WEDNESDAY COMMUNIQUÉ

June 12, 2013

The Millennium Project: The Millennium Project is a research center at the University of Michigan that concerns itself with the impact of technology on our society, our communities, our institutions, and our planet. Of particular interest is the research on higher education as illustrated by the posting titled "Fixing the Fragmented University."

IDEA Teaching Evaluations: UNM has been using the IDEA (Individual Development and Assessment) system to obtain end-of-semester course- and instructor-related feedback from students since 2008. That feedback is used as one input to instructor's performance, promotion, and tenure evaluations. In response to concerns about the effectiveness of this tool, a working group was formed to investigate an upgrade or replacement. The working group is faculty-driven and includes several Faculty Senate, student and administrative representatives.

Important goals for a new or updated system include timelier and higher-quality feedback, greater ability to customize survey content to specific courses and pedagogy, more robust options for online surveys, and simpler administration, data analysis, and results interpretation. A description of progress to date and future plans and a place to give feedback can be found at this web site. Please help the working group and the Faculty Senate by providing additional comments before the RFP requirements are finalized.

Studying Learning in the Worldwide Classroom: First, I would like to thank those of you who have already engaged in the discussion of MOOCs. As I predicted (one of the few guarantees in life is that I will hear from many of you), the comments have ranged from the very positive to the very negative, with good supporting arguments on both sides. In order to keep the conversation going, I will try in this space and on the blog to continue to stoke the flames by presenting studies and arguments supporting either side. Contrary to some blog and e-mail comments, I assure you first that my own judgment about MOOCs falls closer to the "let me taste the unusual dish" on a foreign trip, than the "let us burn the ships that brought us here." This week, I am linking to a study about learning in one of the first MOOCs, namely, one by MIT titled "Circuits and Electronics." The study was conducted by a team of multidisciplinary researchers from MIT and Harvard, the two institutions who partnered to create edX, one of the non-commercial MOOC providers. The study begins by trying to adapt and distinguish between approaches of studying learning in brick and mortar classrooms versus large online courses, and more specifically MOOCs. I have selected a few of the more interesting findings from that study (and highlighted what was surprising or interesting to me, based on my prior prejudices) but encourage you to look over the entire paper to get the full picture before you agree or disagree with any of the excerpts below.

> Participation and performance do not follow the rules by which universities have traditionally organized the teaching enterprise: MOOCs allow free and easy registration, do not require formal withdrawals, and include a large number of students who may not have any interest in completing assignments and assessment.

> Students came from 194 countries, virtually all in the world. The top five countries were the United States (26,333), India (13,044), the United Kingdom (8,430), Columbia (5,900), and Spain (3,684). **Although it was speculated that many Chinese students would enroll, in fact, we counted only 622 Chinese registrants.** Discussions were the most frequently used resource while doing homework problems and lecture videos consumed the most time. During exams, old homework problems were most often referred to, and most time was spent with the book, which is otherwise largely neglected. Some of the findings were not particularly surprising. For example, of the over 1,100 students who were asked about their age on the particular survey they received, most reported they were in their 20s and 30s, although the entire population of 6.002x students who responded to that question ranged from teenagers to people in their seventies. As might also be predicted, 88% of those who reported their gender were male. Of the survey responders who

answered a question about highest degree attained, 37% had a bachelor's degree, 28% had a master's or professional degree, and 27% were high school graduates.

Given that the topic of circuits and electronics has professional applications, we were not surprised to learn that over half the survey respondents reported the primary reason they enrolled in 6.002x was for the knowledge and skills they would gain. Although, interestingly, only 8.8% stated they registered for the course for "employment or job advancement opportunities." **Over a quarter of the students took the course for the "personal challenge."** There were no correlations between motivation for enrollment and success in the course. Whether students were taking 6.002x to advance their knowledge or because they wanted the challenge (we realize, of course, the two could be interrelated), it did not seem to affect their performance in the class.

In many ways, 6.002x mirrors its on-campus counterpart: it is built from lectures, albeit shorter ones than in a traditional college course, with questions embedded between lectures so students can work with the concepts just explained in the video. 6.002x also included tutorials and laboratories. Similarly, the edX students were assessed in the same way as their on-campus counterparts—through the scores they earn on homework assignments, labs, and a midterm and final. Thus, we argue, that "success" in 6.002x can be defined as it is in the traditional college classroom, namely, by the grades students earned. We have labeled this measure of success as "achievement," and in some (but not all—please see below) of our models, "achievement" is defined as "total points in the course, weighting the individual assessments (i.e., homework, lab assignments, midterm, and final) as originally laid out in the syllabus." Using this definition, we found no relationship between age and achievement or between gender and achievement, and we found only a marginal relationship between highest degree earned and achievement. There is a correlation between students' previous course experience in mathematics and achievement, but, again, students were told at the onset of the course that they needed to know basic calculus and linear algebra, as well as have some familiarity with differential equations.

The strongest correlation we found between what we are calling "student background" and achievement was in whether or not the survey respondent "worked offline with anyone on the MITx material." The vast majority of students who answered this question (75.7%) did not. However, if a student did collaborate offline with someone else taking 6.002x, as 17.7% of the respondents reported, or with "someone who teaches or has expertise in this area," as 2.5% did, that interaction seemed to have had a beneficial effect. On average, with all other predictors being equal, a student who worked offline with someone else in the class or someone who had expertise in the subject would have a predicted score almost three points higher than someone working by him or herself. This is a noteworthy finding as it reflects what we know about on-campus instruction: **that collaborating with another person, whether novice or expert, strengthens learning.**

One of the more troubling aspects of MOOCs to date is their low completion rate, which averages no more than 10%. This was true of 6.002x as well, with less than 5% of the students who signed up at any one time completing the course. Specifically, of the 154,763 students who registered for 6.002x, we know that 23,349 tried the first problem set; 10,547 made it to the mid-term; 9,318 passed the midterm; 8,240 took the final; and 7,157 earned a certificate. **In other words, 6.002x was a funnel with students "leaking out" at various points along the way.**

In just the few months we have been working with the data from 6.002x, we have come to appreciate what a different animal MOOCs are, and some of the challenges they pose to researchers. The data are more numerous and at a finer grain than have ever been generated from one single course before. **The students are more diverse in far more ways—in their countries of origin, the languages they speak, the prior knowledge the come to the classroom with, their age, their reasons for enrolling in the course.** They do not follow the norms and rules that have governed university courses for centuries nor do they need to. Although perhaps there are not more instructional components in a MOOC than are available in the typical college course—a statement that can be contended, we suppose—those pedagogies are being used in new ways by a wider variety of people than exist in the average college classroom."

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