase) and Virtual Teams (1,523%), as well as Decision Making (277%), Self Discipline (237%), and Stress Management (235%).


April 30, 2020
New Udemy Report Shows Surge in Global Online Education in Response to COVID-19
Strong global growth in top-ranking professional skills includes Neural Networks (61% increase), Communication Skills (131%), and Growth Mindset (206%). Passion topics like Pilates (402% increase), Technical Drawing (920%), and Ukulele (292%), have surged as well.

1. 425% increase in enrollments for consumers
2. 55% increase in course creation by instructors
3. 80% increase in usage from businesses and governments
4. 130% growth in enrollments in the U.S., 200% in India, 320% in Italy, and 280% in Spain.
5. People in India are learning Business Fundamentals (281%) and Communication Skills (606%)
6. Italians are taking courses on Guitar (431%), Copywriting (418%), and Photoshop (347%)
7. The Spanish are taking Piano (466%) and focused on Investing (262%)

Categories with the highest surge in new courses include Office Productivity (159% increase), Health and Fitness (84%), IT & Software (77%), and Personal Development (61%).

April 30, 2020
New Udemy Report Shows Surge in Global Online Education in Response to COVID-19

Categories with the highest surge in new courses include Office Productivity (159% increase), Health and Fitness (84%), IT & Software (77%), and Personal Development (61%).

April 29, 2020
MOOC and Qualtrics
Tanner Phillips, Udemy
https://drive.google.com/file/d/1fkiTPUbDYiK91V8R3odkxFytHiqQnc0/view
Hundred+ MOOC Clubs
February 21, 2020
250 MOOCs and Counting: One Man’s Educational Journey, Chronicle of Higher Education
http://chronicle.com/article/250-MOOCs-Counting-One/229397/?cid=at

If the MOOC movement has faded, nobody told Jima Ngei. Mr. Ngei, who lives in Port Harcourt, Nigeria, has completed and passed 250. Jima Ngei: “I had this unrelenting fear that this miracle of free access might evaporate soon.”

MOOCs Stats
December 17, 2019
Online Degrees Slowdown: A Review of MOOC Stats and Trends in 2019, Dhawal Shah, Class Central

MOOCs Stats
December 17, 2019
A Review of MOOC Stats and Trends in 2019
Dhawal Shah, Class Central

May 26, 2020
Remember the MOOCs? After Near-Death, They’re Booming
Steven Lohr, The New York Times
https://www.nytimes.com/2020/05/26/technology/moocs-online-learning.html

Coursera added 10 million new users from mid-March to mid-May. Credit: Jessica Chou for The New York Times
December 15, 2019
Course <no-reply@m.mail.coursera.org>
Ends TOMORROW: 50% off top tech Specializations

Study #1
MOOCs Design
Considerations and Challenges

Research Background
- MOOCs can be beneficial to both learners and instructors (Hew & Cheung, 2014).
- Instructional design is critical for online learning (Johnson & Aragon, 2003; Phipps & Merisotis, 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).

Research Purpose
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:
  o Survey, interview, and course review

• Participants:
  o 143 survey participants (10% response rate)
  o 12 interviewees

12 Interviewees

<table>
<thead>
<tr>
<th>No.</th>
<th>Countries</th>
<th>Subject areas</th>
<th>Platforms</th>
</tr>
</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>
<tr>
<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>Language and Literacy</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>6</td>
<td>Hong Kong (China)</td>
<td>Health</td>
<td>Coursera</td>
</tr>
<tr>
<td>7</td>
<td>Mainland China</td>
<td>Health</td>
<td>Coursera</td>
</tr>
<tr>
<td>8</td>
<td>Canada</td>
<td>Psychology</td>
<td>Coursera</td>
</tr>
<tr>
<td>9</td>
<td>Sweden</td>
<td>Medicine and Health</td>
<td>FutureLearn</td>
</tr>
<tr>
<td>10</td>
<td>India</td>
<td>Management</td>
<td>edX</td>
</tr>
</tbody>
</table>

