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A Mixed Method Study of Instructor Design and Delivery of MOOCs for Participant Self-directed Learning


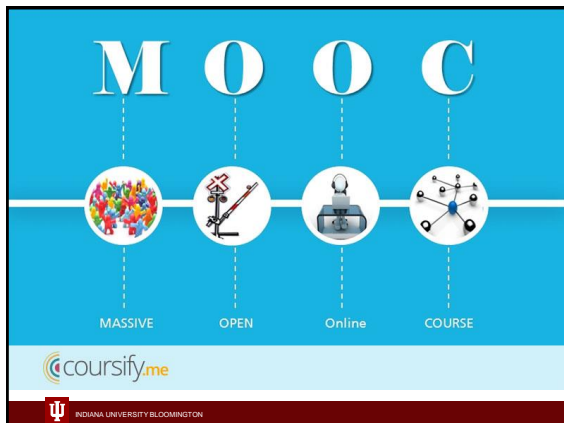
Meina Zhu
Curtis J. Bonk
Annisa Sari
Indiana University



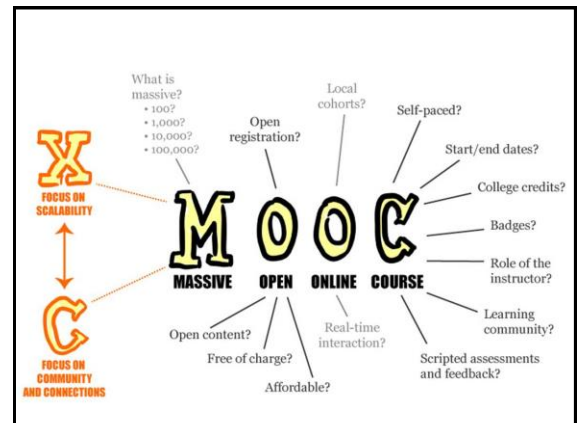
School of Education, IST

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Rethinking the MOOC Phenomenon...

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September 12, 2018

Coursera's CEO on the Evolving Meaning of 'MOOC'

Dian Schaffhauser, Campus Technology

<https://campustechnology.com/articles/2018/09/12/courseras-ceo-on-the-evolving-meaning-of-mooc.aspx>

Introduction

Coursera's CEO on the Evolving Meaning of 'MOOC'

When can you bring large numbers of students together with one of your best minds, and what enterprise needs a highly skilled workforce, could those things be strong enough to forge a new future for massive open online courses?

By Dian Schaffhauser 09/12/18



Jeff Maggioncalda, Coursera CEO

September 2016

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

David Santandreu Calonge and Mariam Aman Shah, IRRODL, 17(5), 67-90.

<http://www.irrodl.org/index.php/irrodl/article/view/2675/3881>

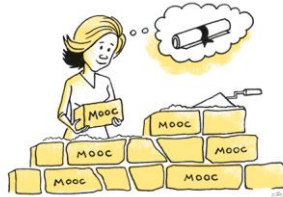
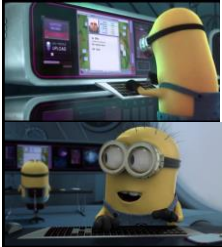
"MOOCs have had a significant role in helping the traditional and the "new traditional" graduates to quickly up-skill before employment or to quickly "come on board" in their new job. MOOCs have provided flexible, on-demand, collaborative, and just-in-time learning opportunities through which to obtain relevant and applicable skills." (p. 78)

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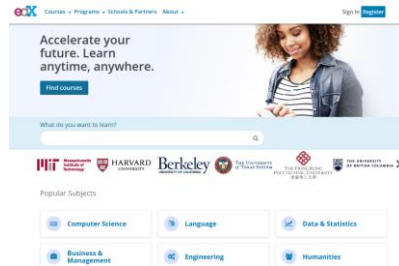
May 21, 2018 The Second Wave of MOOC Hype Is Here, and It's Online Degrees

Dhawal Shah, Class Central
<https://www.edsurge.com/news/2018-05-21-the-second-wave-of-mooc-hype-is-here-and-it-s-online-degrees>



