

# Challenges of Teaching in Massive Open Online Course

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**Abstract.** MOOC or Massive Open Online Course had gathered considerable interest as a new approach towards leveraging technology in higher education. It can be identified as a disruptive innovation in e-learning and MOOC research also had grown rapidly in terms of peer-reviewed studies over this few years. But until now, majority of MOOC based studies focuses on the learner's perspectives. Surprisingly, there were limited studies towards MOOC instructor who plays important role in MOOC success. One of the essential aspects that need to be reviewed are the recent challenges faced by the instructor. Challenges are important because it is closely related to the cost of teaching MOOC. Based from the previous studies, they are not focuses exclusively on challenges faced by instructor. It mostly based on instructor's overall experiences and also as secondary consideration behind learner's perspectives. Besides that, they do not provide a comprehensive list of recent challenges that are vital towards understanding instructor's problems in teaching MOOC. This study addressed these issues by investigating the literature on recent challenges faced by instructors in teaching MOOC. It is accomplished by conducting a systematic literature review on the recent literature from 2015 to 2018. 30 MOOC instructor perspectives studies were found where 12 studies are selected as primary studies. The findings offer current statistics of studies that provide recent challenges faced by instructors. 35 recent challenges had been identified we categorize them to 6 main themes of challenges.

## 1. Introduction

Every now and then, disruptive innovation come along that can potentially promise to change higher education landscape. One such recent innovation is the Massive Open Online Course (MOOC). MOOCs can be considered as a disruptive innovation in e-learning because it can revolutionize and also threaten the traditional higher education model nowadays. There are more than 1500 of peerreviewed studies in 2015 compared to 50 studies in 2013 [1]. However, majority of MOOC studies emphasize on learner's perspectives such as their motivation and behavior patterns and teaching practices that best serve them [2]. But, little attention has been given towards MOOC instructor perspectives, who also play an important role in MOOC. It is vital to understand the instructor's experiences especially the recent challenges that come in teaching MOOC. Besides that, there has been little effort to systematically review and synthesize these studies, in order to provide a clear view of recent challenges for academics and practitioners. Therefore, this study uses a systematic review approach to explore the recent challenges faced by MOOC instructors. It systematically collects, analyses and synthesizes all the current studies and provides a comprehensive list of the recent challenges. To achieve the main objective of this study, we propose two key questions. Answering these questions can help the reader understand the recent challenges, and explain the characteristics of the studies in this area. The research questions of this study are stated in section 4.



Overall, the contribution of this study is twofold. First, through the analysis of 12 of 30 studies, this review provides the readers with a comprehensive understanding of the recent challenges faced by MOOC instructors. Second, for practitioners, this review brings them up to date on the current state of studies that focused on challenges of MOOC instructors. The structure of this study is as follows: the second and third section will discuss the problem background and the review method. The fourth section reveals the SLR results. Then, the fifth section will be the discussion and conclusion.

## 2. Problem Background

Several topics across MOOC phenomenon had been discussed such as topics on learner's perspectives [3], but topics covering the perspectives of instructors in MOOC are still limited [4]. In fact, SLR that had recently been conducted by [5] also produces results that show the paucity of studies in this topic. This leaves a significant gap in the literature that needs to be addressed because instructors also play a major role in MOOC. Instructor enthusiasm and willingness in teaching and interacting with learners is integral for student's need for competency. It increases positive feeling the learners have with the MOOC and help them stay engaged. Therefore, it is important to address MOOC from the instructor perspectives especially the experiences of MOOC instructor. One of the most important experiences are the recent challenges that instructor faced when teaching in MOOC. The recent challenges faced by instructor are closely related towards the cost of teaching MOOC. If the benefits that the instructor gets from teaching MOOC are not worth the cost that they must tolerate, instructor may reconsider their decision to teach in MOOC [6]. Several researchers have investigated MOOC instructor's challenges but there is limited study that focus only on challenges and provide comprehensive detail about it. Study by [7] identified some challenges such as difficulties to engage large learning communities and workloads involved compared with the monetary rewards. But this study uses secondary data and also focus on the overall experiences of instructor not only on their challenges. There are also study that discussed instructor challenges but done this as secondary consideration to primary focus on the learner's perspectives. The identified challenges include heavy workload [8] and lack of learner's participation [9]. These learner-focused findings present little explanation of the justification behind instructor's challenges. From all the previous studies, we identified some common limitation among them. The first limitation is that it is not focus solely on challenges faced by instructor. It usually based on the overall experiences and also as secondary consideration behind learner's perspectives. The second limitation is they do not provide a comprehensive list of recent challenges faced by instructor. This is partly because of the nature of their focus in the first limitation.

