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A Theoretical Analysis of Moocs Types From A Perspective of Learning Theories

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Abstract

The will to provide low cost and effective education to the masses has existed through the ages. Developments in information and communication technology along with distance education applications have realized this dream of educators. Today, especially with the help of web technologies, very rich learning environments and materials are being created. In addition, the constantly growing and transforming structure of knowledge influences the learning mechanism of students and the role of teachers from top to bottom, pushing educational institutions and educational researches into new pursuits. In the most basic definition, MOOCs are online education platforms accessed for free by great masses. Online courses taught by elite academics in elite universities draw a lot of interest, and provide a complete distance learning environment through assignments, presentations, videos and other course materials. As one of the most interesting recent developments among distance education researchers, there is an undoubted expectation that MOOCs will revolutionize the operation of education in the future. However, it is paramount that MOOCs are theoretically analyzed for them to have a meaningful place and take root in education. MOOCs are divided into various different types such as cMOOCs, xMOOCs, all of which have significant theoretical differences. In this regard, MOOCs must be analyzed and evaluated based on learning theories such as behaviorism, cognitivism, constructivism, and connectivism. It must be remembered that approaches lacking in theoretical basis are doomed to fail. This study defines MOOCs, interprets their emergence, interpretations are made regarding its role today and future tendencies, and various recommendations are provided regarding future development. Additionally, a literature review regarding MOOC types is conducted, and their theoretical underpinnings are tabulated. In this regard, while all learning theories are studied within this research, the relationship between connectivism and MOOCs are clearly portrayed.

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1. Introduction

Just as information and communication technologies (ICTs) have influenced many aspects of our lives through their rapid development, ICTs have also manipulated the educational landscape. Due to its structure which is easily and directly influenced by technological development, advances in this field carry great interest and importance for distance education. The transformation of users from a passive stance to an active, creating, producing and agenda setting structure through the emergence of web 2.0 in influential not only in the field of education, but in the shaping of society.

Some of the influences these developments have had on distance education environments have become inevitable realities. Recently, the concept of massive open online courses (MOOCs) has emerged and has become quite vocal throughout the educational realm. Today, as self-development is regarded higher than diplomas and degrees, and as universities try to reach more and more learners with less cost, MOOCs may be seen as platforms that meet these needs.

Recently, the field of education has tended to conduct distance education experiences based on open courses, open educational resources (OER), and open access (Koutropoulos et al., 2012). MOOCs are thus accepted as the final point in evolution for open educational resources (Mazoue, 2013). MOOCs are platforms that are open, free to enroll in, have open curriculums, and can integrate with social networks. Courses are generally offered free of charge while prerequisites for the courses are provided in the course description, along with the expected outcomes of the course. They do not offer a formal accreditation system (McAuley et al., 2010).

MOOCs have various other definitions beyond that provided above. Esposito (2012) defines MOOCs as a recently popular distance education environment providing open content that any individual anywhere on earth can freely register to and take courses. Harding (2012), on the other hand, emphasizes international student participation and defines MOOCs as systems that provide the opportunity to select and take courses from respected universities such as Stanford, MIT, and the University of Edinburgh to students in underdeveloped and developing countries through online tools such as videos, discussion forums, and peer-marked assignments.

If a general definition is to be made based on the aforementioned definitions, MOOCs are internet based educational environments that provide the opportunity to take classes from elite universities and instructors through environments such as videos and presentations through open and free courses and course schedules with no formal degrees, certification or accreditation for the purpose of the self-development of knowledge and competences by individuals. The abbreviation of the initials that comprise the term MOOCs are reflective of this definition. The "massive" in Massive Open Online Courses (MOOCs) indicates that this education appeals to a great mass of people. The system is designed to support the participation of a large student body. "Open" refers to the fact that these courses are opened for free to anyone willing to participate. "Online" indicates that these courses are conducted online through interactive tools such as videos, presentations, and audio.

Unfortunately, in many sources the term MOOCs does not overlap with the concept and has been reduced to a term referring to a specific platform. When studied, the history of MOOCs reveal cMOOCs, which have a very different theoretical basis. MOOCs are thus divided into the connectivism based cMOOCs and xMOOCs, which are closer to a traditional behaviorist model.