Email inbox: June 10, 2018 edX

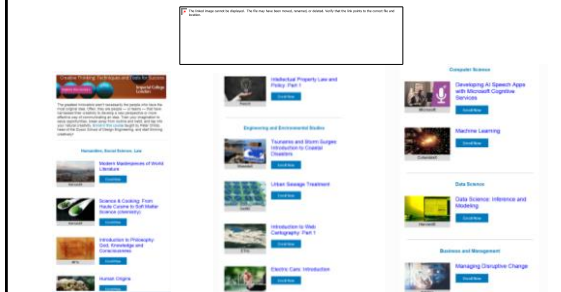
<https://www.edx.org/course>



Email inbox: June 10, 2018

edX

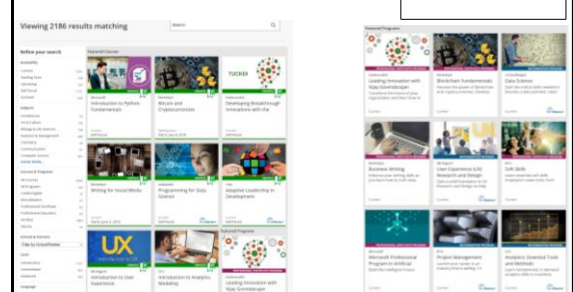
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June 10, 2018

edX

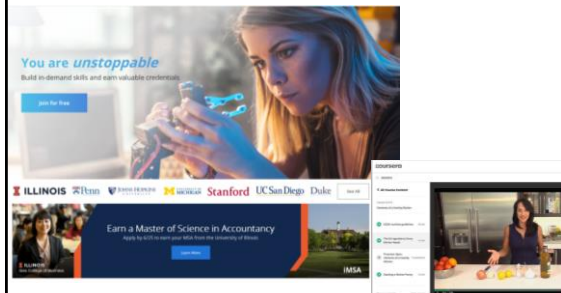
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Email inbox: June 11, 2018

Coursera

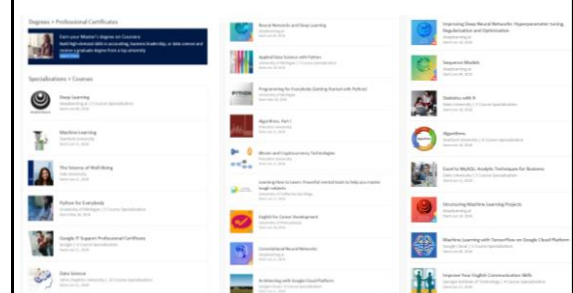
<https://www.coursera.org/>



Email inbox: June 11, 2018

Coursera

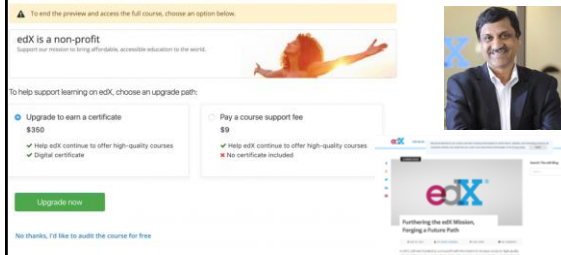
<https://www.coursera.org/>



June 14, 2018

Free MOOCs Face the Music Lindsay McKenzie, Inside Higher Ed

<https://www.insidehighered.com/news/2018/06/14/edx-introduces-support-fee-free-online-courses>



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\$9
✓ Help edX continue to offer high-quality courses
✗ No certificate included

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No thanks, I'd like to audit the course for free

September 26, 2018

The Future of Professional Credentialing ... in an Engagement Announcement

Joshua Kim, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/blogs/technology-and-learning/future-professional-credentialing-engagement>

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 in the *Harvard Business HBX CORe* 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.

October 3, 2018

The EV1 and the MOOC Joshua Kim, Inside Higher Ed

<https://www.insidehighered.com/digital-learning/blogs/technology-and-learning/ev1-electric-car-and-mooc>

The EV1 and the MOOC

Lessons for higher education from the demise of GM's 1990s electric car.

By *Joshua Kim* | October 3, 2018

What to do with the MOOC?

That is a question that many schools that began programs to build and run open online courses in those heady MOOC bubble days of 2012 are asking themselves six years later.