## 3. Review Method

To answer the above questions, this study uses a systematic review approach [10]. Systematic review can be defined as a process of identifying, evaluating, and interpreting all available research relevant to research questions, area of study, or rising phenomenon of interest [11]. This study generally follows [12] review stages. Three main stages are shown in Figure 1 and explained below.

### 3.1. Stage 1: Initial Search

This stage involved developing a research protocol by determining the set of clearly defined research questions, developing the search string (as shown in Figure 1), identifying the bibliographic databases to be used in the searches: Web of Science, Scopus, ScienceDirect, Emerald Insight, SAGE and AIS Electronic Library. Then we conduct searches in the six bibliographic databases to get the initial studies. At this stage, there are no inclusion and exclusion criteria being implemented on the results.

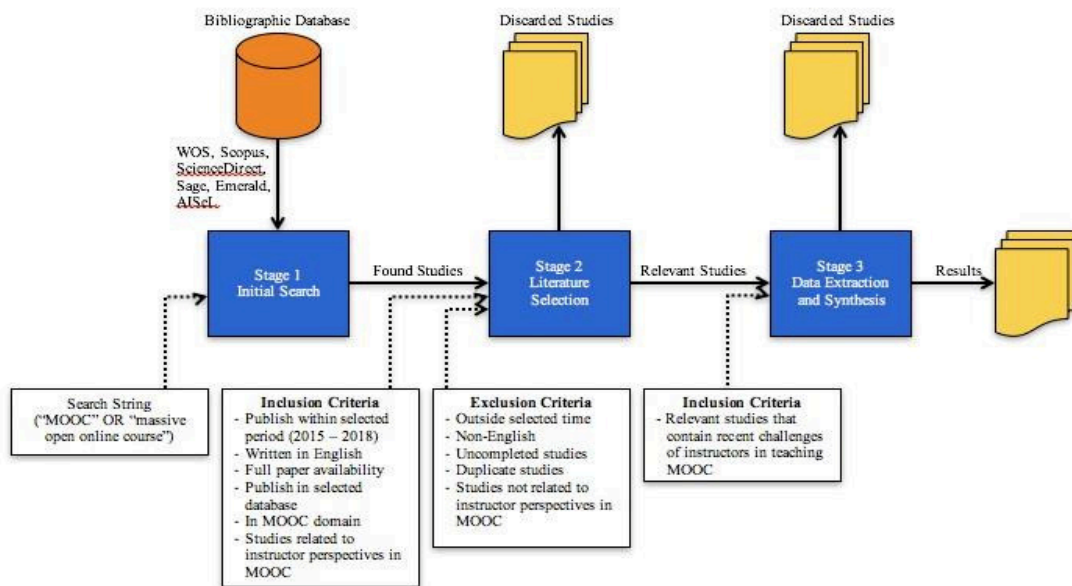


Figure 1. Review protocol.

3.2. Stage 2: Literature Selection

This stage involved analysing the titles, abstracts, and keywords of the studies found in terms of the inclusion criteria: publish within selected period (2015 - 2018), written in English, full paper availability, publish in the selected databases, studies in MOOC domain, and studies related to instructor perspectives in MOOC; and the exclusion criteria: rejecting studies outside selected time, non-English, uncompleted and duplicated studies and studies that not related to instructor perspectives in MOOC. The results of this stage can be seen in Table 1 below.

Table 1. Selected Instructor Perspective Studies & Primary Studies (Challenges)

Bibliographic Database	Instructor Perspective Studies					Primary Studies (Challenges)				
	2015	2016	2017	2018	2015 - 2018	2015	2016	2017	2018	2015 - 2018
WOS	3	5	3	0	11	2	2	0	0	4
Scopus	4	3	6	0	13	1	2	3	0	6
ScienceDirect	1	0	0	0	1	0	0	0	0	0
Emerald	0	0	2	0	2	0	0	1	0	1
SAGE	1	0	2	0	3	0	0	1	0	1
AISel	0	0	0	0	0	0	0	0	0	0
TOTAL	9	8	13	0	30	3	4	5	0	12

3.3. Stage 3: Data Extraction and Synthesis

This stage involved in analysing the full content of the studies found in terms of inclusion criteria: relevant studies that contain recent challenges of instructors in teaching MOOC; and then obtaining them from the bibliographic databases as our primary studies. The results can be seen in Table 1. Then, we designed a data extraction form in order to record all the information accurately based on research framework proposed by [13] and selected items were tailored to our research objectives.

