***S .Grynyuk***

*Kyiv*

***Online Education: From Novelty to Necessity***

Today, digital innovation is driving unprecedented change across the education sector. It has the potential both to improve student learning outcomes and expand access to high quality education opportunities in ways that would have been unimaginable even a decade ago.

Because this revolution is taking place online, it is globally accessible and able to leverage the lower distribution costs afforded by the Internet. These digital innovations will transform both what happens in the classroom as well as broader educational policy in the years to come.

As a result, education is undergoing a monumental shift, from a factory model to a digital, personalized model. The shifting of education from analogue to digital is a one-time event in the history of the human race. At scale, it may have as big an effect on the world as indoor plumbing or electricity. The consequence of nearly every human being receiving as much education as she wants and her ability permits will likely transform the quality of life and global GDP within one generation. Massive pools of human talent will be unlocked. Better-educated people will raise better-educated kids.

This article covers the revolution in online education, as played out in two main areas: distribution and data-mining. It will also assess the disruptive innovation occurring in higher education today and describe its ramifications for the future of universities.

**Revolution in Distribution**

The widespread growth and acceptance of online classes – whether primary, secondary or higher education; credit bearing or not-for-credit; private or open; paid or free; delivered by for-profit institution or not-for-profit – reflect a seismic shift in the education universe.

According to *The New York Times*, 2012 is the “year of the MOOC” (massive open online course), but they easily could have called it the “year elite colleges embraced online courses”.

The MOOC ecosystem today provides free online courses in nearly every higher education field of study. Some MOOC providers, like Coursera, are for-profit and venture-funded – they will one day be forced to pursue revenue and liquidation opportunities for their investors. Others, like EdX and Khan Academy, are not-for profit – meaning they will be perpetually capital-constrained versus any for-profit players that figures out a successful revenue model.

As of May 2013, the platform offers courses from 27 participating universities, including Georgetown University, the University of California at Berkeley, Cornell University, Wellesley College and Rice University.

To date, MOOCs and Khan Academy offer only part of what constitutes a course. They offer lectures with top teachers. This is certainly revolutionary, but it is also incomplete. For all the massive size and bureaucracy of the global education system, students primarily do just two things to drive their learning: (a) attend classes; and (b) read or interact with texts and other materials.

MOOCs offer very large and impersonal – but free – classes, sometimes supported with very light textbooks and materials. Professors generally contribute notes and suggest free materials to students, but to date the focus of MOOCs has been almost entirely on lectures. Almost all of the additional learning that students normally are expected to do on their own – by studying a carefully curated textbook, with professionally created scope and sequence, instructional design, assessment items and production values – is missing. The other supporting services that universities provide, both academic services like libraries and tutors, as well as other nonacademic services, are also missing.

From 2012 to 2013, MOOCs were the poster child for online education. It is easy to understand why people are so excited. Education has always had an access problem. People intuitively understand that creating video versions of the world’s great lecture experiences represents the beginning of a solution to this problem. By providing free access to world-class educators, MOOCs deliver tremendous social good. For many working adults with families, these courses represent an exciting way to improve one’s professional value and get promoted or find new work. When coupled with innovations in Internet infrastructure and hardware, MOOCs also provide an opportunity for students in both developed and developing countries to access educational experiences from top-tier universities for the first time. But the commercial value of MOOCs has not yet been proven. MOOCs’ main value-added may lie in serving as a lead-generation mechanism for for-credit, for-fee courses provided by institutions – sometimes referred to as “small private online courses” (SPOCs). Today, the billions of people who have left the formal K-12 education system are largely invisible to that system, though countless numbers would love to take courses from reputable schools. MOOCs could provide a large, untapped demographic to which SPOCs can market their for-credit or for-certificate offerings.

Given the business dynamics at work, it will likely be high production value, for-credit online courses that will play the central role in the ongoing educational revolution. The factory model of education is no longer necessary.

**Revolution in Data-Mining**

Educational data-mining is broadly defined as the process of developing new methods for using data to improve learning experiences. The field is closely related to that of learning analytics, which focuses more specifically on the application of these methods at large scales to predict student success and/or improve outcomes. Educational data mining can perform advanced “user modeling” to determine what a learner knows, what a learner’s behavior and motivations are and how engaged the learner is with a given course. Learning analytics can determine when students are getting off-track, or when they’re becoming bored or frustrated.

By identifying and analyzing patterns in educational data, technology can now do all of the following: personalize the learning process; predict future student performance and remediate preemptively; reduce administrative work for teachers; measure the efficacy of learning content; help publishers refine content; unlock the potential for cross-disciplinary education; gamify learning; aid in study habituation; conduct longitudinal studies; and facilitate community development and in-person activities (like study groups).

Ultimately, there is the potential for continuous improvement in all education products owing to the multiple feedback loops that provide valuable information to all parties. Students get immediate help on the next problem or piece of content they are tackling; teachers receive feedback each day on both individual students and their classes as a whole to guide individual intervention and class lessons; administrators can judge large-scale progress of their whole schools and district and state officials are able to see broad metrics quarterly or annually to inform overall initiatives. In addition to user-modeling, the ability exists to profile learners into groups to allow for a deeper understanding of each learner, or a more productive collaborative learning experience among learners.