2. cMOOCs and Their Theoretical Basis

Many sources refer to cMOOCs as connectivist MOOCs or as Canadians MOOC. The reasoning behind this is that the creators of MOOCs are Canadian researchers George Siemens, Stephen Downes, and Dave Cormier, and that they prepared the concept based on the principles of the theory of connectivism. Before further study of the history and definition of cMOOCs, an overview of the theory of connectivism, its basic principles, and its relationship with other theories can be considered useful for a better understanding of MOOCs.

Anderson and Dron (2011) divide distance education pedagogy into three categories: cognitive behaviorism, social constructivism, and connectivism. Their definition of cognitive behaviorism refers to the pre-web period of

printed materials, television, and radio; social constructivism is defined as the web 1.0 and teleconference period; connectivism refers to the communication and interaction process provided by web 2.0 and social networks. Connectivism is a new learning theory of the digital age and its principles have been developed by George Siemens. It is still widely discussed. Siemens (2004) states that behaviorism, cognitivism, and constructivism are insufficient in that they were developed in an era in which technology was not as developed and influential on education. The learning process in connectivism takes place as the learner feeds their knowledge through making connections with the collective knowledge of the community (Anderson & Dron, 2011). These connections are established in a biological/neural, conceptual, and social/external context (Siemens, 2008). Connectivists state that learning is not merely the transfer of knowledge from the teacher to the learner and does not take place in a single environment, instead they state that knowledge is transformed and transferred through the interactions of people, especially in a web environment (Kop, 2011).

The theory of connectivism indicates that each individual is responsible for their own learning. In cMOOCs, each learner structures and manages their own learning. They establish their personal learning network through nodes and connections (Levy & Schrire, 2011). cMOOCs may be considered extensions of personal learning environments (PLE) and personal learning networks (PLN). Kop (2011) indicates that the first cMOOCs were similar to the environments denoted as personal learning networks.

cMOOCs employ a system in which rather than being limited, the learner is free throughout the learning process, allowing them to determine their own learning goals. Just as this situation has its advantages, it may be stated that this situation makes the assessment and evaluation along with the certification processes quite difficult. In addition, due to the open nature of courses, monetary gain from these systems are also quite difficult (Lugton, 2012).

Downes (2013) established a chronological list of opened cMOOCs. The first cMOOC, dubbed "Connectivism", opened in the fall semester of 2008. Compared to xMOOCs, cMOOCs have an earlier history and trend towards opening more courses in the future.

3. xMOOCs and Their Theoretical Basis

xMOOCs, or as some sources call them, Coursera type MOOCs have become the single referred concept regarding the term MOOC in most literature. Despite cMOOCs being established earlier, in recent years the term MOOC has referred mostly to xMOOCs. xMOOCs are basically systems in which the instructor provides video presentations to teach the course while each student follows their coursework at their own learning speed (Mangelsdorf, 2012). Courses from a variety of fields from Social Sciences to Computer Sciences, Medical Training to Educational Sciences are offered on these sites.

The most well-known xMOOCs are sites such as Coursera, edX, Udacity, Udemy, Khan Academy, and Venture Lab. The courses sections of these sites allow participants to take any course they wish, conduct their assignments and quizzes, and complete the course program in a given amount of weeks merely by signing up as a member. These sites generally do not provide any formal degree or diploma (Hamilton, 2012). Thus the main purpose of participation in MOOCs is learning the subject rather than attaining credits or proficiency (Masters, 2011).

All xMOOC sites have a different method of operation. For example to take a course through Coursera, one must follow the pre-determined schedule, while Udemy has no such limitation. In addition, there are for-profit and non-profit MOOCs. For example edX is non-profit while Coursera is a for-profit organization. Despite being a paid service, Coursera does not charge any fees throughout the trial period and for course access. Coursera and its associated establishments cover their own costs. Coursera operates on a venture capital model. Beyond this, users may receive certificates from courses they have completed through certain donations or by paying certain fees, and they may also be referred to employers or have their competences assessed and evaluated in physical campuses

and classrooms, again in return for certain fees. However the infrastructure and financial support required to offer these courses are mostly provided by large corporations and foundation donations (Smith, 2012).