Figure 2 shows that there was average attention given towards challenges recently faced by instructor. The percentage should be higher because the novelty of MOOC makes it a complex and dynamic situation for instructors. They will face many challenges and it is imperative to identify and addressed them accordingly to provide appropriate support for teaching in MOOC.

As shown in Figure 3 and 4, this review majority of studies were published in journals that were indexed in WOS and Scopus. It contributes to the increase importance of this review by ensuring the high quality of primary studies. The publications of studies containing instructor’s challenges in teaching

MOOC have steadily increased from 2015 to 2017. There are no studies publish in 2018 yet, but we posit that it is because it is still early in the year and the result may change if the SLR is conducted later in the year.

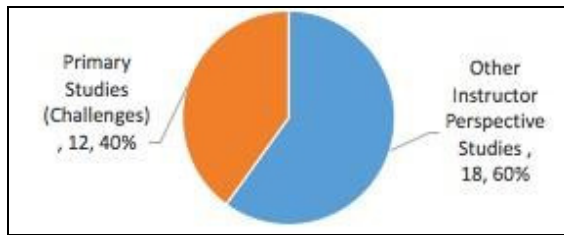


Figure 2. Ratio of primary studies (challenges) with instructor perspectives studies.

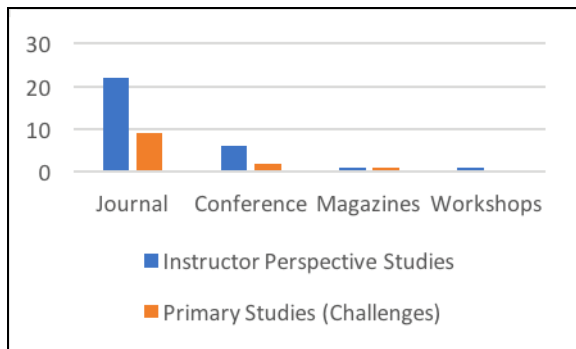


Figure 3. Ratio of primary studies (challenges) with instructor perspectives studies.

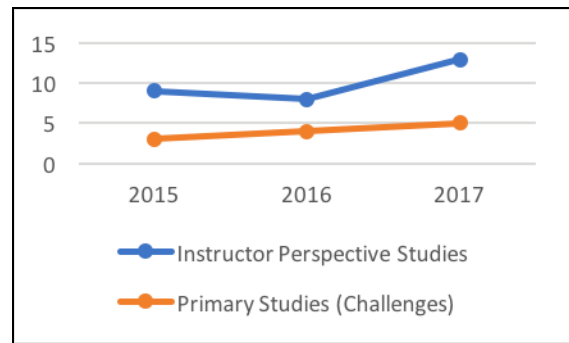


Figure 4. Temporal view publication

#### 4. Research Questions Results

4.1. RQ1: What are the characteristics of the studies? Who are their authors and what method and type of participants that they use in their study?

Table 2 provide the characteristics of the primary studies. It consists of the authors of the studies, type and sources. Besides that, we identified the method used for extracting the challenges and the type of participants. 2 studies used mixed method to extract challenges from instructors, while 10 of them use qualitative method. As for participant’s type, 10 studies participants were instructors that had experience teaching in MOOC, 1 study extracted challenges from MOOC administrator while 1 of the studies had MOOC mentors (students) as their participants.

Table 2. Characteristics of the primary studies

Author / Type / Sources	Method and Participants Types
[14] / Journal / Scopus	Mixed method and facilitators volunteers selected. 203 facilitators responded.
[15] / Magazine / Scopus	Qualitative method, crowdsourced questions about MOOCs and HCOCs and selected top 10 questions. Posed the question towards 3 educators.
[16] / Conference / Scopus	Qualitative method, data collected in two phase, World Café method: 34 staff involved in MOOCs. Interviews: 11 interviews around 15 minutes.
[17] / Journal / SAGE	Qualitative method, 90 minutes’ interviews were conducted with the MOOC 1 instructor within 2 weeks after the MOOC ended via Skype.
[18] / Journal / WOS	Qualitative method, with four focus groups interviews. 20 MOOC mentors belonged to the same institution.
[6] / Conference / WOS	Qualitative method, interviews. 14 interviewees: 2 Full Professors, 6 Associate Professors, 5 Assistant Professors, and 1 Senior Researcher.
[19] / Journal / Scopus	Qualitative method, open-ended 60 minutes’ interviews. Participants: instructor and instructional designer.
[20] / Journal / WOS	Mixed method, online survey, open-ended questions and interviews. 162 professors completed the survey. Interviews with 5 participants.