In answering the question about what to do with our MOOC programs, we might want to look to the story of the General Motors EV1.

Remember the EV1?

Maybe you saw the 2006

**October, 2018**

Teaching the World Sarah Fister Gale, CLO

<https://magazine.clomedia.com/issue/october-2018/teaching-the-world/>
<https://magazine.clomedia.com/issue/october-2018/>



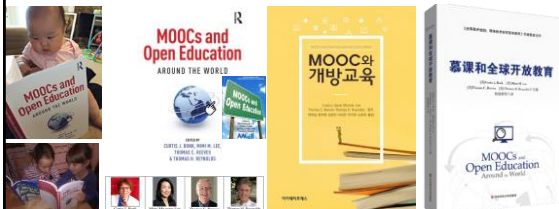
"MOOCs and Open Education Around the World"

Edited by Curt Bonk, Mimi Lee, Tom Reeves, and Tom Reynolds
(Published 2015 in English, 2016 in Korean, and 2018 in Chinese)

Book Endorsement:

"I am truly astonished by the creative energy that the MOOC has unleashed in recent years. This book is a wonderful collection of some of the very best thinking in this very young field." Sebastian Thrun, CEO and cofounder of Udacity, Stanford Professor, and developer of Google Glass and self-driving cars, and instructor to 160,000+ students in a MOOC on AI

Bonk, C. J., Lee, M. M., Reeves, T. C., & Reynolds, T. H. (Eds.). (2015). *MOOCs and Open Education Around the World*. NY: Routledge. (Note: translated to Korean (2016), Academy Press, Paju, Korea; and translated to Chinese (2018), East China Normal University, Shanghai, China. Homepage: <http://moocbook.com/>)



MOOC Trends and Recent Data



December 25, 2016

A Review of MOOCs Stats and Trends in 2016, Dhawal Shah, Class Central

<https://www.class-central.com/report/mooc-stats-2016/>



58M Students
700+ Universities
6850 Courses

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January 22, 2018

A Review of MOOCs Stats and Trends in 2017, Dhawal Shah, Class Central

<https://www.class-central.com/report/moocs-stats-and-trends-2017/>



78M Students
800+ Universities
9.4k Courses

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January 22, 2018

A Review of MOOCs Stats and Trends in 2017, Dhawal Shah, Class Central

<https://www.class-central.com/report/moocs-stats-and-trends-2017/>

CLASS CENTRAL

Growth of MOOCs



By the Numbers: MOOCs in 2017



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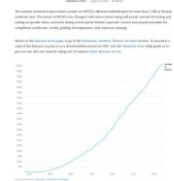
August 19, 2018

Top 5 MOOC Providers by Number of Registered Users, 2018

Almanac 2018, Chronicle of Higher Education
<https://www.chronicle.com/article/Top-5-MOOC-Providers-by-Number/244090?cid=cp216>



Cumulative Growth in Number of MOOCs, 2011-18



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August 19, 2018

Top 5 MOOC Providers by Number of Registered Users, 2018

Almanac 2018, Chronicle of Higher Education
<https://www.chronicle.com/article/Top-5-MOOC-Providers-by-Number/244090?cid=cp216>

Rank	Provider	Registered users
1.	Coursera (U.S.)	30.0 million
2.	edX (U.S.)	14.0 million
3.	XuetangX (China)	9.3 million
4.	Udacity (U.S.)	9.0 million
5.	FutureLearn (Britain)	7.1 million

Showing 1 to 5 of 5 entries

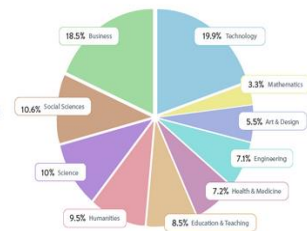


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Subject areas (January 22, 2018)

CLASS CENTRAL

Course Distribution by Subject



By the Numbers: MOOCs in 2017



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August 19, 2018**Top 5 MOOC Providers by Number of Registered Users, 2018**

Almanac 2018, Chronicle of Higher Education

<https://www.chronicle.com/article/Top-5-MOOC-Providers-by-Number/2440907cid=cp216>

Rank	Subject	Percentage
1	Technology	20.7%
2	Business	15.0%
3	Social sciences	10.0%
4	Science	9.8%
5	Humanities	9.4%
6	Education and teaching	8.4%
7	Health and medicine	7.2%
8	Engineering	7.2%
9	Art and design	5.2%
10	Mathematics	3.2%
11	Personal development	3.2%

Showing 1 to 11 of 11 entries

Note: "Technology" includes computer science, programming, and data science. Percentages are rounded, but subjects were ranked before rounding. Center



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June 15, 2017**Massive List of MOOC Providers Around The World, Class Central**

JMOOC, K-MOOC, and T-MOOC?

