A Literature Review of MOOC

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Abstract. MOOC has become a new field of higher education in recent years. It changes the traditional pattern of higher education, and brings both opportunities and challenges for China's higher education. This paper reviews some literatures on MOOC and analyzes differences between foreign and Chinese studies, and then points out the direction of Chinese research on MOOC to suit our practices in higher education.

MOOC is an abbreviation of Massive Open Online Course. It has appeared and spread widely in the field of higher education, especially in higher education fair, open education, teaching reform and learning revolution. As The New York Times regarding 2012 as the "Year of the MOOC", the Chinese scholars regarded 2013 as the "Year of the Chinese MOOC". Since we have not used MOOC for a long time, there are some differences between foreign and Chinese studies about MOOC.

Literature review on foreign research

Learning theory research of MOOC. Since George Siemens and Stephen Downes opened the first MOOC：Connectivism and Connective Knowledge Online Course in Sep. 2008, connectivist theoretical assumptions had been regarded as the learning theory of MOOC by many scholars. But Marc Clarà and Elena Barberà(2013) argued that connectivism didn't provide adequate explanation to learning phenomena because it neglected other crucial aspects of learning. They thought the Vygotskian tradition of cultural psychology provided three ideas that can adequately addressed the two challenges of learning in Web 2.0 identified by connectivists.[1] Rita Kop(2011) critically assessed the challenges of connectivist as informal, personal, and networked learning, and highlighted learners' perceptions and experiences related to these challenges on two connectivist courses.[2.6] Based on personality and self-determination theories, Carmen Tschofen and Jenny Mackness(2012) gained insight into the dimensions of individual experience in connective environments and further explored the meaning of autonomy, connectedness, diversity, and openness.[3]

Curriculum research of MOOC. These researches usually take a MOOC or a few MOOCs as the research object to explore the organizational form, teaching, the function of the platform, teaching assessment, characteristics and problems. By participating a MOOC offered by George Siemens and Steven Downes which was titled "Current/Future State of Higher Education", Diane J.Skiba（2012）described the content and organization of the MOOC.[4] Jeffrey Bartholet(2012) illustrated the integrity protection in MOOC's testing and examinations. [5] MRI(MOOC Research Initiative funded by the Bill & Melinda Gates Foundation)selected 28 MOOC researches from 266 applicants in 2013.As shown in Table 1,we analyzed the research topics and found that there were 9 curriculum studies including curriculum, teaching, interaction, completion rates, etc. accounted for 32%.

Table 1. Curriculum Research of MOOC Research Initiative: Grants Awarded(2013)

No.	TITLE	TOPIC
1	Characteristics and completion rates of distributed and centralised MOOCs: Martin Weller and Katy Jordan	curriculum
2	Peer Assessment and Academic Achievement in a Gateway MOOC: Mark Warschauer, Suhang Jiang, Adrienne Williams, Diane O'Dowd, Thurston Domina and Padhraic Smyth.	curriculum
3	Investigating the benefits of embedding motivational messages in online exercises: Joseph Jay Williams, John Mitchell and Neil Heffernan	curriculum
4	Social Network Formation and its Impact on Learning in MOOC-Eds: Shaun Kellogg, Kevin Oliver and Sherry Booth.	curriculum
5	Learning Analytics for Smarter Psychological Interventions: Daniel Greene, Carol Dweck and John Mitchell	curriculum
6	Writing to Learn and Learning to Write across the Disciplines: Peer-to-Peer Writing in Introductory-level MOOCs: Denise Comer and Dorian Canelas	curriculum
7	UW System College Readiness Math MOOC Study: Robert Hoar	curriculum
8	Promoting a Higher-Level Learning Experience: Investigating the Capabilities, Pedagogical Role, and Validity of Automated Essay Scoring in MOOCs: Erin Reilly, Stephanie Corliss, Cynthia Louden, Kyle Williams, Emily Cicchini, Donna Kidwell and Dawn Zimmaro	curriculum
9	MOOC instructional design principles: Ensuring quality across scale and diversity: Martha Cleveland-Innes, Derek Briton, Mike Gismondi and Cindy Ives	curriculum

Learner research of MOOC. Rita Kop(2011) pointed that it took time for people to feel competent and comfortable to learn a MOOC, especially at the beginning of the learning journey, supported by more knowledgeable others proved to be helpful in this. [2.6] Apostolos Koutropoulos et al.(2012) focused on the high levels of participation and low levels of retention often experienced in the MOOC format through the specific context of the discussion forums of MobiMOOC. The results indicated that emotive vocabulary usage did not significantly predict or impact participation retention in MobiMOOC. They suggested that in order to better understand the learners and MOOC participation, data might be needed for analysis and the systems that facilitated this collection might need to be built.[7] As shown in Table 2,there were 7 learner studies accounted 25% in MRI researches in2013.

