

Category

Innovative Use of Digital Learning Environments

Title

How to ensure academic integrity in a MicroMasters program

Author(s)

Eva Ponce and Chris Caplice

University or Organization

Massachusetts Institute of Technology, Center for Transportation & Logistics

Abstract

The introduction of the MicroMasters credential, consisting of a sequence of MOOCs and serving as a potential pathway for credit to a Master's degree at MIT and other Universities, dramatically changed how MOOCs need to be designed and run. One critical change is the increased importance of rigorous assessment to ensure academic honesty. In this paper, we review how we address two objectives: providing the best learning experience and ensuring fidelity of assessment in a massive open and online program. We also discuss the main challenges of achieving these objectives and detail two different approaches to ensure academic integrity in a MicroMasters program.

Introduction

MOOCs are tremendous learning platforms where feedback is instantaneous and collaboration between learners is both enabled and encouraged. The first SCx courses offered by the Center for Transportation and Logistics (CTL) were run in 2014 and 2015, prior to the invention of MicroMasters credentials. The courses, at that time, did not lead to any academic credit at MIT. Because of this, we focused solely on creating relevant and engaging content in a highly collaborative learning environment. At that time, the assessment was an afterthought with only weekly assignments that included full hints and provided the correct answer after three tries. As expected, there was a fair amount of cheating between learners – but this was deemed not critical since we were only providing learning – no university credit was being earned.

In the Fall of 2015, these SCx courses became part of the very first MicroMasters program. MicroMasters were developed to provide deep learning and a much higher level of credentialing in a specific career field; supply chain management in our case. The primary differential between individual course certificates and a MicroMasters credential is that MicroMasters credential holders may apply to various Masters programs and, if accepted, will receive essentially a semester's worth of academic credit. This allows a student to complete a university Masters degree in about half the time of a traditional in-residence program. Because of this, the need for rigorous and accurate assessment became critical.

Unfortunately, there is a fundamental trade-off involved with providing an educational platform for both learning and assessment. A platform that is ideally suited for a pure learning experience will, in all likelihood, not be able to provide an accurate assessment of the student's skills, and vice versa. The edX platform was initially designed and implemented primarily as a learning platform where the assessment capabilities were not a high priority. As a result, features that encourage learning and collaboration between learners, can, perversely, enable potential academic dishonesty and cheating.

Results

In order to better meet both objectives (learning and assessment) we clearly differentiate the two environments, as illustrated in Figure 1. The pure learning sections (videos, quick questions, practice problems, discussion forums) provide open access to solutions and encourages collaboration between learners, but does not award any grade points. The pure assessment sections (mid-term and final exams), on the other hand, never display problem

solutions, limit the number of chances to answer, do not provide hints, and strictly forbid any cross-learner collaboration. In other words, to meet each of these two conflicting objectives, we created two distinct environments.

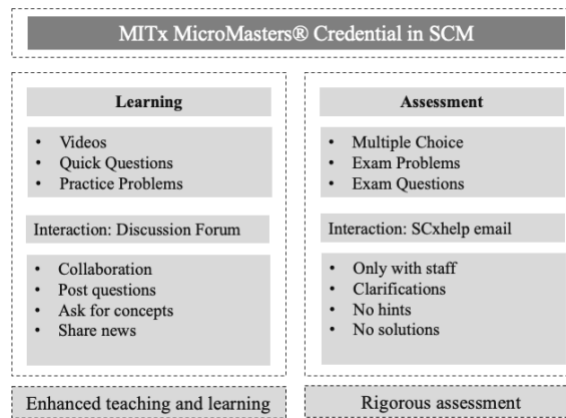


Figure 1. Learning vs. Assessment

The weekly Graded Assignments, however, were a problem in that they are neither pure assessment nor pure learning. Treating weekly assignments as pure learning by assigning no points to them, we believed, would dramatically reduce the number of learners attempting them – thus sacrificing their learning. Conversely, treating them like an exam would not provide any feedback to help them master the concepts. After multiple different approaches, we opted to lean more, but not completely, towards learning (showing correctness, providing solutions, etc.) but also significantly lowered the points assigned to them to minimize the impact of any cheating.

We have found that ensuring academic integrity in a massive, open and online environment, requires a mix of two approaches: prevention and detection. In order to minimize the opportunity to cheat, we used all available randomization tools within the platform for assessment sections and also developed several of our own. We implemented timed exams over a shorter window in all courses, modified the platform to restrict the display of correct/incorrect solution indicators (the green check and red X), and introduced virtual proctoring for the Comprehensive Final Exam. Because one can never eliminate all opportunity to cheat, we also continuously run a variety of detection algorithms. These algorithms flag learners with multiple active accounts or who have submitted copied solutions using hidden characters and identify many other potential forms of dishonest behavior. While both approaches are used, we have spent more time and resources on preventing the opportunity to cheat than on detecting actual cheating.

To enforce academic honesty, we have created our own policy and procedures to deal with potential violators. We use different tiers of actions for various honor violations and provide opportunities for students to appeal any decisions.

In summary, MicroMasters courses need to achieve two, sometimes conflicting, objectives in their courses: learning and assessment. Segmenting the course into two distinct environments, and customizing accordingly, works well. Ensuring academic honesty within the assessment environment also requires two approaches: prevention and detection. Finally, clear, consistent, and repeated communication of these rules to the learners is critical to the overall success.