Chapter 3
MOOCs and Multiple Learning Styles

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ABSTRACT
Massive Online Open Courses are a recent trend in distance learning promoted by several prestigious universities. They have drastically changed the way we learn as well as how we teach. The main aim of MOOCs is to provide new opportunities to a massive number of learners to attend free online courses from anywhere all over the world. MOOCs provide open learning. It has been found that the current model of open learning suffers from some limitations, and one of these limitations is the lack of personalization. A way to provide personalization into open learning is through learning style theory. The learning style theory is considered and, specifically, the Felder and Silverman model is selected to identify the learning styles and provide the required adaptation.

INTRODUCTION
Online learning is an evolutionary learning approach that keeps evolving and changing due to the continuous evolution of technology. Open leaning is a new phenomenon of online learning that allows learning materials to be freely available on the Internet for anyone who is interested; this new phenomenon becomes a tangible reality due to the newly emerged cloud computing technology.

Recently, various prestigious learning institutions, such as Harvard, MIT, and Stanford, have utilized cloud computing to provide learning materials in an open approach. Coursera (Coursera, 2012), edX (edX, 2012), Udacity (Udacity, 2012), and many others are examples of this inventive open learning style. Courses that are provided through these open learning environments are termed Massive Open Online Courses (MOOCs).

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The concept and format of MOOCs have been invested with hopes for radical changes in higher education, due to their potential to make high quality teaching accessible to everyone with broadband Internet access and motivated to invest their time into concentrated learning. While all MOOCs share the goal of bringing together thousands of learners into a common event, they largely differ with respect to the underlying concept of openness (Rodriguez O., 2013). Minimally MOOCs are open because access is not restricted by cost, affiliation, or any other type of privilege.

With no cost to entry or exit, MOOCs attract learners with a wide range of backgrounds and intentions, as well as personal or technical constraints to participation. Given the heterogeneity of the population, we would be remiss to make a priori assumptions about the appropriate characteristics or behaviors around which to categorize learners, or which pathways and outcomes are more or less valuable for their learning.

Analogous challenges can be found in research on community colleges—the closet brick-and-mortar analogue to MOOCs in terms of the diversity of educational objectives among their students (Goldrick-Rab, 437-469) and on unstructured virtual inquiry environments, where there is not a clear notion of “correct” pathways through the available resources. Using unsupervised clustering techniques, community college researchers have developed meaningful typologies of students based on longitudinal enrollment patterns (Bahr, 2010) and survey measures of engagement (Saenz, Hatch, Bukoski, Kim, Lee, & Valdez, 2011).

Despite the popularity of MOOCs and the fact they attract an enormous number of learners (Breslow, Pritchard, DeBoer, Stump, Ho, & Seaton, 2013), there are some limitations that still need to be considered and managed to enhance such an open model of learning. These limitations relate to different aspects of the courses, such as teaching and learning methods; learning content; assessments; identity authentication; accreditation; and learners’ varying needs, among others. All of these limitations raise different concerns about the sustainability of open learning. The authors believe that there is a need to enhance the current model of open learning, and based on the suggestion in (Williams, 2013), they find that this can be done efficiently by considering cognitive science and learning principles. The authors have previously introduced some learning theories that can be considered to enhance the presentation and organization of learning materials in open learning environments, and also to personalize the learning experience and adapt to individual learners’ needs and preferences (Fasihuddin, Skinner, & Athauda, 2013). The focus of this chapter is talk about MOOCs based on the theory of learning styles.

Students learn in many ways—by seeing and hearing; reflecting and acting; reasoning logically and intuitively; memorizing and visualizing and drawing analogies and building mathematical models; steadily and in fits and starts. Teaching methods also vary. Some instructors lecture, others demonstrate or discuss; some focus on principles and others on applications; some emphasize memory and others understanding. How much a given student learns in a class is governed in part by that student’s native ability and prior preparation but also by the compatibility of his or her learning style and the instructor’s teaching style.

Learning style refers to the way a learner receives and processes information; therefore, every learner had a different learning style (Felder & Silverman, 1988).

A student’s learning style may be defined in large part by the answer to five questions: 1) what type of information does the student preferentially perceive: sensory (external)—sights, sounds, physical sensations, or intuitive (internal)—possibilities, insights, hunches? 2) Through which sensory channel is external information most effectively perceived: visual (pictures, diagrams, graphs, and demonstrations) or auditory (words, sounds)? 3) With which organization of information is the student most comfortable: inductive—facts and observations are given, underlying principles are inferred or deductive—principles are given, consequences and applications are deduced? 4) How does the student prefer to process in-