Table 2. Learner Research of MOOC Research Initiative: Grants Awarded(2013)

No.	TITLE	TOPIC
1	The Life Cycle of a Million MOOC Users: Laura Perna, Alan Ruby and Robert Boruch	learner
2	MOOCs Personalization for Various Learning Goals: Sergiy Nesterko and Svetlana Dotsenko	learner
3	The Relations Between MOOC Participants' Motivational Profiles, Engagement Profile and Persistence: Bruno Poellhuber, Terry Anderson, Jacques Raynauld, Jean Talbot and Normand Roy	learner
4	MOOC Learner Motivation and Course Completion Rates: Yuan Wang and Ryan Baker.	learner
5	Hatch, match, and dispatch: Examining the relationship between student intent, expectations, behaviours and outcomes in six Coursera MOOCs at the University of Toronto: Laurie Harrison, Carol Rolheiser, Stian Håklev and Chris Teplovs	learner
6	Patterns of Persistence: What Engages Students in a Remedial English Writing MOOC?: John Whitmer, Eva Schiorring and Pat James	learner
7	Detecting and Analyzing Subpopulations within Connectivist MOOCs: Martin Hawksey and Maren Deepwell	learner

Literature review on Chinese research

Development research of MOOC. These literatures focus on the origin,characteristics,development trends and the problems of MOOC.CAI Wen-xuan et al.(2013) combed the major events of MOOC in 2012.[8]LIU Yang-yue et al.thought MOOC would trigger MOOR(Massive Open Online Research) which could be seen as a future direction of MOOC.[9]JIAO Jian-li(2013)thought MOOC would have important impacts on higher education in information technology, international and democratic

collaboration, and put forward five proposals for the development of MOOC.[10] WANG Zuo-li argued that MOOC had a big impact on higher education institutions, but it might took 30-40 years to replace traditional education. During the process, the functions of the university would change.[11] **Platform research of MOOC.**Almost all scholars belive that we Chinese should develop MOOC as soon as we can,but chinese platforms of MOOC are very inadequate.They discuss the existing platforms as a reference and study the techniques and operating mode of foreign platforms. Wang Zuo-li(2013)[12] and Yu Jian-bo(2013)[13] compared Coursera with edX and Udacity. Sun Mao-song(2013) summarized the platform was a key element of the success MOOC.[14]JIAO Jian-li(2013) introduced the MOOC platform such as School,Veduca,FutureLearn and Open2Study.[15]DENG Hui(2013) introduced chinese MOOC platform known as xuetangX and new MOOC platform such as Stanford Online、NovoED、iversity.[16]

Differences between foreign and Chinese research.

Different depth regarding theoretical study. Foreign scholars have a continuing controversy on the supporting theory of MOOC. Besides connectivism, they put forward new theories such as cultural psychology, sociology ,personalized determinism and psychological theory. But in Chinese literature, it seems that the connectivism has been the prerequisite of MOOC and logically "bunding research" on MOOC have been carried out . Only a few Chinese scholars have mentioned behavior theory, and there is a lack of multidisciplinary perspectives concerned on MOOC. Therefore, when facing the practical problems of MOOC, we can not proposed solution strategy based on the appropriate theory. **Micro and macro.** With a strong development of business drivers and mature platform, foreign studies focus on the micro-level aiming to resolve the real issue of MOOC in practices. They combined curriculum and learner research with a large number of case studies, survey and data. As China is a beginner in the MOOC, we are short of direct experiences and first-hand cases and data, so Chinese literature focus on the macro perspective like history, developing, platform etc. Most researchers didn't involved in the production and learning of MOOC, andthey mainly use the qualitative methods to do the research.

Direction of Chinese research.

As the practices have just started in Chinese MOOC, current studies are limited to guide the development and application of MOOC. We suggest that the future studies should focus on the following aspects: Firstly, we should explore the theoretical nature of MOOC and lay a solid foundation for the development of MOOC; secondly, we should learn a MOOC as a learner to know what the MOOC really means to strength the case studies; thirdly, the research should combined higher education with communication, psychology, sociology and other disciplines, and the big data technology should be used to analysis MOOC information, so we can judge how MOOC bring changes to higher education.

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