<https://www.class-central.com/report/mooc-providers-list/>

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MOOC Research Gaps and Summaries**2015****Instructional quality of Massive Open Online Courses (MOOCs).**

Margaryan, Bianco, & Littlejohn, Computers & Education, 80, 77-83.

<https://www.sciencedirect.com/science/article/pii/S0306987615000788>

"As MOOCs proliferate, drawing in increasing numbers of faculty and learners worldwide, the issue of their instructional quality becomes increasingly pressing." (p. 82)



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August 2017**A Contemporary Review of Research Methods Adopted to Understand Students' and Instructors' Use of Massive Open Online Courses (MOOCs)**

Ruiqi Deng and Pierre Benckendorff

TABLE III: PERSPECTIVE OF THE ARTICLE (N=13)

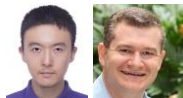
Perspective	Frequency	Per cent
Student	48	90.6
Instructor	4	7.5
Both student and instructor	1	1.9

TABLE IV: NUMBER OF RESEARCH METHODS USED FOR DATA COLLECTION (N=13)

Number of Research Methods Used	Frequency	Per cent
One	36	67.9
Two	15	28.3
Three or above	2	3.8

TABLE V: TYPE OF RESEARCH METHODS USED FOR DATA COLLECTION (N=13)

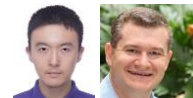
Type of Research Methods Adopted	Frequency	Per cent
Surveys	31	44.9
Interviews	14	20.0
Log files	12	17.4
Other qualitative methods	12	17.4



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August 2017**A Contemporary Review of Research Methods Adopted to Understand Students' and Instructors' Use of Massive Open Online Courses (MOOCs)**Ruiqi Deng and Pierre Benckendorff, *International Journal of Information and Education Technology*, 7(8), 601-607.

"There are a number of research avenues which could be explored based upon the findings of this study. First, additional research strategies should be considered to understand students' and instructors' experience in using MOOCs." (p. 605)



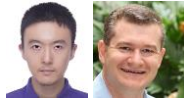
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August 2017

A Contemporary Review of Research Methods Adopted to Understand Students' and Instructors' Use of Massive Open Online Courses (MOOCs)

Ruiqi Deng and Pierre Benckendorff, *International Journal of Information and Education Technology*, 7(8), 601-607.

"Second, triangulation of a wider range of research methods and data source should be undertaken. Beyond triangulation of surveys and interviews or log files, MOOC scholars are encouraged to combine other research methods to triangulate findings, such as diary studies and focus groups." (p. 605)



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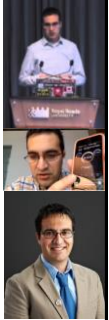
Quotes: Veletsianos et al. (2015-2016)

"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) 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, notetaking and contexts surrounding content consumption. *BJET*, 46(3), 570-587.

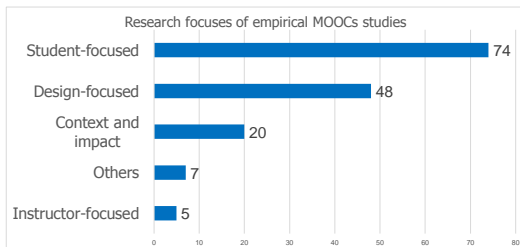
"*Dependence on Particular Research Methods May Restrict our Understanding of MOOCs.*"

George Veletsianos & Peter Shepherdson's Study (2016). Systematic Analysis and Synthesis of the Empirical MOOC Literature Published in 2013-2015. *IRRODL*. <http://www.irodl.org/index.php/irodl/article/view/2458/2855>