- [21] / Journal / Scopus           Qualitative method, interviews with 19 instructors, some of whom taught different sections of the same course.
- [22] / Journal / Emerald        Qualitative method, interviews with 4 faculty members who have done 8 or more MOOC.
- [23] / Journal / Scopus        Qualitative method, semi structured interviews is conducted with 2 MOOC administrators.
- [24] / Journal / WOS           Qualitative method, semi structured interviews is conducted with 8 U of T MOOC instructors.

4.2. RQ2: What are the recent challenges faced by instructor in teaching MOOC? What are the main types of challenges that can be identified?

Table 3 provide the recent challenges from 12 identified studies. We identified 35 recent challenges, and it can be categorized to 6 main theme of challenges. The first theme is based on the incompatibility of expectations teaching in MOOC. It consists of 11 challenges. The second theme is based on the time pressure instructors experienced when teaching in MOOC. This consists of 8 challenges. The third theme is the complexity of collaboration in MOOC. This type consists of 5 challenges. The fourth and fifth themes are about the institutional support and the MOOC platform functionality available towards MOOC. Both themes consist of 4 challenges. The last theme is regarding the student influence towards instructors teaching in MOOC. It consists of 3 challenges. These 5 main themes of challenges play a huge role towards instructor’s role when teaching in MOOC. 2 of the challenges found in [14] were not be able to be categorized because it lacks description that was needed to decide a suitable theme for it.

**Table 3.** Recent challenges faced by instructors and their main themes

Recent Challenges	Main Themes of Challenges	Recent Challenges	Main Themes of Challenges
[18] Online exposure	Incompatibility of expectation	[6] Logistical complexities of collaborative work	Complexity of collaboration
[6] Scaling to meet expectations		[14] Design of the MOOC	
Produce appropriate level of material		[16] Adapting to new tools and processes	
[20] Handling volume of anonymous students		[21] Intellectual property	
[24] Clarity of contents			
[14] Massiveness and diversity of participants		[18] Unrealistic workloads	Time pressure
[19] Content difficulty		Underpayment	
[22] Connection with students		[6] Crisis of time management	
Volume of discussion board threads and posts		[20] Time and effort required to produce MOOC	
[17] Feedback on the submitted articles		[20] Distraction to other tasks	
Content that appeals to worldwide learners		[15] Maintenance of MOOC contents	
[6] Extreme criticism and reputation risk	[16] Meeting deadlines		
[19] Accommodating attitudes	[23] Quality of MOOC contents		
Instructors pressures			
[6] Insufficient support (Resources and policy)	Institutional support	[6] Insufficient support (Technological support)	Platform functionality
[20] Institutional support		[20] Technical support for new platforms	
[16] Incentives		[19] Global design	
Investment in resources		[21] Technology integration	

## 5. Discussion and Conclusion

This study provides an overview on recent challenges faced by MOOC instructors. In order to understand it, we set two research questions. A systematic review approach used to answer these questions and the review included studies between 2015 and 2018. After performing multiple processes, 12 studies were selected as primary studies. From the data analysis, 10 studies use qualitative method to extract the challenges. The participants in 12 studies consist of instructors that had experience in MOOC, MOOC administrators and MOOC mentors (students). Besides that, there were 35 recent challenges identified and we categorized it into 6 main themes of challenges. In conclusion, by reviewing the current studies on recent challenges of instructors, we consider this effort could be valuable for both academic and practitioners. This study can help MOOC managers and decision makers in institutions to appropriately support instructors by alleviating the challenges instructor faced and reduce the difficulty teaching in MOOC.