MOOCs gather a large amount of quantitative data regarding student behavior through their great number of participants. This data may be used to better understand the teaching process and how cognitive development takes place (Educause, 2012).

Despite small differences, these sites generally have a similar understanding in that they share the characteristics of a traditional behaviorist approach. The instructor prepares the course through a video or presentation while the learner passively receives the course. Bates (2012) states that Coursera type xMOOCs designed in accordance with the old-fashioned traditional behaviorist model are systems in which information is directly transmitted rather than environments in which critical, creative, and unique thinking skills are developed. The behaviorist model is primarily based on the transfer of information from the teacher to the student. This situation reduces the students to a position in which they merely receive information, preventing their creativity and cognitive development. In xMOOCs, information is transferred from instructors to students through video courses and the learners are later evaluated through various tools.

xMOOCs are criticized regarding their dated theoretical basis. Siemens (2012) states that "our MOOC model emphasizes creation, creativity, autonomy, and social networked learning. The Coursera model emphasizes a more traditional learning approach through video presentations and short quizzes and testing. Put another way, cMOOCs focus on knowledge creation and generation whereas xMOOCs focus on knowledge duplication. I've spoken with learners from different parts of the world who find xMOOCs extremely beneficial as they don't have access to learning materials of that quality at their institutions. xMOOCs scale, they have prestigious universities supporting them, and they are well-funded."

Interpreting Siemens' (2012) statements at this point, he emphasizes that while they were the ones to initiated the MOOC movement, connectivist MOOCs engage the learner more actively than xMOOCs with traditional approaches. Downes (2012) also states that current xMOOCs may transform into cMOOCs in the near future.

xMOOC is a concept that has recently greatly influenced the realm of distance education, and is constantly the subject of news and publications. It truly has the potential to revolutionize higher education in the future. It must be stated that online courses are not necessarily a new development. The Phoenix and DeVry universities were large commercial establishments that opened credited courses on the Internet. Students were already passive in classroom lectures, and these lectures had video versions in online classrooms. Basically not much had changed. Through MOOCs, however, the video presentations of the professors were enriched with practices and quizzes during and after the class, placing the focus on the understanding and comprehension skills of the students (Carr, 2012).

MOOCs do have many aspects that need development and correction. MOOCs are still vague regarding the execution of any meaningful evaluation. In this regard, advanced learning analytics and peer review approaches have been considered but have yet to achieve any broad application (Carson & Schmidt, 2012).

Individuals undertaking courses from MOOCs must have a basic level of digital literacy, and they must be able to take responsibility for their own learning. In addition, the employment aspect following course completion is still ambiguous, as are the subjects of formal diplomas and accreditation. It appears that the dropout rate for courses is also quite high. Certain arrangements must be made to ensure that users remain committed to their courses.

4. Conclusion

As the popular abbreviation of the day, MOOCs have drawn attention and appealed to users previously unable to take courses from esteemed universities and their staff. This situation is not expected to be met enthusiastically by educational institutions and administrators providing face to face education. The development of thinking, creating, active individuals has become more important than diplomas and degrees. In this regard, even with the limitations carried, the emergence of MOOCs has brought a new page in education through offering high quality,

open, and free courses. The most elite universities throughout the world are endeavoring to take part in this establishment, because such membership has become a symbol of the reputation and brand worth of institutions. The trend has become to reach more students at a lower cost. MOOCs appear to be the solution for the realization of this goal.

References

Anderson, T. and Dron, J. (2011). Three generations of distance education pedagogy. *International Review of Research in Open and Distance Learning, 12*(3), Retrieved 2 March, 2014, from, http://www.irrodl.org/index.php/irrodl/article/view/890/1663

Bates, T. (2012). What's right and what's wrong about Coursera-style MOOCs. Retrieved 30 April, 2014, from, http://www.tonybates.ca/2012/08/05/whats-right-and-whats-wrong-about-coursera-style-moocs/

Carr, N. (2012). The crisis in higher education. *MIT Technology Review*. Retrieved 13 April, 2014, from, http://www.technologyreview.com/featuredstory/429376/the-crisis-in-higher-education/