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Systematic Review of Research Methods in MOOCs (2014-2016) (Zhu, M., Sari, A., & Lee, M. M., 2018)



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Systematic Review of Research Methods in MOOCs (2014-2016) (Zhu, M., Sari, A., & Lee, M. M., 2018)

	Quantitative	Qualitative	Mixed methods
Student-focused	39	9	26
Design-focused	19	12	17
Context and impact	9	6	5
Instructor-focused	0	3	2



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Systematic Review of Research Methods in MOOCs (2014-2016) (Zhu, M., Sari, A., & Lee, M. M., 2018)

No.	Journal	Total
1	International Review of Research in Open and Distance Learning (IRRODL)	31
2	Computers & Education	12
3	British Journal of Educational Technology	9
4	Online Learning	7
5	Distance Education	5
6	Educational Media International	5
7	Internet and Higher Education	5
8	Journal of Computer Assisted Learning	5
9	Computers in Human Behavior	4
10	Open Learning	4
11	Journal of Online Learning and Teaching	3
12	Journal of Asynchronous Learning Network	3



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Systematic Review of Research Methods in MOOCs (2014-2016) (Zhu, M., Sari, A., & Lee, M. M., 2018)

Location of MOOC Research Team Members (2014-2016)

UNITED STATES UK SPAIN AUSTRALIA CANADA	CHINA NETHERLANDS TURKEY TAIWAN CHILE	DENMARK EGYPT GERMANY IRELAND PORTUGAL SOUTH KOREA	BANGLADESH BELGIUM CYPRUS ECUADOR GREECE FINLAND ISRAEL HONG KONG MEXICO NEW ZEALAND SAUDI ARABIA SOUTH AFRICA SWEDEN UAE
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Systematic Review of Research Methods and Topics in MOOCs: Comparing 2014-2016 and 2016-2017 (Zhu, M., Sari, A., & Bonk, C. J., 2018)

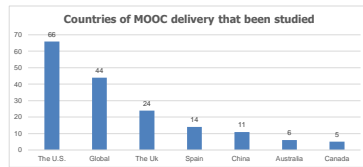


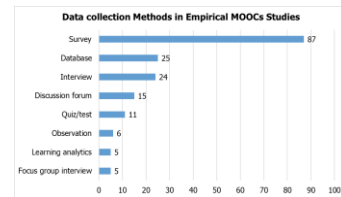
Figure 7. Countries of MOOC delivery in which the research was conducted (2014 – 2017) (n=197) (Note: this figure only includes the main countries)



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Systematic Review of Research Methods in MOOCs (2014-2016) (Zhu, M., Sari, A., & Lee, M. M., 2018)

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



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Implications and Final Comments

"Given the number of participants that MOOCs attract, this study has the potential to provide marked insight into an emerging phenomenon that has immense global, local, and societal ramifications. With such wide impact potential, our research team continues to expand the database of MOOC instructors and courses that we have collected. The goal as we move forward is to determine more about the psychological, instructional, and technological issues, challenges, and opportunities of MOOCs and other emerging types of open online courses and educational experiences."

International Review of Research in Open and Distributed Learning
Volume 19, Number 4

September - 2018

Pushing Toward a More Personalized MOOC: Exploring Instructor Selected Activities, Resources, and Technologies for MOOC Design and Implementation



Curtis J. Bonk¹, Meina Zhu², Minyoung Kim³, Shuya Xu⁴, Rajja Sabar⁵, and Annika R. Sari⁶
¹Indiana University, USA, ²University of West Florida, USA, ³Tringgarlata State University, Indonesia

Self-Directed Learning Framework...



Research Background

- Self-directed learning (SDL) is considered essential to adult education (Garrison, 1997; Merriam, 2001)
- In addition, researchers consider SDL as an essential element in MOOC environments (Bonk et al., 2015; Kop & Fournier, 2010; Terras & Ramsay, 2015)
- Learners expect the instructor to act as a facilitator to provide support for the development of the appropriate SDL skills (Kell & Deursen, 2002; Lunyk-Child et al., 2001)



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Question: Are you self-directed when you take your MOOCs?



