



PLENARY 1

A Framework for Higher Education 2.0: 21st Century Education for 21st Century Learners

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Higher education institutions today appear to be somewhat slow in responding to the needs of the 21st century workplace. Fortunately, there is a growing trend among higher education providers who believe in providing meaningful and relevant education to benefit students and to prepare them for an increasingly globalised world. Making use of emerging technologies, they make education exciting, stimulating, fun and enjoyable. The challenge that many educational institutions continue to face today is how to make this paradigm shift. How do we move from the way we know education has been to how education should be? How do we break the mould to becoming something flexible, creative and challenging? An education system that responds to societal needs is a system that will contribute to the future growth of the nation and in view of the various technological developments, the incorporation of technology to support the provision of a learner-centric environment is needed more today than ever before. How does one move from 19th century paradigm of education to 21st century paradigm? This paper seeks to provide a framework for 21st century education and examples of how emerging technologies have been used.

Keywords: Emerging technologies, 21st century education, framework

Introduction

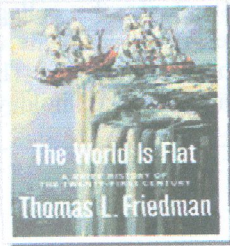
Anyone will agree that the Internet and other ICT developments have resulted in social, economic and political changes. These developments have in turn influenced the education scene. The education landscape is changing as well. There are more than 1.8 billion users on the Internet today and personal ICT devices are becoming more powerful yet increasingly affordable. Between 2000 and 2009, the Internet population grew by 399.3 percent (Internet World Stats, 2010). It is, simply stated, a phenomenal growth that has impacted our daily lives, including the way students socialises with one another and how they are learning.

As Palfrey & Gasser (2008) and Tapscott (1996, 2008) described in their books, the millennials, born after 1980, are a different breed of people, compared with those born earlier: the Xers, baby boomers and silent generation. They have access to networked digital technologies and are very adept in using them. The Millennials are also good in multitasking, are goal orientated, have positive attitudes and enjoy collaborating (Oblinger, 2003). They have an information age mindset where computers are not technology but are assumed part of life, where the Internet is better than television and where doing is more important than knowing, and typing is preferred to handwriting. Furthermore, staying connected is essential and they have a zero tolerance for delays.

Hence, it can only be expected that today's students are expecting a different set of learning experience thus making it essential for educators to understand the "new" student's expectation so as to be able to produce the desired learning. Based on the findings by Pew Research Centre (2009) when comparing the generational experience; three-quarters of Millennials have a profile on a social networking site such as Facebook, compared with half of Xers, 30 percent of Boomers and six percent of Silents. Millennials are also regarded as a confident group of individuals, connected and open to change. The millennials (born between 1980 and 2000) make up the campus population today and will continue do so for more than another decade.

As Friedman (2005) pointed out in his book, "The World is Flat," the world has become flatter as a result of collaborative technologies and the convergence of mobile, wireless, personal or virtual technologies. He listed ten flatteners that have contributed to a flat world (see Figure 1).

Friedman's ten "flatteners" in the leveling the global playing field:



- Collapse of the Berlin Wall in 1989
- Netscape going public in 1995
- Workflow software (e.g. PayPal and eBay)
- Open sourcing (e.g. Mozilla, Apache, Wikipedia, Linux, Mozilla Firefox)
- Outsourcing (e.g. telephone reception service)
- Offshoring (e.g. to China, Vietnam and Mexico)
- Supply chaining (e.g. Wal Mart)
- Insourcing (e.g. UPS fixing Toshiba laptops)
- Informing (e.g. Google, Yahoo!)
- The steroids (e.g. wireless, file sharing, VoIP)

Figure 1. Friedman's ten flatteners (adapted from Bonk, 2009)

However, Florida (2005) contends that as the world becomes flatter, it is also becoming spikier. He observed that these are places in the world that are more economically developed and have skilled workers to help further the economic growth. This implies that as we become more and more globalised, it is possible to leverage on the Internet for one's economic growth but it is also imperative that we have the required skills to take advantage of other economic opportunities. Interestingly, Bonk (2009) recently explored ten key trends in educational technology that will make education more open and how these are expected to change the education landscape whether we like it or not (see Figure 2).

Ten Openers: WE-ALL-LEARN

- Web Searching in the World of e-Books
- E-Learning and Blended Learning
- Availability of Open Source and Free Software
- Leveraged Resources and OpenCourseWare
- Learning Object Repositories and Portals
- Learner Participation in Open Information Communities
- Electronic Collaboration
- Alternate Reality Learning
- Real-Time Mobility and Portability
- Networks of Personalized Learning

<http://worldisopen.com/>

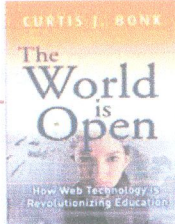


Figure 2. Bonk's WE-ALL-LEARN openers

Indeed, as Bonk indicated, web technology is revolutionising education in many ways and it is possible that when Web 3.0 comes around, students will have even more choices in how they seek learning opportunities. Recent developments such Peer-to-Peer University (<http://p2pu.org/>) and University of the People (<http://www.uopeople.org/>) are just two examples of new educational "institutions" that may change the education landscape.