## References

- [1] Breslow L 2016 MOOC research: Some of what we know and avenues for the future. From books to MOOCs? Emerging models of learning and teaching in higher education p 57–67.
- [2] Kizilcec R F and Schneider E 2015 Motivation as a lens to understand online learners: Toward data-driven design with the OLEI scale. *ACM Transactions on Computer-Human Interaction*.
- [3] Kizilcec R F, Piech C and Schneider E 2013 Deconstructing disengagement: analyzing learner subpopulations in massive open online courses In *Proc. of the 3rd int. conf. on learning analytics and knowledge* p 170-179.
- [4] Liyanagunawardena T R, Adams A A and Williams, S. A 2013 MOOCs: A systematic study of the published literature 2008–2012. *The Int. Review of Research in Open and Distributed Learning*, 14(3) p 202–227.
- [5] Veletsianos G and Shepherdson P 2016 A systematic analysis and synthesis of the empirical MOOC literature published in 2013–2015 *The Int. Review of Research in Open and Distributed Learning* 17(2).
- [6] Zheng S, Wisniewski P, Rosson M. B. and Carroll J M 2016 Ask the instructors: motivations and challenges of teaching massive open online courses. In *Proc. of the 19th ACM Conf. on Computer-Supported Cooperative Work & Social Computing* p 206-221 ACM.
- [7] Hew K F and Cheung W S 2014 Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges *Educational Research Review* vol 12 p 45–58 [8] Head K 2013 Massive open online adventure. *Chronicle of Higher Education* 59(34) B24–25.
- [9] Daniel J 2012 Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility. *Journal of Interactive Media in Education*.
- [10] Hanafizadeh P, Keating B W and Khedmatgozar H R 2014 A systematic review of Internet banking adoption *Telematics and Informatics* 31(3) p 492–510.
- [11] Kitchenham B and Charters S 2007 Guidelines for performing systematic literature reviews in software engineering (Vol 2) Keele University and University of Durham p 1051.
- [12] Sanchez-Gordon S and Luján-Mora S 2017 Research challenges in accessible MOOCs: a systematic literature review 2008–2016 *Universal Access in the Information Society* p 1-15.
- [13] Liang T P and Turban E 2011 Introduction to the special issue social commerce: a research framework for social commerce *Int. Journal of Electronic Commerce* 16 (2) p5–14.
- [14] Mercado-Varela, M A, Beltran J, Perez M V, Vazquez N R and Ramirez-Montoya M S 2017 Connectivity of learning in MOOCs: facilitators' experiences in team teaching. *Turkish Online Journal of Distance Education* 18(1) pp 143-156.
- [15] Fisher D H, Isbell Jr C L and Littman M L 2017 Ask Me Anything About MOOCs. *AI Magazine*, 38(2).

- [16] Urrutia M L, Cobos R and Dickens K 2017 Internal Perspectives of MOOCs in Universities. Proc. of EMOOCs 2017.
- [17] Loizzo J, Watson S L and Watson W R 2017 Examining Instructor and Learner Experiences and Attitude Change in a Journalism for Social Change Massive Open Online Course: A Mixed-Methods Case Study *Journalism & Mass Communication Educator*.
- [18] Urrutia M L, Fielding S and White S 2016 Professional Development Through MOOCs in Higher Education Institutions: Challenges and Opportunities for PhD Students Working as Mentors *Journal of Interactive Media in Education*.
- [19] Watson S L, Loizzo J, Watson W R, Mueller C, Lim J. and Ertmer P A 2016 Instructional design, facilitation, and perceived learning outcomes: an exploratory case study of a human trafficking MOOC for attitudinal change *Educational Technology Research and Development* 64(6) p1273-1300.
- [20] Evans S and Myrick J G 2015 How MOOC instructors view the pedagogy and purposes of massive open online courses *Distance Education* 36(3) p 295-311.
- [21] Griffiths R, Mulhern C, Spies R and Chingos M 2015 Adopting MOOCs on campus: A collaborative effort to test MOOCs on campuses of the university system of Maryland *Online Learning* 19(2).
- [22] Ahmed S S, Khan E, Faisal M and Khan S 2017 The potential and challenges of MOOCs in Pakistan: a perspective of students and faculty *Asian Association of Open Universities Journal*, 12(1) pp 94-105.
- [23] Mee C K, Sui L K M, Jano Z and Husin H 2016 The Readiness of the Administrators and Undergraduates in Using Massive Open Online Course (MOOC) in the Mandarin Subject *The Social Sciences* 11(12) pp 3017-3023.
- [24] Najafi H, Rolheiser C, Harrison L and Håklev S 2015 University of Toronto instructors' experiences with developing MOOCs *The International Review of Research in Open and Distributed Learning* 16(3).