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Theory Framework

Garrison's (1997) three dimensions model is one of the popular models, which categorized SDL into three overlapping dimensions:

- (1) self-management (task control);
- (2) self-monitoring (cognitive responsibility);
- (3) motivating (entering and task).



Research Focus and Purpose



Research Background

- However, there is a lack of studies that examine instructional design challenges in creating a MOOC or the issues that emerge during the actual delivery of that MOOC from the perspective of MOOC instructors (Margaryan, Bianco, & Littlejohn, 2015; Ross, Sinclair, Knox, Bayne, & Macleod, 2014; Watson et al., 2016); especially lacking is research on instructor perceptions related to the facilitation of SDL and how they design and deliver MOOCs to facilitate students' SDL.

Research Purpose

This study examined instructors' perceptions of SDL and the design and deliver of MOOCs to facilitate learners' SDL. The purpose is to find out MOOC instructors' perceptions of SDL and how MOOC instructors put considerations related to facilitating SDL skills into MOOC designs and delivery.

Research Questions

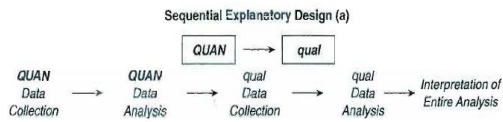
1. How do MOOC instructors perceive participants' SDL skills?
2. How do MOOC instructors perceive their facilitation of participants' SDL skills?
3. How do instructors design and deliver MOOCs to facilitate participant SDL skills?

Research Design



Research Methods-Design

Sequential mixed methods design (Creswell & Clark, 2007)



Research Methods-Data collection

Data Collection:

(1) surveys, (2) interviews, and (3) course reviews.

Participants:

- 48 survey participants (10% response rate)
- 4 interviewees



Research Methods-Data collection

MOOC instructors interviewed

No.	Countries	Subject areas	Platforms
1.	The UK	Computer Science	Kadenze
2.	The UK	Literacy	FutureLearn
3.	The U.S.	Finance	Coursera
4.	Canada	Geography	Coursera

Research Methods-Data analysis

RQs	Data Sources	Data analysis
RQ1	Survey	Descriptive statistics
	Interview	Content analysis (Elo & Kyngäs, 2008)
	MOOC review	
RQ2	Survey	Descriptive statistics
	Interview	Content analysis
	MOOC review	
RQ3	Interview	Content analysis
	MOOC review	

Demographic Information



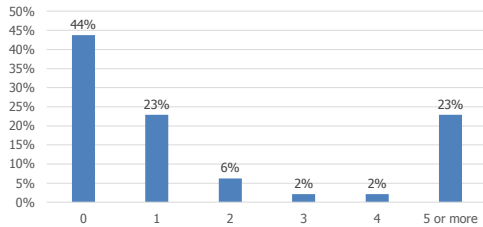
Study Results

Final Result



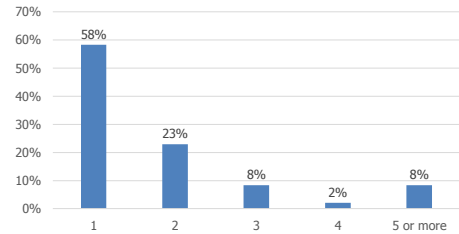
Prior Online or Blended Experience

Number of online or blended courses instructors have designed



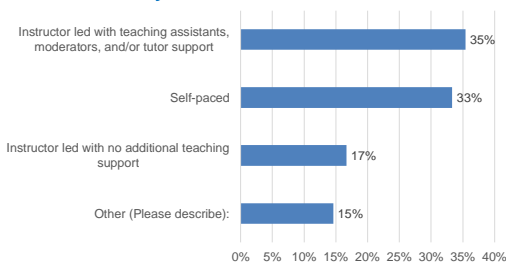
Prior MOOC Experience

Number of MOOCs instructors have designed



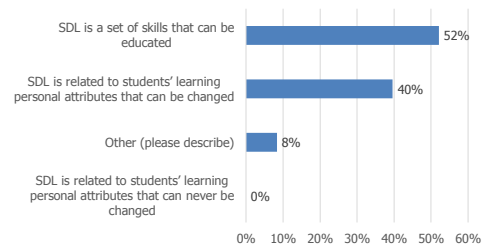
MOOC Delivery Format

Delivery format of instructors' MOOC



RQ1:MOOC instructors' perceptions of self-directed learning

Perceptions of self-directed learning (SDL) skills



RQ1:MOOC instructors' perceptions of self-directed learning

One instructor from the UK shared one example of students who have high SDL.

