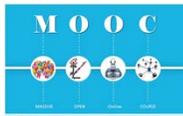


**MOOC Research Looking Back:  
MOOC Research Looking Forward**

Meina Zhu and Curtis J. Bonk  
IST Department, Indiana University  
AECT DDL, January 24, 2018



**2015**

**Instructional quality of Massive Open Online Courses (MOOCs).**

Margaryan, Bianco, & Littlejohn, *Computers & Education*, 80, 77-83.  
<http://www.sciencedirect.com/science/article/pii/S0306987614001174>

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

2

**October 2015**

**Predictors of Retention and Achievement in a Massive Open Online Course**

Greene, Oswald, & Pomerantz, *American Educational Research Journal*, 52(5), 925-955.  
<http://aer.sagepub.com/content/52/5/925>

“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)

3

**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.  
<http://online.library.wiley.com/doi/10.1111/bjet.12297/abstract>

“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.)

4

**September 2016**

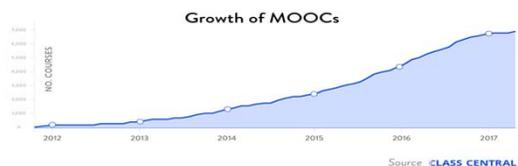
**MOOCs, Graduate Skills Gaps, and Employability: A Qualitative Systematic Review of the Literature**

David Santandreu Calonge and Mariam Aman Shah, *IRRODL*, 77(5), 67-90.  
<http://www.irrodl.org/irrodl/77vol5/issue775/2881>

“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.)

5

**The Numbers: MOOCs in 2016 (Dec 25<sup>th</sup>, Class Central)**



Source: CLASS CENTRAL

**58M** Students  
**700+** Universities  
**6850** Courses

MOOCs in 2016: Analysis by Class Central

6

### Cumulative Growth in Number of MOOCs (2011-2017)

Month	Number of MOOCs
October 2011	3
June 2012	34
December 2012	108
June 2013	446
December 2013	859
June 2014	1,524
December 2014	2,090
June 2015	2,940
December 2015	4,007
June 2016	5,397
December 2016	6,563
June 2017	7,465

7

### Top 5 MOOC providers by number of registered users (2017)

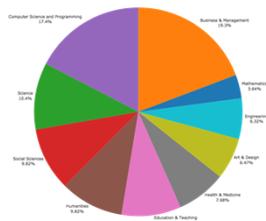
Rank	Provider	Registered users
1.	Coursera (U.S.)	27 million
2.	edX (U.S.)	11 million
3.	XuetangX (China)	7 million
4.	FutureLearn (Britain)	6.3 million
5.	Udacity (U.S.)	6 million

8

### August 17, 2017 By the Numbers: MOOCs in 2016 Class Central, Dhawal Shah

<https://www.moocx.com/articles/0/report/0/mooc-stats-2016/>

Course Distribution by Subjects



### August 17, 2017 By the Numbers: MOOCs in 2016 Class Central, Dhawal Shah

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

#### Providers

With 1700+ active courses, Coursera is still the largest MOOC provider even after discontinuing [hundreds of courses](#).

EdX is not far behind with 1300 courses, followed by FutureLearn with 480 courses.

After this there is Latin American MOOC provider Mirfada X with 350 courses in Spanish followed by XuetangX with 300+ courses in Chinese.

