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Lessons Learned from MOOCs
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ABSTRACT
A breathtakingly short hype cycle prematurely sounded the death knell for massive open online courses (MOOCs) while overlooking the value that they bring to the table: massive data that describe the convergence of teaching, learning, and technology at scale.

Keywords: MOOCs (massive open online courses), instructional design, big data, learning, high impact teaching practices, mastery learning, learner profiles, adult learners, learning modules, video, asynchronous learning

INTRODUCTION
A breathtakingly short hype cycle prematurely sounded the death knell for massive open online courses (MOOCs) while overlooking the value that they bring to the table: massive data that describe the convergence of teaching, learning, and technology at scale.

The University of Colorado (CU) has been a Coursera partner since 2013. Through the development of dozens of open courses and specializations, we have explored principles of learning design by analyzing data from the nearly 2 million learners who have signed up for our courses, reflecting on our course development experiences, and learning from Coursera’s A/B testing.

Many of these lessons in learning design at scale can be applied to the design of face-to-face, hybrid, and “traditional” online courses. They also bear a striking resemblance to the basics of learning design: knowing the learning audience; increasing learner engagement by contextualizing what students need to learn; providing them with community; and ensuring expert and peer feedback through rigorous assessments. We measure the success of learning design by looking at persistence at the micro level—completion of a video, an assessment, an assignment—and the macro level—completion of a course or specialization (a series of MOOCs), as well as by evaluating learning as reflected in formative or summative assessments or peer-evaluated projects.

CU’s explorations of MOOCs are similar to those of our peers. Content spans multiple disciplines, from the humanities to business, from computer science to various health care fields. Faculty elect to develop MOOCs for a variety of reasons. Some are leaders and evangelists in and for their fields. Others use MOOCs to crowd-source new knowledge or to disseminate the results of their funded research. Many instructors use MOOCs as the basis for flipping their classes or for scholarship of teaching and learning. Some departments view MOOCs as a way to recruit students into their face-to-face or online programs. MOOCs also allow the university as a whole to expand its reach, improve its reputation, and experiment with new revenue streams.

LESSONS LEARNED
Based on our experience, we share lessons learned: knowing your learner, employing practices that engage, and ensuring quick feedback of rigorous assessments.

Know Your Learner
Our MOOC principles of design begin with articulating who the learner is for a particular course or specialization, being clear about how the learner will be different in abilities and knowledge before and after engaging with a MOOC, and assuming that learners will behave as if they are volunteer learners, even with the small fee paid for certificates. We create learner profiles that reflect the realities of adult learners’ lives. Based on those profiles, we create modularized content and clearly communicate to learners what they will be learning and how they can navigate through course content.
- Detailed learner profiles serve both as guides for course design and as valuable, published information for learners considering enrolling in a course.

- The majority of MOOC learners are working adults. How content is delivered reflects the realities of their part-time learner status: MOOCs are mobile-ready, largely on-demand, and structured in short, stackable chunks.

- Videos, consistent with neuroscience research and data on viewing habits of students, are short, most well under 10 minutes and often include in-video questions to increase the probability that learners will watch a video to its conclusion.

- Learning objectives, especially those that describe what learners will be able to do—after an entire course or specialization, or even after a module—help students understand the personal and professional benefits of their learning.

- Module titles that incorporate learning objective language help students navigate through a course, reinforcing the overarching structure of the course.

- Coursera’s mastery learning platform and the small fees charged for MOOC or specialization certificates (financial aid is available for learners who need it) also make the learning experience “stickier” for learners who otherwise need to invest little in a MOOC, save their own time and effort.

**Employ Practices that Engage**

Because faculty and instructors are not just remote from their MOOC learners, but also asynchronous—designed well, MOOCs offer an almost hands-off teaching experience once the initial kinks have been worked out—those ineffable behaviors of face-to-face teaching that keep students engaged must be woven into the fabric of a MOOC from the beginning, and not just added as classroom banter as the situation fits. Learners need to see instructors as approachable, knowledgeable, and passionate about their field, and as expert coaches guiding them through course material.

- A video introducing an instructor that gives personal, biographical touches and reveals an instructor’s passion can provide the thousands of learners who enroll in a MOOC a strong and often inspiring connection to the instructor, as well as the course and discipline.

- Ungraded, formative assessments give valuable opportunities to practice newly learned skills and knowledge, and, because they can be repeated, they are learning activities in and of themselves.

- Contextualizing learning within a course can encourage persistence—“Many learners find this week to be difficult, but hang in there—next week will be easier!”

- The same is true for contextualization of the learning within the professional field—“Researchers use the same techniques we’re learning this week when they work in archives.”

- The simple practice of referring backward and forward in a course is as effective at grounding learning in MOOCs as it is in face-to-face courses—“Last week we learned the concepts that provide the foundation of what we will tackle this week.”

- Although the MOOC format supports asynchronous learning, synchronous learning opportunities such as video office hours with professors, real-time, text-based discussions forums, and local, face-to-face study groups increase persistence.

**Ensure Quick Feedback of Rigorous Assessments**

Well-designed assessments also can be tools for learning, opportunities to reflect and think critically about material and mastery both. MOOCs make heavy use automated grading and peer evaluations and allow learners to receive quick feedback for their work.

- Multiple choice assessments provide explanatory feedback for correct and incorrect responses, which promotes learning regardless of whether a learner answered a question correctly or not.

- Coursera’s mastery learning platform used in conjunction with a rich test bank allows learners the opportunity to re-take assessments until they are able to pass a test with the grade they want.

- With the use of a well-articulated grading rubric and the opportunity to practice grading before providing evaluation of open-ended or project-based work of others, learners gain insight into learning objectives.

- Community TAs, volunteers who have performed well in a prior run of a MOOC, are available to provide experienced, and often expert, feedback and guidance to learners.
FINAL THOUGHTS

Many of the practices that are integrated into well-designed MOOCs aren’t revolutionary. Instead, they have been documented frequently by educational researchers. That said, because instructors designing MOOCs have as their audience thousands of vocal, critical learners, they are often forced to learn, adopt, and adapt a wide range of effective practices during an intensive design process and to weave those practices consistently throughout their courses.

Several recommendations highlighted in John Hattie’s Visible learning: a synthesis of over 800 meta-analyses relating to achievement (2009) are evident in effective MOOC instructional design. According to Hattie, positive and significant impacts on student learning are possible when instructors articulate what they expect students to learn, when they establish relationships with their students, and when they are enthusiastic about helping their students learn. Hattie also emphasizes feedback and mastery learning, two common MOOC design practices. Similarly, George Kuh and Ken O’Donnell’s 2013 Ensuring quality and taking high-impact practices to scale calls out practices known to promote student success. Of those, the recommendations to provide frequent and timely feedback and to incorporate real-world applications of learning are discernable in MOOC design.

The volume of learning data produced by MOOCs lend further validity to the effective practices highlighted by Hattie, Kuh, O’Donnell and others and might thereby make persuading faculty to adopt them in face-to-face or other online modalities easier. MOOCs also provide a unique opportunity to incorporate effective practices into asynchronous learning environments, underscoring the flexibility and adaptability of the practices themselves. Far from being a short-lived, overly-hyped educational trend, MOOCs might well be long-lasting because they uniquely coalesce effective practices and the data that validate and help further refine them.

REFERENCES


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