I guess to me it gets really exciting to look at how a number of those students have done projects that really go beyond the simple examples that I showed in lecture, and beyond the simple things up they were asked to do in the assignments.

You know they've taken them into the real world... One student who, during the presidential election made a presidential debate voiced motion classifier, that you could run. And it would tell you whether candidates were being angry or not. It was just like really fun stuff that people did.

RQ1:MOOC instructors' perceptions of self-directed learning

Another instructor from the UK mentioned the his students with high SDL skills:

We had several students who said this is the 10th or 15th MOOC I have taken. Within a body of students who a very much learning junkies, who are enjoy doing all kinds of different MOOCs. One of them told us I just like all kinds of different things. But you have to be quite disciplined.

RQ1: MOOC instructors' perceptions of self-directed learning

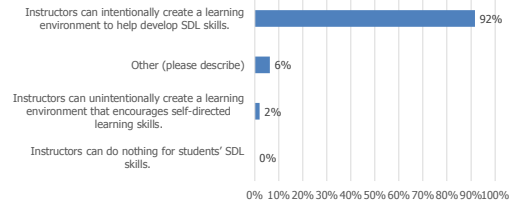
One instructor from Canada mentioned the he has elder students with high SDL skills:

We have a very number of sort of sixty plus, retired people taking the course. They're pretty motivated.



RQ2: MOOC instructors' perceptions of their role in facilitating SDL skills

Perceptions of instructor's role in facilitating students' self-directed learning (SDL) skills



RQ2: MOOC instructors' perceptions of their role in facilitating SDL skills

One instructor from the UK stated:

I mean instructors can absolutely help, and, furthermore, I think the architecture of the MOOC itself that really helped. I think is common practice now, for instance, **is to chop up video isn't a ten-minute chunk so that it's really easy for students to watch a little bit at a time, to watch it on the go**, also you know [you will] be able to return to a subject that they maybe didn't understand or the first time...

Similarly, having things like **suggested deadlines** where it's something that's used as a piece of a way to motivate students to do the next thing, even though there's not any real consequences if they're not doing it.

RQ2: MOOC instructors' perceptions of their role in facilitating SDL skills

Another instructor from the UK stated that his

responsibility with SDL is limited, but he can help in certain ways:

I think my responsibility with SDL was quite limited.

My main responsibility is to provide good material... We also fell a mission of showcase that we are in the cutting-edge. We were very modern. We wanted students to realize that and engage with that. Those are the kind of general experiences of responsibility.

RQ2: MOOC instructors' perceptions of their role in facilitating SDL skills

On the other side, the instructor from the Canada rely more on students motivation in SDL:

I tried. But I also think it's probably their [students] responsibility to be motivated. So I just make myself available and encourage you know people to complete the course if they get stuck on something to ask questions or to move on. Yeah. It's meant to **be interesting and fun** and you know. There's no life or death decision that hinges on whether you complete this or not. It's there you know up to you. If you're not interested in it anymore, you might stop right.

RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

The top five SDL skills that their MOOCs facilitated included:

- (1) motivates students to **learn new information** (M=4.38);
- (2) helps the student **critically evaluate new ideas** (M=4.06);
- (3) helps the student be **in control** of his/her learning (M=4.06);
- (4) helps the student to be able to **find out information** related to learning content for him/herself (M=3.94);
- (5) helps the student **embrace a learning challenge** (M=3.92).

However, it seems that their MOOC designs have limited influence on students' management skills (e.g., managing time and learning resources) (M=3.38) and setting strict time frames for learning (M=3.25).