No.
Countries
Subject areas
Platforms
1. The U.S.
   Language and Literacy
   Coursera
2. The U.S.
   Education
   Coursera
3. The U.S.
   Education
   Coursera
4. The U.S.
   Chemistry
   Coursera
5. UK
   Language and Literacy
   FutureLearn
6. Hong Kong (China)
   Health
   Coursera
7. Mainland China
   Health
   Coursera
8. Canada
   Psychology
   Coursera
9. Sweden
   Medicine and Health
   FutureLearn
10. India
    Management
    edX

Data Analysis

<table>
<thead>
<tr>
<th>RQs</th>
<th>Data Sources</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Survey-multiple-choice questions</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td>RQ1</td>
<td>Survey-open-ended questions</td>
<td>Content analysis</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
</tr>
<tr>
<td></td>
<td>MOOC review</td>
<td>Content analysis</td>
</tr>
<tr>
<td>RQ2</td>
<td>Survey-multiple-choice questions</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>Survey-open-ended questions</td>
<td>Content analysis</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
</tr>
<tr>
<td>RQ3</td>
<td>Survey-multiple-choice questions</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
</tr>
</tbody>
</table>

Research Context

The Number of MOOCs the Instructor has Designed

Research Context

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:
- Discuss the role of learning in scientific investigations.
- Discuss the role of inquiry in scientific research.
- Develop and apply scientific reasoning skills.
- Identify the nature of science that can and can’t be measured.
- Summarize the data on students’ knowledge and behavior.
- Discuss the limitations of experiment and its complements for
- Provide examples of the extent of data that can be measured.

Less than 5,000
5,000-10,000
10,001-15,000
15,001-20,000
More than 20,000

23%
38%
5%
13%
21%
0
RQ1 Survey Results

MOOC Design Considerations
- Objectives of the course: 124
- Assessment activities (e.g., peer review, quiz): 96
- Duration of the course: 71
- Time for designing this MOOC: 66
- Platform of offering this MOOC: 66
- Pedagogical approaches: 67
- Learning context for the MOOC: 65
- Instructional role: 65
- Support from institution: 60
- Flexibility: 58
- Support from the platform: 53
- Collaborative learning support: 54
- Available existing intellectual resources (e.g., OERs, videos): 53
- Hardware resources (e.g., recording studios, cameras): 53
- Professional development for educators: 44
- 'Target learners' self-directed learning ability: 46
- Cultural sensitivity: 54
- Learning theory: 64
- Software resources (e.g., video editing software): 41
- Source of motivation: 41
- Tools for communication (e.g., Facebook, Twitter, blog): 27
- Time for designing this MOOC: 31
- Duration of the course: 27
- Assessment activities (e.g., peer review, quiz): 34
- Objectives of the course: 41
- Platform of offering this MOOC: 44
- Pedagogical approaches: 46
- Learning context for the MOOC: 53
- Instructional role: 54
- Support from institution: 60
- Flexibility: 58
- Support from the platform: 53
- Collaborative learning support: 54
- Available existing intellectual resources (e.g., OERs, videos): 53
- Hardware resources (e.g., recording studios, cameras): 53
- Professional development for educators: 44
- 'Target learners' self-directed learning ability: 46
- Cultural sensitivity: 54
- Learning theory: 64
- Software resources (e.g., video editing software): 41
- Source of motivation: 41
- Tools for communication (e.g., Facebook, Twitter, blog): 27

Findings RQ2

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

RQ2 Survey Results

Design challenges faced by the MOOC instructors
- Assessment methods: 29
- Engaging students' active participation: 66
- Strategies to engage students' interaction: 65
- Time limitation of designing MOOCs: 62
- Compressing the content into short videos: 58
- Personalizing students' learning: 46
- Recording videos: 34
- Tracking students' learning progress: 33
- Technology support: 33
- Strategies to encourage students' team collaboration: 23

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/colleagues/institutions
RQ3 Survey Results

Ways to Address Challenges

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsing other MOOCs for ideas, examples, and benchmarks</td>
<td>79</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>Sealing 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.

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 & Miligan, 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).
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.

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

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?