### August 7, 2017

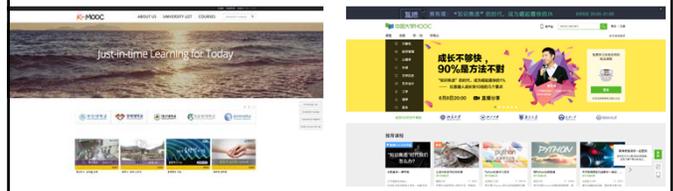
#### FutureLearn and Coventry University to Roll Out 50 Online Degrees (Last year Deakin University announced a similar partnership with FutureLearn) Class Central, Dhawal Shah

<https://www.class-central.com/report/futurelearn-coventry-university-roll-50-online-degrees/>

Degree	Provider	University	Cost
MS Computer Science	Udacity	Georgia Tech	\$6,600
MS Analytics	edX	Georgia Tech	\$10k
MBA	Coursera	University of Illinois	\$22k
MS CS Data Science	Coursera	University of Illinois	\$19.2k
MS Accounting	Coursera	University of Illinois	\$27.2k
Masters in Innovation and Entrepreneurship	Coursera	HEC Paris	€20k
Cyber Security (Masters)	FutureLearn	Deakin University	£24k
Development and Humanitarian Action (Masters)	FutureLearn	Deakin University	£24k
Professional Practice: Information Technology (Masters)	FutureLearn	Deakin University	£24k

### 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 — [course163.org](http://course163.org/) / China Class Central, Dhawal Shah



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



**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**  
<https://www.class-central.com/news/50-online-degrees/>



**MOOC Study #1: Looking Back**

A Systematic Review of Research Methods and Topics of the Empirical MOOC Literature (2014-2016)

Zhu, M., Sari, A., & Lee, M. M. (2018). A Systematic Review of Research Methods and Topics of the Empirical MOOC Literature (2014-2016). *The Internet and Higher Education*.



15

**Research Background**

- MOOC offerings continue to surge (Almanac, 2017-2018; Shah, 2016)
- A scarcity of systematic analysis of empirical studies of recent MOOC research that targets all of the following aspects: research methods adopted by MOOC researchers, the research topics, the geographic locations of MOOC researchers, and the regions of the MOOC delivery.

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**Research Purpose & Questions**

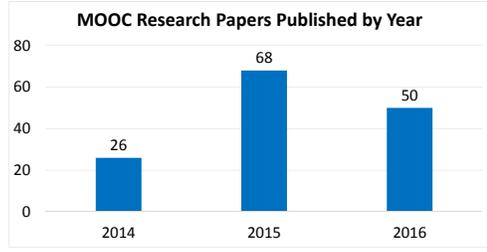
To gain a deeper and more diverse understanding of the current MOOC phenomenon by reviewing recent articles.

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

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**Context** (Zhu, M., Sari, A., & Lee, M. M., 2018)

**MOOC Research Papers Published by Year**



Year	Number of Papers
2014	26
2015	68
2016	50

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## Context (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

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## Context (Zhu, M., Sari, A., & Lee, M. M., 2018)

Location of MOOC Research Team Members (2014-2016)



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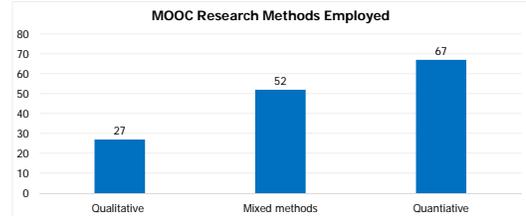
## Context (Zhu, M., Sari, A., & Lee, M. M., 2018)

Country of Origin of MOOC Delivery (2014-2016)



## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

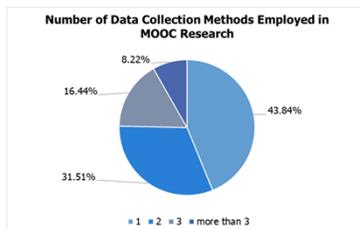
• RQ1: What are the research methods researchers employed in empirical MOOC studies?



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## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

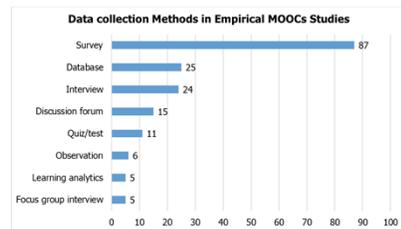
• RQ1: What are the research methods researchers employed in empirical MOOC studies?