MOOC Instructor Perceptions of the Importance of Different SDL Skills for MOOC Participants

SDL skills	Avg.
Q17. motivates students to learn new information	4.38
Q20. helps the student critically evaluate new ideas	4.06
Q24. helps the student be in control of his/her learning	4.06
Q29. helps the student be able to find out information related to learning content for him/herself	3.94
Q19. helps the student embrace a learning challenge	3.92
Q18. helps the student develop a need to learn	3.90
Q16. helps the student to be confident in his/her ability to search out information	3.88
Q27. helps the student be responsible for his/her learning	3.88
Q26. helps the student evaluate his/her own performance	3.83
Q22. helps the student seek the deeper reasons for the facts	3.77
Q11. helps the student to be self-disciplined	3.73
Q12. helps the student to be organized	3.71
Q21. helps the student learn from his/her mistakes	3.71
Q28. helps the student be able to focus on a problem	3.71
Q23. helps the student be willing to seek different ways to solve difficult problems	3.69
Q30. helps the student have high beliefs in his/her abilities of learning	3.65
Q15. helps the student to prioritize his/her study (e.g., determine the order in which the studies are to be done)	3.60
Q25. helps the student set his/her own learning goals	3.52
Q14. helps the student to have good management skills (e.g., managing time and learning resources)	3.38
Q13. helps the student to set strict time frames for learning	3.25



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RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

An interview with one instructor from Canada revealed a more **behaviorally-based tactic** that some MOOC instructors use to facilitate students' SDL skills.

He argued that "I think our **quizzes at the end** are helpful. And I think...**we have reading lists and I update the reading lists for the course on a regular basis.**" He added that they "direct people to that" and send reminders through the forum and emails.



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RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

One instructor from Canada mentioned he sent students **message to remind students:**

You lose people at the front and so one of the things that I've started to try to do is, because I know who those people are is to sort of send messages out saying "hey, if you haven't started yet just sign up again blah blah blah" and get people started. **I figure once we get people started we can keep them in the course like we have a good track record of keeping people in the course.**



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RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

One instructor from the UK mentioned she encouraged student reflection:

One of the things that I tried to do was to give people opportunities for **different types of engagement with explicit opportunities for reflection built-in.** So, for instance. You know for the second or third assignment, part one is you're asked to go through a set of exercises on your own following from examples in lecture. At the end **you're asked some questions about which parts of this were hard, what challenges did you encounter, how would you approach solving those challenges, how successful were you.**



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RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

One instructor from the US mentioned she tried to **combine the content with student personal life:**

one of the things that we really tried to put in was opportunities for people to take what they were learning and to **reflect back how it impacted their own lives.** So, we asked people about activities the case studies and things always go back to you...then we say, in your own situation what would you do? So, in that sense I think that helps people to think about not only what's the right answer to a quiz question, perhaps but also how does what I'm learning affect me and how does that what I want to still learn more about. We made this really personal and applicable to them.



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RQ3: How do instructors design and deliver MOOCs to facilitate participant SDL skills?

One instructor from the US mentioned she used **interactive interview to engage students in MOOC:**

And then we also have these little one-minute like on the street interviews to also try to help students engage with like what's happening. To me so it wasn't all talking heads because that just we didn't think that was going to be helpful for the self-directed learning at all. So, we did try to really think about how could we get people involved.



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Discussion, Significance, and Conclusion



Discussion of Results

1. Instructors considered SDL as a skill that can be educated.
2. Most of them felt that MOOC instructors can intentionally create learning environments that foster the development of SDL skills as Kell and Deursen (2002) suggested.
3. In terms of their design and delivery practices to facilitate SDL via the MOOC, it seems that the impact is mainly on learner self-monitoring and motivation. However, the impact on students' self-management skills seems limited.



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Significance & Conclusion

1. This study offers insights into MOOC design for SDL.
2. The findings might offer implications for instructors or instructional designers concerning the design of MOOCs for self-directed learners.
3. Additionally, the results also provide guidance for MOOC learners on the SDL strategies that they need to be successful.



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Limitations and Future Directions



Limitations...

1. No student perspective or voice
2. Small sample (48 surveyed; 4 interviewed)
3. Self-report survey data
4. No direct observations



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Future Research Might Explore...

1. Student perceive their SDL in MOOC.
2. Support needed from learners in terms of SDL in MOOCs.
3. MOOC instructional professional development and instructor teaching skill changes from designing MOOCs.



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Any Questions?



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