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

<table>
<thead>
<tr>
<th>Participants</th>
<th>Country</th>
<th>Subject Area</th>
<th>Platform</th>
<th>Gender</th>
<th>No. of O/B</th>
<th>No. of M</th>
<th>Mode of M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucas</td>
<td>US</td>
<td>Social science</td>
<td>edX</td>
<td>M</td>
<td>0</td>
<td>1</td>
<td>I without T</td>
</tr>
<tr>
<td>Branden</td>
<td>US</td>
<td>Education</td>
<td>Udacity</td>
<td>M</td>
<td>0</td>
<td>5 or more</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Logan</td>
<td>US</td>
<td>Literacy and language</td>
<td>Coursera M</td>
<td>F</td>
<td>2 or more</td>
<td>1</td>
<td>I with T</td>
</tr>
<tr>
<td>Brenna</td>
<td>US</td>
<td>Literacy and language</td>
<td>Coursera F</td>
<td></td>
<td>2</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Klein</td>
<td>US</td>
<td>Science</td>
<td>edX</td>
<td>M</td>
<td>1</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Madison</td>
<td>US</td>
<td>Medicine and health</td>
<td>Coursera F</td>
<td></td>
<td>2</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Samuel</td>
<td>US</td>
<td>Education</td>
<td>FutureLearn M</td>
<td></td>
<td>6</td>
<td>2</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Hannah</td>
<td>US</td>
<td>Education</td>
<td>Blackboard F</td>
<td></td>
<td>5 or more</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Ashley</td>
<td>US</td>
<td>Education</td>
<td>EdX</td>
<td>F</td>
<td>0</td>
<td>5 or more</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Andrew</td>
<td>UK</td>
<td>Art</td>
<td>FutureLearn M</td>
<td></td>
<td>10</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Emily</td>
<td>UK</td>
<td>Medicine and health</td>
<td>FutureLearn F</td>
<td></td>
<td>5</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Colin</td>
<td>UK</td>
<td>Social science</td>
<td>FutureLearn M</td>
<td></td>
<td>0</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Henry</td>
<td>UK</td>
<td>Social science</td>
<td>FutureLearn M</td>
<td></td>
<td>0</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Joseph</td>
<td>UK</td>
<td>Medicine and health</td>
<td>FutureLearn M</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Charles</td>
<td>UK</td>
<td>Literacy and language</td>
<td>FutureLearn M</td>
<td></td>
<td>2</td>
<td>2</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Megan</td>
<td>Australia</td>
<td>Education</td>
<td>FutureLearn M</td>
<td></td>
<td>2</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Ryan</td>
<td>Australia</td>
<td>Business</td>
<td>Coursera M</td>
<td></td>
<td>3</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Ben</td>
<td>Australia</td>
<td>Social science</td>
<td>edX M</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Paul</td>
<td>France</td>
<td>Computer science</td>
<td>Coursera M</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Fernando</td>
<td>Belgium</td>
<td>Research methods</td>
<td>Blackboard M</td>
<td></td>
<td>5</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Giada</td>
<td>Netherlands</td>
<td>Science</td>
<td>Coursera M</td>
<td></td>
<td>0</td>
<td>1</td>
<td>Self-paced</td>
</tr>
<tr>
<td>Ivan</td>
<td>Iceland</td>
<td>Science</td>
<td>Coursera M</td>
<td></td>
<td>0</td>
<td>1</td>
<td>Self-paced</td>
</tr>
</tbody>
</table>

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 Collections
## Data Analysis

### RQs, Data Sources, Data analysis, Tools

<table>
<thead>
<tr>
<th>RQs</th>
<th>Data Sources</th>
<th>Data analysis</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1</td>
<td>Survey</td>
<td>Descriptive statistics</td>
<td>SPSS</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
<td>NVivo</td>
</tr>
<tr>
<td>RQ2</td>
<td>Survey</td>
<td>Descriptive statistics</td>
<td>SPSS</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
<td>NVivo</td>
</tr>
<tr>
<td>RQ3</td>
<td>Course review</td>
<td>Content analysis</td>
<td>NVivo</td>
</tr>
</tbody>
</table>

## Research Context

### MOOC Subject Areas

- Social Science: 27
- Medicine and Health: 24
- Language and Literacy: 22
- Business and Management: 14
- Art and Humanity: 13
- Physical Science: 12
- Data Science: 12
- Computer Science: 10
- Biology: 9
- Math: 5
- Engineering: 5
- N/A: 5

