

# Chapter 1

## Facilitating Student Interaction and Collaboration in a MOOC Environment

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### **ABSTRACT**

*Collaborative learning facilitates the clarification of ideas, provides access to peer-feedback and promotes the sharing of diverse and alternate perspectives (Stacey, 2007). Guardia, Maina and Sangra (2013) identified collaborative learning as a key design principle for MOOCs and the interactions facilitated through this kind of learning are often considered to be as valuable as the direct instruction provided by the teacher (Stewart, 2013). This chapter explores a variety of technologies and pedagogical approaches that can be employed in a MOOC environment to promote collaboration and student interaction. Benefits and drawbacks of these strategies are considered in order to help guide decisions about the instructional design of MOOCs.*

### **INTRODUCTION**

When Lev Vygotsky (1978) first posited his theory of socially constructed knowledge it isn't likely he was envisioning a day when 100,000 students would sign-up for a single Massive Open Online Course (MOOC) (Breslow et al, 2013). Yet Vygotsky's findings on the social nature of learning can directly inform the design of MOOCs and the opportunities to collaborate inherent within these types of learning environments. MOOCs are intended to emphasize socialized learning and promote peer-to-peer interactions through different forms of social media and technology (Conole, 2013). This is particularly true in the design of connectivist MOOC courses or cMOOCs (Milligan et al, 2013), which adhere to connectivism (Siemens, 2006) and social constructivism (Vygotsky, 1978) theoretical guidelines.

The theory of social constructivism suggests that, "knowledge is generated through social intercourse" (p. 3, Kanuka & Anderson, 1998) and that the construction of this knowledge is ongoing as social interactions persist and evolve (Young, 1998). Online learning environments such as MOOCs add a new layer

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of complexity to the social construction of knowledge because of the fact that online communication is often mediated through text rather than in face-to-face, synchronous settings (Gunawardena, 1995). The lack of non-verbal cues can make it difficult to interpret tone, inflection and emotion, which are all characteristics that would be present in a face-to-face interaction. In addition, learners must negotiate the technological interface of their learning environment, which can impact their ability to successfully construct knowledge (Hillman et al, 1994). Siemens (2006) offers an alternative theory to social constructivism known as connectivism, which posits that, “learning is a process that occurs within nebulous environments of shifting core elements” (p. 3). Within the framework of connectivism, learning is dependent upon the correct information or knowledge being connected to the appropriate people or learners at the right time. This theory seems tailor made for the online environment where vast amounts of information is available by the click of a mouse and that informational landscape is being continually updated and revised.

At the core of both social constructivism and connectivism is the notion that learning exists when individuals collaborate to share ideas, engage in problem solving, brainstorm, produce artifacts and wrestle with difficult concepts. Collaborative learning facilitates the clarification of ideas, provides access to peer-feedback and promotes the sharing of diverse and alternate perspectives (Stacey, 2007). Guardia, Maina and Sangra (2013) identified collaborative learning as a key design principle for MOOCs and the interactions facilitated through this kind of learning are often considered to be as valuable as the direct instruction provided by the teacher (Stewart, 2013). This chapter explores a variety of technologies and pedagogical approaches that can be employed in a MOOC environment to promote collaboration and student interaction.

## **BACKGROUND**

The advent of MOOCs can be traced back to 2008 when George Siemens and Stephen Downes granted open enrollment to their Connectivism and Connective Knowledge course at the University of Manitoba (Fini, 2009). This course was designed as a connectivist or cMOOC in that students were expected to learn largely through making connections with each other as well as the content of the class (Siemens & Downes, 2008). By 2012 prestigious institutions such as MIT, Harvard and Stanford started to experiment by offering a style of MOOC known as xMOOC, which takes a more behaviorist approach to instruction (Daniel, 2012). The xMOOC defers from the cMOOC structure in that more emphasis is placed on providing access to course content and allowing students to work independently rather than encouraging or facilitating collaboration. A primary goal of creating MOOCs of either kind is to provide access to educational opportunities to a population of students who would not otherwise be able to take college level courses for any number of reasons. However, due to the nascent nature of MOOCs, it has yet to be determined if they offer a viable educational experience for students.

MOOCs and other similar types of online learning environments present a different set of instructional challenges for the instructor. Traditional pedagogical strategies that work in a face-to-face setting don't translate well to an online class with an enrollment of 5,000 students and the sheer size of enrollment within most MOOCs decentralizes the teacher's role (Stewart, 2013). Therefore, it is important to utilize social pedagogies that encourage student interaction, promote social learning and leverage the openness of the MOOC environment (Stacey, 2014). These peer-to-peer interactions and social learning opportunities have been shown to positively impact student satisfaction within MOOCs (Khalil & Ebner,

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