On the Road Toward Fostering Greater Self-Directed Learning in MOOCs: Research Toward Better Design Practices

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September 18, 2020

Talk Outline
1. MOOC News and Trends.
2. Study #1: MOOC ID Considerations and Challenges.
4. 20 SDL guidelines for MOOCs.

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

August 26, 2020
Zoom, Microsoft and Apple take on remote learning challenges as kids head back to school
Dalvin Brown, USA Today

MOOC Trends and Recent Data

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
**July 24, 2018**

The 100-Year Life: Living and Working in an Age of Longevity

Lynda Gratton and Andrew Scott

[www.100yearlife.com/](http://www.100yearlife.com/)

**March 13, 2019**

The Career Curriculum Continuum

Andrew Hermayn, Inside Higher Ed


**August 27, 2020**

Alternative Credentials on the Rise

Paul Fain, Inside Higher Ed


Sources: Moody’s, U.S. Department of Education

**October 3, 2019**

Google IT Professional Certificates

Coursera Blog

[https://grow.google/programs/it-support/?cid=wc&source=ams&sourceId=61203](https://grow.google/programs/it-support/?cid=wc&source=ams&sourceId=61203)

[https://www.youtube.com/watch?time_continue=107&v=fvhPKZWbfms&feature=emb_logo](https://www.youtube.com/watch?time_continue=107&v=fvhPKZWbfms&feature=emb_logo)

**September 11, 2019**

250 MOOCs and Counting: One Man’s Educational Journey

Chronicle of Higher Education


If the MOOC movement has faded, nobody tells Jima Ngei. Mr. Ngei, who lives in Port Harcourt, Nigeria, has completed and passed 250.

**Hundred+ MOOC Clubs**

**September 11, 2019**

250 MOOCs and Counting: One Man’s Educational Journey

Chronicle of Higher Education


If the MOOC movement has faded, nobody tells Jima Ngei. Mr. Ngei, who lives in Port Harcourt, Nigeria, has completed and passed 250.
June 8, 2019
The second half of humanity is joining the internet:
They will change it, and it will change them
The Economist

https://www.economist.com/leaders/2019/06/08/the-second-half-of-humanity-is-joining-the-internet

December 16, 2019
2020 Impact Report, edX


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

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

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

May 26, 2020
Remember the MOOCs? After Near-Death, They’re Booming
Steven Lohr, The New York Times

Coursera added 10 million new users from mid-March to mid-May. Credit...Jessica Chou for The New York Times

August 9, 2020
250 Universities Just Launched 900 Free Online Courses. Here’s the Full List.
Dhawal Shah, Class Central

In the past nine years or so, over 400 universities have created around 15,000 MOOCs. I’ve been keeping track of these online courses the entire time here at Class Central, a search engine and reviews site for online education which has been used by over 40 million learners around the world.

August 16, 2020
New Registered Learners
Dhawal Shah, Class Central

New Registered Learners 2019 2020 Total
coursera 8M 20M 65M
edx 5M 8M 32M
Future Learn 1.3M 4M 13.5M
Class Central 350k 700k 2.2M
MOOCs Stats

August 16, 2020
By the Numbers: MOOCs During the Pandemic
Dhawal Shah, Class Central

MOOCs Stats

August 16, 2020
By the Numbers: MOOCs During the Pandemic
Dhawal Shah, Class Central

MOOCs book #3 (2020)

November 9, 2019
Chapter 9: Nepali High School Students in MOOCs
Baman Kumar Ghimire
Teacher, Motherland Secondary School, Pokhara

November 26, 2019
Sanjaya Mishra, Martha Cleveland-Innes, and Nathaniel Ostashewski

November 26, 2019
Chapter 16: Courses for a Cause: MOOC Contributions to a "Better Place for All"
(Marianne Krasny et al., 2020)
Chapter 25. Responsive Innovations in MOOCs for Development: A Case Study of AgMOOCs in India
Balaji Venkataraman and Tadinada V. Prabhakar
http://www.agmoocs.in/