## 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

<table>
<thead>
<tr>
<th>Perception</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDL is a set of skills that can be educated</td>
<td>122</td>
</tr>
<tr>
<td>SDL is related to students' personal attributes that can be changed</td>
<td>64</td>
</tr>
<tr>
<td>Other (please describe)</td>
<td>12</td>
</tr>
<tr>
<td>SDL is related to students' learning personal attributes that can never be changed</td>
<td>20</td>
</tr>
</tbody>
</table>

## 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

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

### Participants' Perceptions of Their Role in Facilitating Students' SDL

<table>
<thead>
<tr>
<th>Role in Facilitating SDL</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors can intentionally create a learning environment to help...</td>
<td>171</td>
</tr>
<tr>
<td>Other (please describe)</td>
<td></td>
</tr>
<tr>
<td>Instructors can unintentionally create a learning environment that...</td>
<td></td>
</tr>
<tr>
<td>Instructors can do nothing for students' SDL skills.</td>
<td></td>
</tr>
</tbody>
</table>

## RQ2 Interview Results

- 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 identify the needs and goals of learning 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

RQ3 Strategies to Facilitate SDL

• 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. 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 (i.e., embedded quizzes)

RQ3 Progress Indicators

RQ3 External Feedback: Peer-assessment (e.g., 3 peers assigned to review each assignment)
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 (e.g., time advisories and estimates)

- 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 Used for SDL

Discussion

- 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 a vital role in facilitating SDL skills.
- Tech expectations: Adaptive learning systems, artificial intelligent systems, and learning analytics were expected to have to support SDL.

Implications

- 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

Top 10 Strategies to Facilitate SDL in MOOCs

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

Example:

"I have asked, at the first page of course, why they’re taking the course. So that is the goal. A lot of people say, ‘I’m a teacher. And I want to do the stuff with my kids. Or I want to update my knowledge. Or I’m retired and I want to learn this.’"

2. Building learning community.

Joshua from the UK mentioned: We use a lot of resources that already exist. And then we use the MOOC discussion board as a place to where they, kind of, point out and say, “I’ve seen this. And this is useful. Well, I use this, and this is good. I created this.”

3. Offering immediate feedback.


5. Providing progress indicators

6. Providing reflection questions.

We introduced kind of moments that video was stopped and there was a question. The student had to think of it a bit. Sometimes it was kind of a rhetorical question. There wasn’t even no answer required. But it was just a pause for a while to let the student reflect. (Jacob)

7. Designing short learning units.

- Video: Introduction to Regression  6 min
- Video: Introduction: Basic Least Squares  6 min
**Top 10 Strategies to Facilitate SDL in MOOCs**

8. Providing flexible timelines.

9. Highlighting estimated time frames.


11. Structure continued...

12. On completion of modules participants get a certificate.
13. Week overview. The course is divided into week-long segments, and each week is chunked into manageable parts. Very importantly for the participant to be able to anticipate what can get done in one sitting, the length of each video is included.

14. Lecture recorded and captions added.

15. Quick check tasks.


There is the choice to watch all of the videos, read all of the materials, and submit all of the assignments, or there are choices all along the way to “cut corners” and take in only what the participant wants to.
17. Visuals showing tasks completed.

18. Visuals showing work progress.

19. Rewirements (assignments) for putting the material to practice (e.g., Random Acts of Kindness, Make A Social Connection, Let’s Get Physical, Meditate!, Sleep!, Gratitude Letter/Visit, Savoring, etc.)

Daily Gratitude Journal

Gratitude is a positive emotional state in which one recognizes and appreciates what one has received in life. Research shows that taking time to experience gratitude can make you happier and even healthier. For the next seven days, you will take 5-10 minutes each night to write down five things for which you are grateful. They can be little things or big things. But you really have to focus on them and actually write them down (Again, try to develop a tracking method works for you and utilize a note on your phone, a daily calendar, a special notebook, etc). You can just write a word or short phrase, but as you write these things down, take a moment to be mindful of the things you’re writing about (e.g., imagine the person or thing you’re writing about, etc.). This exercise should take at least five minutes. Do this each night for the whole week.

20. Offer community support and help.

Bonus Item: Peer-graded assignments.
MOOC Study #3

Figure 1. Number of MOOCs that offer different types of learning system automation and adaptation (n=127)

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

What's the Future?

Any Questions?

Curtis Bonk: cjbonk@Indiana.edu
Meina Zhu: meinazhu@wayne.edu