23

## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

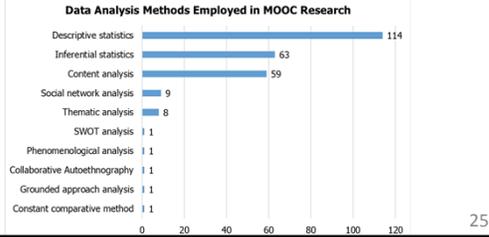
• RQ1: What are the research methods researchers employed in empirical MOOC studies?



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## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

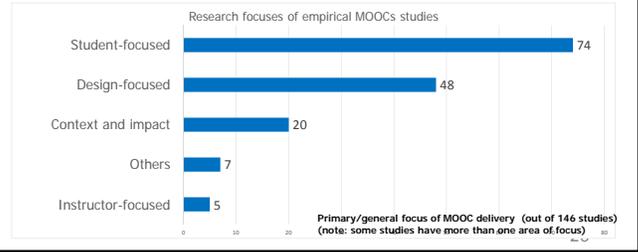
- RQ1: What are the research methods researchers employed in empirical MOOC studies?



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## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

- RQ2: What are the research focuses in MOOC studies?



## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

Research methods used in each research topic (out of 146 studies)

	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

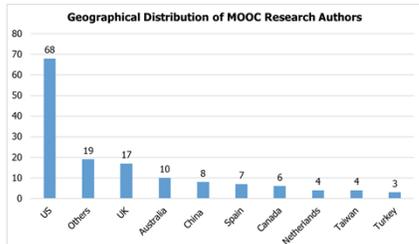
27

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



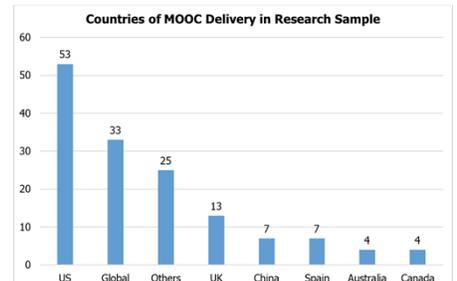
## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)

- RQ3: How are researchers of empirical MOOC studies geographically distributed?



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## Findings (Zhu, M., Sari, A., & Lee, M. M., 2018)



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## MOOC Study #2: Looking Forward

MOOC Instructor Experiences and Pedagogical Choices:  
Documenting Key Instructional Design Considerations and Challenges  
Zhu, Bonk, & Sari (manuscript in review)



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## Research Background

- MOOCs can be beneficial to both learners and instructors (Hew & Cheung, 2014)
- Instructional design is critical for online learning (MOOC) (Johnson & Aragon, 2003; Phipps & Merisotis, 1999)
- Instructors are one of the five main components of MOOCs; the other four are learners, topic, material, and context (Kop, 2011)
- Few studies have examined instructional design from MOOC instructors' perspectives (Margaryan et al., 2015; Ross, Sinclair, Knox, Bayne, & Macleod, 2014; Watson et al., 2016)

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## Research Purposes & Questions

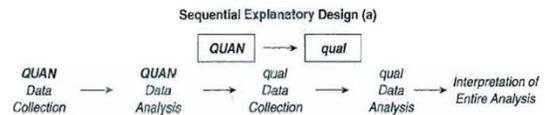
Research Questions:

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?

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## Research Methods-Design

- Sequential mixed methods design (Creswell & Clark, 2007)



34

## Research Methods (Zhu, Bonk, & Sari, in review)

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

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## Research Methods

MOOC instructors interviewed

No.	Countries	Subject areas	Platforms
1.	The U.S.	Language and Literacy	Coursera
2.	The U.S.	Education	Coursera
3.	The U.S.	Education	Canvas
4.	The U.S.	Chemistry	Coursera
5.	UK	Public health	FutureLearn
6.	UK	Language and Literacy	FutureLearn
7.	Hong Kong	Math	Coursera
8.	Mainland China	Math	Coursera
9.	Canada	Psychology	Coursera
10.	Australia	Public Health	Open2Study
11.	Sweden	Computer Science	edX
12.	India	Management	edX