Learning in the 21st Century

In many institutions, it can be observed that many educators are slow in adjusting to the daily habits of learners of the 21st century. Today's learners or the millennials tend to use social networks or new media for communication and information. They also tend to practise a culture of sharing (Wheeler, 2009) and collaboration. Downes (2005) observed that "learning is characterized not only by greater autonomy for the



learner, but also a greater emphasis on active learning, with creation, communication and participation playing key roles, and on changing roles for the teacher, indeed, even a collapse of the distinction between teacher and student altogether.”

According to Oblinger (2003) and Oblinger & Oblinger (2005), it is essential to understand learners such as their learning styles, attitudes and approaches before facilitating learning. She doubts that college and university faculty, administrators and staff understand this well enough when designing programs or courses. The millennial students gravitate toward group activity and are fascinated by new technologies. They have distinct learning styles and lean toward teamwork, experiential activities, structure and use of technology.

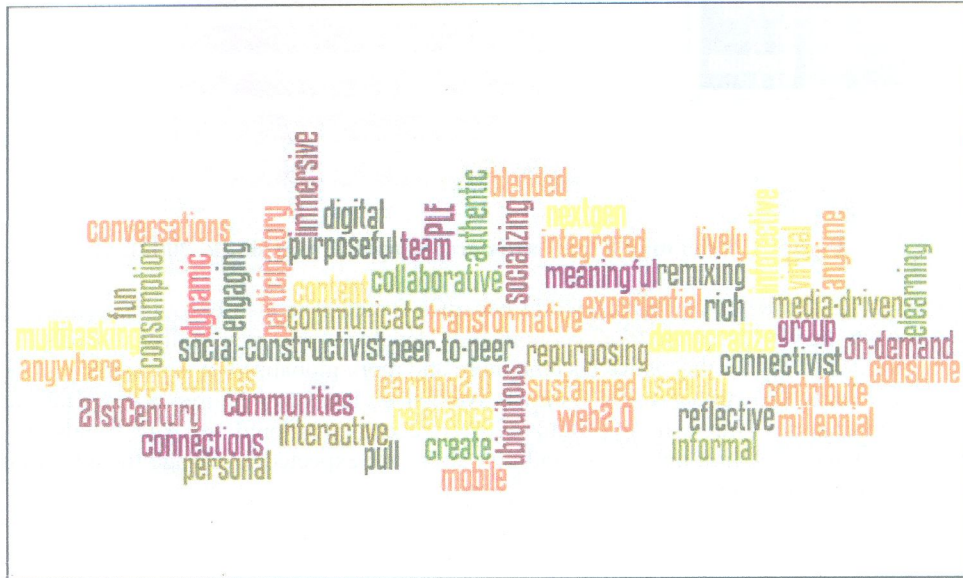


Figure 3. Descriptors of 21st century learning

While some educators today consider the growth of e-learning explosive, others seem to feel that changes made in higher education institutions have been somewhat slow. As a result, learners in higher education institutions today may be ill-prepared for an increasingly interconnected world especially with the transformation of the Internet from Web 1.0 to Web 2.0 (Bonk, 2009; Downes, 2005) and soon, Web 3.0.

Table 1 describes what 21st century learning should be like (see Education 2.0 and Education 3.0) and how 21st Century Learning can be described is illustrated in Figure 3. The latter incorporates use of Web 2.0 tools and where learning consists of going beyond consumption of knowledge or information provided online but also involves communities and connections. Imagine a class of students going online to discuss their thoughts, issues and opinions on selected topics with their course mates as well as their professor. Learning is purposeful and meaningful, suitable for the millennial generation or the “nextgen” group of students.

Connectivist learning as proposed by Siemens (2005) is the new “theory” that best describes learning that is connected, interactive and where learners communicate with each other synchronously and asynchronously anywhere and where ever they are and probably through mobile devices such as smart phones, iPods, iPhones, iPads and other latest inventions. It makes learning fun and the fact is that learners contribute to each other’s learning experiences. It becomes personal in nature, informal and where learners appreciate the transformative approach for millennials.

Learning is on-demand enabling learners to “pull” information, resources or activities into their daily lives. They could be doing this any time using mobile devices. As such, this makes learning ubiquitous. The situation will be such that the learner will find learning a series of engaging activities. Imagine learners being able to watch a YouTube video and post their comments or download a podcast and add their own opinions about the topic in an online forum. It could be a lively debate during which they involve themselves in for a few days perhaps. They could also be playing the role of an infotective, to locate other relevant information before they contribute to forums in a platform such as Facebook or Ning. Learning could be media-driven as exemplified by YouTube videos, slideshare slides or Scribd resources on the Internet. It would be blended learning where a variety of



media, modes or approaches are used. It is more or less like creating a Personal Learning Environment (PLE) for students where learning is better sustained.