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

Data Analysis

<table>
<thead>
<tr>
<th>RQs</th>
<th>Data Sources</th>
<th>Data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1</td>
<td>Survey multiple-choice</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>questions</td>
<td></td>
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<tr>
<td></td>
<td>Survey-open-ended</td>
<td>Content analysis (Elo &amp; Kyngäs, 2008)</td>
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<tr>
<td></td>
<td>questions</td>
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<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
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<td></td>
<td>MOOC review</td>
<td>Content analysis</td>
</tr>
<tr>
<td>RQ2</td>
<td>Survey multiple-choice</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>questions</td>
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<td>Survey-open-ended</td>
<td>Content analysis</td>
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<td></td>
<td>Interview</td>
<td>Content analysis</td>
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<tr>
<td></td>
<td>MOOC review</td>
<td>Content analysis</td>
</tr>
<tr>
<td>RQ3</td>
<td>Survey multiple-choice</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>questions</td>
<td></td>
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<tr>
<td></td>
<td>Interview</td>
<td>Content analysis</td>
</tr>
</tbody>
</table>

Research Context

The Number of MOOCs the Instructor has Designed

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:

- Identify the type of evidence needed to support a hypothesis
- Write a clear and concise summary of the research
- Analyze the results of an experiment and interpret the findings
- Design an experiment to test a hypothesis
- Evaluate the validity of an argument and distinguish it from a fact

Findings RQ1
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.)

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>Ways to Address Challenges</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
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</thead>
<tbody>
<tr>
<td>Browsing other MOOCs for ideas, examples, and benchmarks</td>
<td>28</td>
<td>34</td>
<td>41</td>
<td>43</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
</tr>
<tr>
<td>Seeking help from platform</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Seeking help from colleagues</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Seeking help from MOOCs instructors</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Reading books or articles related to MOOCs</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Seeking help through online searching</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
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<tr>
<td>Attending training sessions or workshops</td>
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<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Reading news related to MOOCs</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
<td>81</td>
<td>89</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>Attending conferences or other professional events on MOOCs</td>
<td>24</td>
<td>34</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>67</td>
<td>71</td>
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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** (Hilsea, Greene, & Mitchell, 2014; Littlejohn & Milikan, 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)

Pilot interview with 4 instructors
Pilot survey with 48 instructors
Survey 198 instructors
Review 22 MOOCs of interviewees
Interview 22 instructors
Review 22 MOOCs of interviewees

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

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</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>
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<tr>
<td></td>
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<td>Content analysis</td>
<td>NVivo</td>
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<tr>
<td>RQ3</td>
<td>Interview</td>
<td>Content analysis</td>
<td>NVivo</td>
</tr>
<tr>
<td></td>
<td>Course review</td>
<td>Content analysis</td>
<td>NVivo</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

| SDL is a set of skills that can be educated | 112 |
| SDL is related to students’ personal attributes that can be changed | 64 |
| Other (please describe) | 12 |
| SDL is related to students’ learning personal attributes that can never be | 20 |

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

| Instructors can intentionally create a learning environment to help... | 171 |
| Other (please describe) | 14 |
| Instructors can unintentionally create a learning environment that... | 13 |
| Instructors can do nothing for students’ SDL skills. | 0 |

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 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

- 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)

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

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-a. Tech Used for SDL

- **Synchronous communication technologies**
  - Google Hangouts
  - YouTube Live

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

- **Multimedia** (e.g., video and graphics)

- **Feedback technologies**

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.

You've already completed 77% of your course! Reset your deadlines so you can finish the rest.

Top 10 Strategies to Facilitate SDL in MOOCs

9. Highlighting estimated time frames.

- Video: 1.2 - Popular Music and Classical Music Compared
- Quiz: Popular Music and Classical Music Compared
- Video: 1.3 - Music and Emotions
- Video: 1.4 - How Do We Hear Music? Sound Waves and the Ear
- Quiz: How Do We Hear Music? Sound Waves and the Ear

Top 10 Strategies to Facilitate SDL in MOOCs


Top 10 Strategies to Facilitate SDL in MOOCs

11. Structured learning environment:
• Clearly stated the learning objectives.
• Course details stated the expected time to complete the course.
• The syllabus, number of course modules, and title of each module.

Top 10 Strategies to Facilitate SDL in MOOCs

12. On completion of modules participants get a certificate.

MOOC: Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19) from OpenWHO (English Version)

11. Structured learning environment:
• Clearly stated the learning objectives.
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10 More Strategies to Facilitate SDL in MOOCs

11. Structure continued...
Graphic or visual organizations for essential material.
The text on screen matched the narration enforcing the redundancy principle.

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.

Caption added to video

Video of student audience


The full transcript of each video recording is shown below the video player, with the current point in video highlighted as it plays.

15. Quick check tasks.

The video lectures contain one or two “quick check” pop-up questions in assessing understanding (and attractiveness).


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.
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.

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**Bonus Item:** Peer-graded assignments.

**Do we have time for another study? No!**


Any Questions?

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