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## Data Analysis

RQs	Data Sources	Data analysis
RQ1	Survey-multiple-choice questions	Descriptive statistics
	Survey-open-ended questions	Content analysis (Elo & Kyngäs, 2008)
	Interview	Content analysis
	MOOC review	Content Analysis
RQ2	Survey-multiple-choice questions	Descriptive statistics
	Survey-open-ended questions	Content analysis
	Interview	Content analysis
RQ3	Survey-multiple-choice questions	Descriptive statistics
	Interview	Content analysis

37

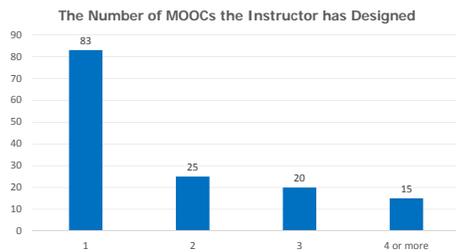
## Analytical Framework

Alario-Hoyos, Pérez-Sanagustin, Cormier, and Kloos' (2014) MOOC design considerations

Design considerations	Example (Alario-Hoyos et al, 2014)
Resources	Technology resources and human resources
Pedagogy	Motivate students, participatory learning, and collaborative community etc.
Logistics	Time required while planning MOOCs and peer assessment

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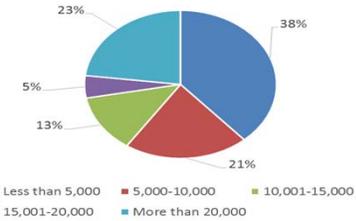
## Context



39

## Context

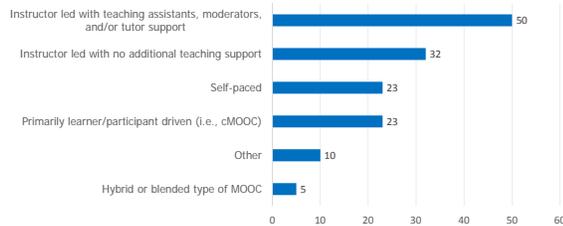
The Number of Learners Enrolled in Recent MOOC



