

Understanding Instructional Designs and Teaching Strategies of Massive Open Online Courses

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Abstract

This study examined instructional designs and teaching strategies of Massive Open Online Courses (MOOCs), with a focus on the activities and expectations for students to complete the courses. It is hoped that such an examination will help in the development of a course taxonomy which will help learners set better expectations before they take college-level courses. This effort will also provide guidance for instructional design and technology choices beyond MOOC settings in a global learning environment, since emerging designs such as MOOCs are often designed for learners who would otherwise not have an opportunity to learn. Therefore, this taxonomy could be helpful to learners from different cultures, due to differences in language backgrounds and cultural experiences of learning.

Keywords: massive open online courses, instructional design, content analysis, qualitative study

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Objectives

The purpose of this study is to explore the time and expectation factors involved in current Massive Open Online Courses (MOOCs) with the goal of developing a taxonomy that will help learners better manage their time and expectations before taking a MOOC. While at one time the statement “I’m taking a college course” would evoke an image of students’ sitting in a lecture hall for 45 minutes listening to an instructor, this is no longer the case due to changing views on how people learn and rapid integration of new technologies in teaching and learning. These changes have created learning opportunities as well as challenges. One of the challenges is that learners may become frustrated or quit learning when their lives become chaotic because they were asked to learn in ways that were in conflict with their schedules, habitual learning styles, or current abilities.

A course taxonomy may fill in a gap in research and practice by helping learners understand the nature of a course or courses they wish to take before they enroll. Such understanding will potentially help learners to have more positive and meaningful learning experiences. This taxonomy can also serve as a formative and summative evaluation tool so that course designers and instructors can better evaluate the nature and structure of a course design.

Background and Theoretical Framework

This study was based on three main theoretical and practical angles: technological changes, epistemological differences, and three kinds of knowledge.

Technological Changes

The growth of digital technology usage in secondary education over the last 40 years has led to new concepts and designs in the education landscape. Whereas one may still experience

the traditional “lecture hall” style in a college classroom, the age of online learning has brought about many different forms of classroom structures. The rise of Web 2.0 technologies and social media has provided better tools to create content (Murugesan, 2007). Online education quickly made use of these tools, encouraging learners to create online projects, blogs, and videos to demonstrate their mastery of concepts and to collaborate with the other learners synchronously and asynchronously at a distance (Livingstone, & Brake, 2010). In education, this created networks for learners through sites such as Facebook, Twitter, and LinkedIn. Most recently, MOOCs and flipped classroom models have gained considerable attention. The college courses of today are becoming more varied and diverse in structure.

Epistemological Differences

To further complicate this diversity, the same pedagogical structures may be used to design courses with differing ontologies and epistemologies. For example, there are two generally accepted paradigms in MOOCs. One of the first MOOCs to gain attention was offered by George Siemens and Stephen Downes in 2008 (Mackness, Mak, & Williams 2010). This course was built on an offshoot of social constructivist epistemology that Siemens and Downes call connectivism (Bell, 2010). Connectivism is described by Siemens (2005) as “the integration of principles explored by chaos, network, and complexity and self-organization theories” (para. 23) where learning “is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual” (Siemens, 2005, para. 23). In 2011, Stanford offered a MOOC on artificial intelligence that was seen as different in overall design from the original MOOCs. This MOOC was designed more on instructivist concepts. Instructivism is an educational paradigm that “places emphasis on the passage of information and knowledge encapsulating activities and other learning events for learning to take place

thereby resulting in a change of behaviour, attitude, belief etc.” (Onyesolu, Nwasor, Ositanwosu, & Iwegbuna, 2013, p. 40). This Stanford course led to the formation of companies such as Udacity, Coursera, and EdX, all of which offered MOOCs that were more instructivist in nature. Due to the difference between the original MOOC design of Siemens and Downes and the emerging design of MOOCs, Downes proposed that the two different paradigms should be referred to as cMOOC (for Connectivist MOOC) and xMOOC (MOOC as an extension of something else such as a college) (Downes, 2013). Some MOOCs stick strictly with one model or the other, but many have been known to mix elements of both. Therefore, simply stating that a course is a MOOC is no longer sufficient enough to accurately describe what a learner will encounter in the course.

While some may feel that instructivist instruction is better than constructivist or vice versa, the literature supports both as valid forms of educational paradigms. For example, Watson (2001) reviewed several studies on social constructivism and concluded that “a general framework of social constructivism can promote effective teaching in pupils of all ages and levels of ability and across the curriculum” (p. 146). Porcaro (2011) also examined the case for instructivist design and found that “instructivist methods based on behaviorism, for instance, are well-suited to skills such as recalling facts and repetitive performance, while those based on cognitivism are well-suited to rule or procedural execution” (p. 43). Porcaro (2011) continues to make a case for both constructivism and instructivism having strengths and weaknesses, ultimately proposing that both paradigms have a place in education.

