Backgrounder: Disruptive Technologies in Higher Education

Ken Reimer, May 21, 2012

Disruptive Technology

The term "disruptive technologies" was first used in 1995 by Clayton M. Christensen and Joseph Bower in an article *Disruptive Technologies: Catching the Wave*. Since that time, our understanding and recognition of disruptive technologies has grown, and numerous articles and books are emerging on the topics of disruptive technologies, disruptive innovation, disruptive moments, and other disruptive forces.

"The word 'disruptive' connotes an interruption or upset to the orderly progression of an event, process, or activity. 'Disruptive' can also imply confusion or disorder, or a drastic alteration in structure. In short, it entails a discontinuity. A disruptive technology may change the status quo to such an extent that it leads to the demise of an existing structure" (p. 11, CFDT-NRC).

Reasons to Pay Attention to Disruptive Technologies:

The Committee on Forecasting Disruptive Technologies gives reasons to engage in forecasting upcoming disruptive technologies, which help describe the rationale for monitoring and addressing disruptive technologies (p. 11, 34. CFDT-NRC)

1. To understand the potential disruptive impact of certain technologies

2. To increase the lead time for stakeholders to plan for and address potential disruptions

3. To give stakeholders tools to allocate resources in a manner that increases the probability of capitalizing on or mitigating the risk of a potential disruption

4. To predict enrolment trends, where students are attracted to hot disruptive technology fields that will employ future workforce.

Solis (2012) believes it is critical to discover the difference between technology which is trending versus technology that is showing signs of becoming or already is disruptive. At UNB we need to ask if we want to "provide leadership that emphasizes innovation, forward thinking, and a willingness to cater to an emerging rather than a historical (and often dominant) market to help speed the introduction of a disruption that is inevitable" (p. 35 CFDT-NRC). Do we want to get ahead of the curve?

Characteristics of Disruptive Technologies:

An interesting phenomenon regarding the birth of many disruptive technologies is the convergence of more than a single discipline, when a crossover technology is born (p. 35 CFDT-NRC).

The disruptive technologies may combine with other technologies to disrupt a workforce, class of institutions, society, or the economy. Although the disruptive technologies often generate significant, often exponential new value, these technologies require that institutions significantly change to take advantage of it (p. 35 CFDT-NRC).
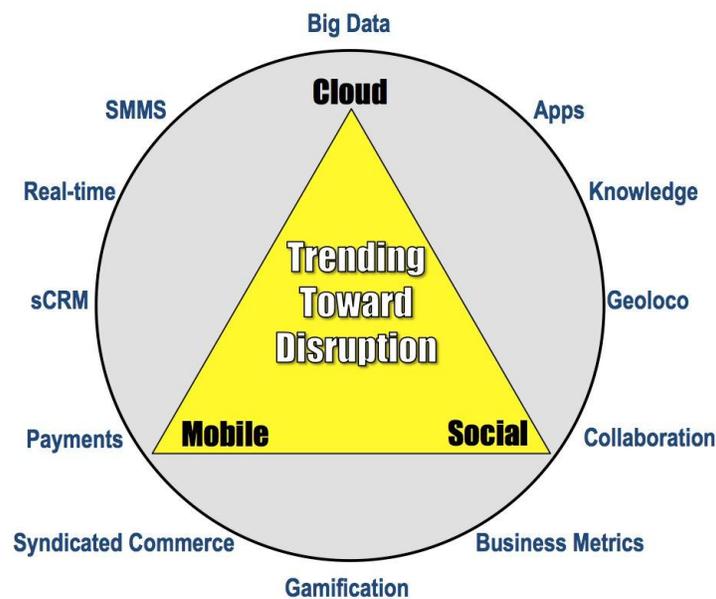
The Committee for Forecasting Disruptive Technologies categorizes all disruptive technologies in one of the following six categories; enabler, catalyst, morpher, enhancer, supersede, breakthrough.

Signposts that Predict Disruptive Innovation:

There are a few signposts that are relevant to higher education, which could predict likely disruption in the current higher education models.

- The plateauing of any technology (or educational model) in terms of performance, cost, or efficiency (CFDT-NRC, 2009)
- Emerging applications are providing alternative technologies that are converging on our territory.
- Markets dominated by expensive products and services considered overpriced and too good relative to the needs of existing customers (Christensen, 2004).

Brian Solis (2012) provides a graphic of a "Golden Triangle" concept where developments occurring in the golden hub should be evaluated for potential disruptive force:

Potential Disruptive Technologies that Could Affect Higher Education:

Conversation in blogs, Twitter, scholarly articles, and face-to-face have identified a number of areas that we should be aware of, that could be candidates for disruptive innovation. This is draft listing, to spark conversation, and to serve as a starting point for prioritizing our focus on disruptive technology.

Higher Education Business Model	
	For-profit universities
	OCW and MOOC open (free) courses at respected instiutions
	Higher Ed becoming more modular (eg "badging" credentials)
	Online Courses becoming status quo
Student Learning	
	Wireless and 3G/4G in the classroom
	Distractions in the classroom (Facebook, Twitter, Movies, Games)
	Game-based and Simulation Learning Apps
	E-Textbooks
	Crowd-sourcing of knowledge (vs. authoritative source)
Safety, Security, and Privacy	
	Student movements/protests that can arise in real-time using Twitter
	Ubiquitous cameras – everything is recorded
	Students recording in the classroom
Research, Spinoffs, and Entrepreneurship	
	Specific new technologies/applications may create startup opportunities
	Crowdfunding, a new method for funding startups, perhaps even funding research?

Gathering local thought-leaders who are individually dealing with disruptive technologies, will help UNB to be proactive in mitigating negative impacts, and taking advantage of opportunities in the next few years. This effort may also help UNB provide leadership in contributing to the Province of New Brunswick innovation agenda as outlined in their recent "Strategies for Innovation" framework.

References:

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