40

## Context

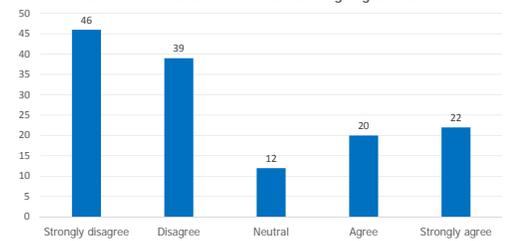
MOOC Delivery Format



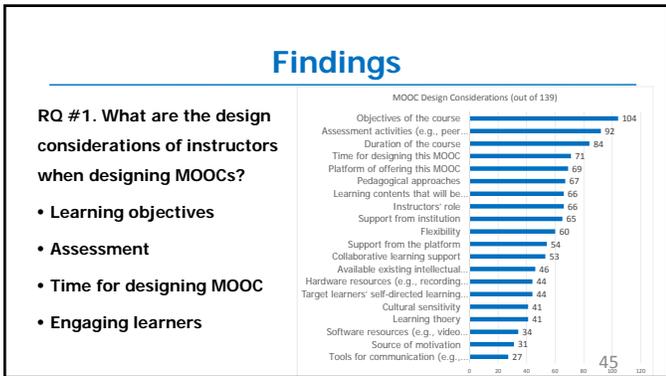
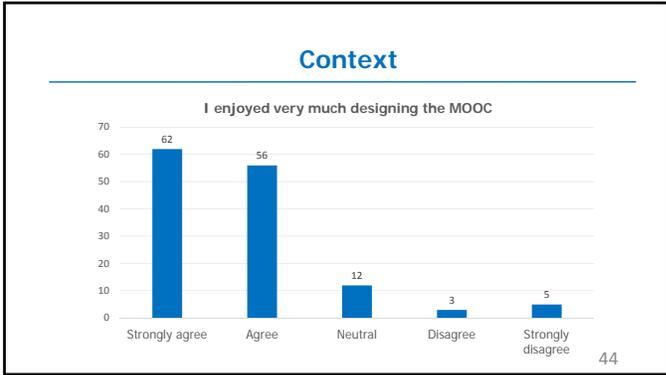
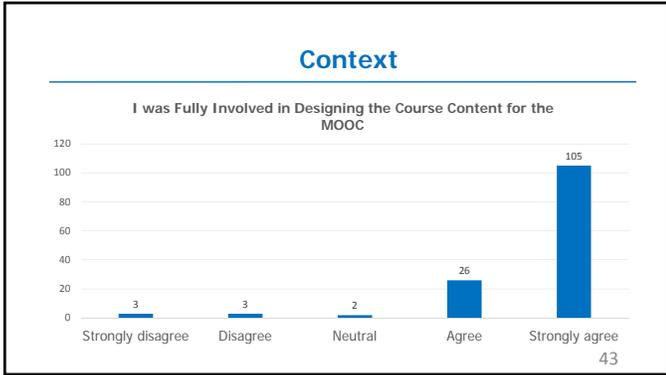
41

## Context

I Have Many Prior Experiences Related to Designing Full Online or Blended Courses Prior to Designing the MOOC



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### Findings

- Engaging learners (One of the 12 interview themes)

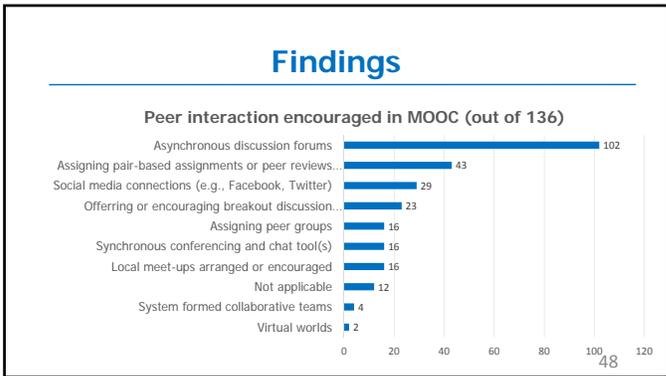
One instructor from the UK mentioned:

**“When we were designing, we tried to have a hook for each week, a reason for learners to come back each week. So, we built that into our learning design. So what's going to be the big thing that makes you want to join the course in Week One.”**

### Findings

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

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



## 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."

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## Findings

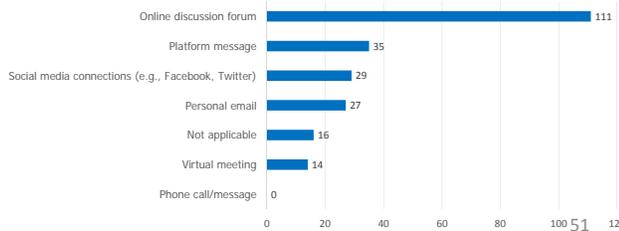
RQ #1-2. How do MOOC instructors design the course to encourage interaction between instructor and learners?