Carson, S. and Schmidt, J.P. (2012). The Massive Open Online Professor. *academicmatters*. Retrieved 2 May, 2014, from, http://www.tofp.org/resume/The_Massive_Open_Online_Professor.pdf

Downes, S. (2012). A True History of the MOOC. Retrieved 2 May, 2014, from, http://www.downes.ca/presentation/300

Downes, S. (2013). (Very) Partial History of MOOCs. Retrieved 13 April, 2014, from, http://mooc.ca/

Educause (2012). What Campus Leaders Need to Know About MOOCs. Retrieved 16 March, 2014, from, http://net.educause.edu/ir/library/pdf/PUB4005.pdf

Esposito, A. (2012). Research Ethics in Emerging Forms of Online Learning: Issues Arising From a Hypothetical Study on a MOOC. Retrieved 11 April, 2014, from, http://www.eric.ed.gov/PDFS/EJ985433.pdf

Hamilton, D. (2012). Moocs: What Are Mitx, Harvardx, Edx And Coursera?. Retrieved 21 March, 2014, from, http://www.onlineschools.org/inside-online-schools/moocs-what-are-mitx-harvardx-edx-and-coursera/

Harding, N. (2012). The Massive Open Online Course revolution hits the UK. Retrieved 09 April, 2014, from, http://thepositive.com/mooc-massive-open-online-courses-uk/

Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course. *International Review of Research in Open and Distance Learning, 12*(3), Retrieved 15 April, 2014, from, http://www.irrodl.org/index.php/irrodl/article/view/882/1823

Koutropoulos, A., Gallagher, M.S., Abajian, S.C., De Waard, I., Hogue, R.J., Keskin, N.and Rodriguez, C.O. (2012). Emotive Vocabulary in MOOCs: Context & Participant Retention. Retrieved 04 March, 2014, from, http://www.eric.ed.gov/PDFS/EJ979609.pdf

Levy, D. and Schrire, S. (2011). The Case of a Massive Open Online Course at a College of Education, Retrieved 5 April, 2014, from, http://conference.nmc.org/files/smkbMOOC.pdf

Lugton, M. (2012). What is a MOOC? What are the different types of MOOC? xMOOCs and cMOOCs. Retrieved 15 April, 2014, from, http://reflectionsandcontemplations.wordpress.com/2012/08/23/what-is-a-mooc-what-are-the-different-types-of-mooc-xmoocs-and-cmoocs/

Mangelsdorf, M. (2012). Massive Open Online Courses (MOOCs): An Assessment Based on Personal Experience. Retrieved 07 March, 2014, from, http://www.iedp.com/Pages/DocumentManager/Massive%20Open%20Online%20Courses%20_%20Full%20Article.pdf

Masters, K. (2011). A brief guide to understanding MOOCs. *The Internet Journal of Medical Education,1*(2). Retrieved 29 March, 2014, from, http://archive.ispub.com/journal/the-internet-journal-of-medical-education/volume-1-number-2/a-brief-guide-to-understanding-moocs.html#sthash.fn4mVzpX.2xPywz3P.dpbs

Mazoue, J.G. (2013). The MOOC Model: Challenging Traditional Education. Retrieved 14 April, 2014, from, http://www.educause.edu/ero/article/mooc-model-challenging-traditional-education#.USTQTVRDxno.twitter

McAuley, A., Stewart, B., Siemens, G. and Cormier,D. (2010). The Mooc Model For Digital Practice. Retrieved 11 April, 2014, from, http://www.elearnspace.org/Articles/MOOC_Final.pdf

Siemens, G. (2004). Connectivism: A learning theory for the digital age. *elearnspace*. Retrieved May 1, 2014, from http://www.elearnspace.org/Articles/connectivism.htm

Siemens, G. (2008). What is the unique idea in Connectivism?. Retrieved May 21, 2014, from http://www.connectivism.ca/?p=116

Siemens, G. (2012). MOOCs are really a platform. *elearnspace*. Retrieved 2 May, 2014, from, http://www.elearnspace.org/blog/2012/07/25/moocs-are-really-a-platform/

Smith, L. (2012). 5 education providers offering MOOCs now or in the future. *Education Drive*. Retrieved 22 March, 2014, from, http://www.educationdrive.com/news/5-mooc-providers/44506/