Three Kinds of Knowledge

The debates between instructivism and constructivism are closely linked to Habermas (1971)'s concept of three kinds of knowledge, namely, instrumental, communicative, and

emancipatory knowledge, which provides another important lens to examine instructional designs and teaching strategies. According to Habermas (1971), instrumental knowledge is basic knowledge we need to obtain in order to survive or control the environment. Yet, not all knowledge is instrumental in nature. The second kind of knowledge is based on our need to understand each other through language. Communicative knowledge is derived from a shared interpretation and consensus of what is “true,” and is often interpreted and negotiated rather than transmitted. Habermas calls the third kind of knowledge emancipatory. Emancipatory knowledge is gained through a process of critically questioning ourselves and the social systems within which we live. The philosophical foundation of emancipatory knowledge lies in critical theory. Clearly, the pedagogies, instructional designs, and teaching strategies of the three kinds of knowledge can be dramatically different in MOOCs.

The complicated mixture of learning designs, epistemologies, conceptual frameworks, and uncertain directions for pedagogical models highlights the need for a taxonomy system that will help learners and instructors quickly classify and understand the learning environments in which they will be participating. The goal of this study was to identify possible trends in various MOOCs to see if patterns emerge. These emerging patterns will be combined with existing patterns in the literature to form a preliminary taxonomy for course classification and evaluation.

Methods and Data Source

Research Questions and Method

The research questions of the study were:

1. What instructional designs or teaching strategies are included in MOOCs that are currently offered?

2. How do instructional designs and strategies affect the time and expectations pressed upon the students?

Content analysis was used to examine the syllabus statements of thirty current MOOCs. Content analysis is an “analysis of messages that relies on the scientific method (including attention to objectivity, intersubjectivity, a priori design, reliability, validity, generalisability, replicability, and hypothesis testing) and is not limited as to the types of variables that may be measured or the context in which the messages are created or presented.” (Neuendorf, 2002, p. 10).

Procedure and Data Source

The syllabus section of each course was examined as the message in this study. Emerging themes were then identified from the coding of each line of the relevant sections of the syllabus in each course (or the part of the course that served as the syllabus if not specifically labeled as such). Thirty MOOCs were chosen to examine the structure of the existing courses. Of those MOOCs, ten were classified as cMOOCs and twenty were classified as xMOOCs. Both in-coding based on existing theoretical frameworks and open coding were used to examine the emergent themes. For instance, cMOOCs were chosen from instructors and groups that attempted to adhere to the concepts of connectivism in some form, and xMOOCs were chosen from the xMOOC platform EdX based on attempted adherence to behaviorist paradigms.

Results and Discussions

Several initial themes emerged from content analysis of the thirty course syllabi. They include: emphasis on communication of self-directed learning, voluntary collaboration, and learning as application. The following is a brief discussion of each of the themes.

The first theme was the emphasis on communications of self-directed learning. More interactive communications and technologies were expected as assignments for students in the

MOOCs. Many course designers and/or instructors were putting the power or learning responsibilities in the hands of the students by asking the students to find their own course content or to create social media channels for communications or deliverable assignments. This “self-disciplinary” (Foucault, 1980) or self-regulatory learning may offer new opportunities for learning while at the same time putting pressure on students for unlimited time or effort in the learning or assignments of a particular course. Students may experience frustration when they are expected to find their own content or direct their own learning, but are not given the power to decide on their grades or how they should be evaluated.

The second theme was voluntary collaboration. Many of the instructors encouraged the learners to participate in the course discussions. While a few instructors required collaboration as part of the course work, most set up a voluntary interactive system. The goal of these encouragements tended to be along the lines of allowing learners to discuss content and activities as they needed, without crossing the line into cheating or plagiarism. The instructors that did not require interaction spent considerable efforts to convince learners that they needed to interact. This may affect participation levels, and is a possible topic for future research.

The third theme was the concept of learning – learning was discussed more as application than memory of the learned materials, at least, expressed in cMOOCs. While cMOOCs created activities specifically geared towards application, the xMOOCs encouraged application in the method that learners completed the given assignments. This ties back to the first theme that emerged, in that students were given the power to make the assignments application based or not. However, whether or not the learner chose a topic that was application-based was often left up to the learner.

These themes could have significant impact on learner time and expectations. Learners who enter a class expecting clearly defined structures and pathways may struggle when faced with the uncertainty of self-directed learning. Additionally, learners who expect to have a more interactive learning experience may struggle when they find that other students might not participate in optional collaboration exercises. Overall, the students who are accustomed to instructor-centric learning may struggle with the ambiguity of many MOOCs if they desire more structure. Early communication of these issues could possibly allow learners to prepare for the rigors of various emerging courses structures more adequately.

Significance of the Study

These themes have set a good foundation for a useful taxonomy for the learners and instructors, which will be explored in the next stage of the study. The main contribution of this study is an understanding of the themes and/or categories that seem to be prevalent in the instructional design of MOOCs. These themes and categories can be used to form a prototype of a complete taxonomy system that can be used to classify various course structures as well as inform instructional design and technology decisions. In the future, this proposed taxonomy system will be piloted in a university setting where it can be tested and refined towards the goal of creating a practical, flexible taxonomy system that assists learners in course selection as well as instructors in course design. Since MOOCs and other emerging designs are reaching learners who would otherwise not have an opportunity to learn, this taxonomy could be helpful to learners from different cultures, with different language backgrounds and different experiences of learning.

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