- Online discussion forums
- Platform messages
- Social media connections

50

## Findings

Instructor-learner interaction encouraged in your MOOC (out of 136)



51

## Findings

- Online discussion forum

One instructor mentioned:

"**We monitor discussion boards as well.** That would not necessarily be like formal assessment. We're just wondering how students are engaging with material. So it's **an indicator for us but not a measurable one**"

52

## 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."

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## 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.**"

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## Findings

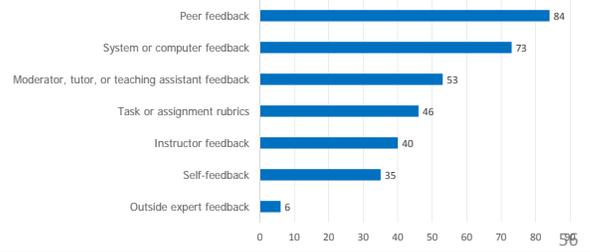
### Ways to monitor learners' learning



55

## Findings

### Ways that learners get feedback



56

## 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**.”

57

## Findings

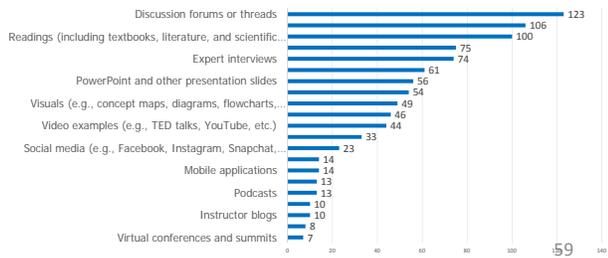
### RQ #1-3. How do MOOC instructors design the course to encourage learner-content interaction?

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

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## Findings

### Learner-Content Interaction in MOOCs (out of 136)



59

## Findings

### One professor from the U.S. stated that:

“Besides **videos**, there was a **suggested book**.”

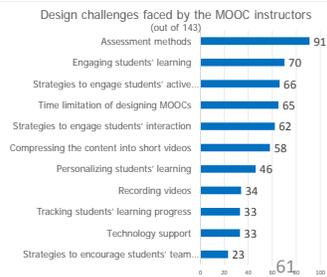
Another instructor noted that she used visuals in her MOOC “I had a **whole lot of graphical material** that I used in class. And I had got them from one of the texts that were published in the area and had been allowed to use them, because I was recommended the textbook.”

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## Findings

RQ #2. What challenges do instructors perceive when designing MOOCs?

- Assessment methods
- Engaging students' learning
- Time limitation



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## Findings

- Time limitation (One of the 12 interview themes)

One instructor mentioned:

"I think one of the challenges is time. It does take a lot of time to get the videos done. I did not get a course release when I was doing, and it was a side project at the same time as my regular load. I think it gets to be concentration and balance about what's going on."

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## Findings

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



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## Findings

- Team work (One of the 12 interview themes)

Teamwork. It was amazing to have such support on the development side. There was never a time where I wrote a script for a MOOC. It was like: "OK. Let's go with this." There was always a discussion... We think examples to clarify that for visual learners or learners who respond better to auditory cues. So the challenges were never greater than the team here.

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## Discussion

- The pedagogical factors were the primary design considerations and challenges in MOOC design (Watson, S. L., Loizzo, J., Watson, W. R., Mueller, C., Lim, J., & Ertmer, P. A., 2016).
- The assessment and engagement strategies are the main considerations as well as challenges (Hew & Chung, 2014).
- The time limitation of creating MOOCs was the primary logistical consideration (Hew & Chung, 2014; Watson et al., 2016).

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## 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.

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## Conclusions

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- 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.

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## Limitations

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- Limited to MOOCs which are mainly delivered in English
- Volunteer bias
- Only review 12 MOOC Courses

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## Implications

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- For MOOC instructors:
  - May inform them about what other instructors are most concerned with and tend to target in MOOC design as well as their efforts in addressing the possible design challenges.
- For instructional designers:
  - May help them in the consulting process.

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## Future Studies

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- Assessment design
- Engaging activity design
- Course design that supports self-directed learning
- Further observations and analyses are needed to better understand how MOOC instructor design and deliver their MOOCs to encourage online interaction and learner success.

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**Thank you!**

**Questions and Comments...**

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AECT Webinar, January 24, 2018

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Curtis J. Bonk, IU, [cjbonk@indiana.edu](mailto:cjbonk@indiana.edu)



MOOC RESEARCH

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