Table 1: Educational generations in higher education

Characteristics	Education 1.0	Education 2.0	Education 3.0
Primary role of professor	Source of knowledge	Guide and source of knowledge	Orchestrator of collaborative knowledge creation
Content arrangements	Traditional copyright materials	Copyright and free/open educational resources for students within discipline, sometimes across institutions	Free/open educational resources created and reused by students across multiple institutions, disciplines, nations, supplemented by original materials created for them
Learning activities	Traditional, essays, assignments, tests, some groupwork within classroom	Traditional assignment approaches transferred to more open technologies; increasing collaboration in learning activities; still largely confined to institutional and classroom boundaries	Open, flexible learning activities that focus on creating room for student creativity; social networking outside traditional boundaries of discipline, institution, nation
Institutional arrangements	Campus-based with fixed boundaries between institutions; teaching, assessment, and accreditation provided by one institution	Increasing (also international) collaboration between universities; still one-to-one affiliation between students and universities	Loose institutional affiliations and relations; entry of new institutions that provide higher education services; regional and institutional boundaries breakdown
Student behaviour	Largely passive absorptive	Passive to active, emerging sense of ownership of the education process	Active, strong sense of ownership of own education, co-creation of resources and opportunities, active choice
Technology	E-learning enabled through an electronic learning management system and limited to participation within one institution	E-learning collaborations involving other universities, largely within the confines of learning management systems but integrating other applications	E-learning driven from the perspective of personal distributed learning environments; consisting of a portfolio of applications

Source: Keats & Schmidt (2007) from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1625/1540>

Learning is never dull for it never stays the same. It is fun, dynamic and participatory where every learner is involved in some way without feeling any form of threat. They feel safe and welcomed in voicing their opinions or in creating and sharing resources. Their lecturers or tutors are true facilitators of learning knowing when to guide, correct, encourage, motivate and promote learning. It may require learners to multitask such as reading or writing, presenting or listening and doing different things at different times to enrich the learning. This in turn optimises the preferred learning styles of students. There are plenty of opportunities for experiential learning



largely based on a social-constructivist mode where peer-to-peer learning takes on a larger role. It is e-learning at its best. There is authentic learning, possibly using mobile and portable technologies and where learning can be sustained throughout the entire course. There is never a dull moment and, at times, learners would have opportunities to reflect on their learning experience or the new knowledge gained. Students will be appreciative of how learning can be enjoyable and fun at the same time.

Based on how web technologies have evolved and how they will impact on how education has and will progress, Keats and Schmidt's (2007) comparison between Education 1.0, Education 2.0 and Education 3.0 is interesting. Just looking at the role of the professor alone, Education 1.0 is characterised by a one-way process with the professor as the source of knowledge. Going into Education 2.0, the professor is both facilitator and a source of knowledge. In Education 3.0, the professor orchestrates the creation of collaborative knowledge. In contrast, the student is largely passive and is mainly an absorber of knowledge (Education 1.0). In Education 2.0, the student is provided with a learning management system through which learning resources are provided and some of the learning activities take place. In Education 3.0, the student's learning is driven by a perspective of personal distributed learning environments with a portfolio of applications. Table 1 shows a comparison of the three generations of education based on Web 1.0, Web 2.0 and Web 3.0, respectively.

Framework for Higher Education 2.0

21st Century Curriculum

Clearly, a 21st century Curriculum needs to be introduced. It is the first set of Cs in the framework. As highlighted earlier, Friedman's ten flatteners have had a large influence in how the world has changed and functions. During the 21st Century Summit, a meeting of leading authors, researchers, policy makers, educators and artists from around the world, recognised that the world is not only changing but becoming smaller and that it is similarly experienced in countries across the globe (New Media Consortium, 2005). It was noted that there was a need for 21st century literacy, a new language that needs to be put in place in many aspects of society, including education. In particular, 21st century skills and methods must be in schools and universities to use the natural talents of the millennials to help them become better and more effective communicators.

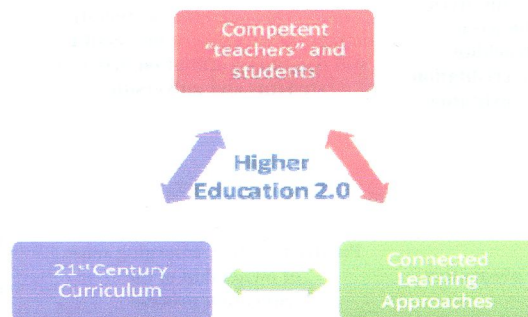


Figure 4.3 C's Framework for Higher Education 2.0

Succeeding in the 21st century is a must and all those in higher education who are concerned with preparing students to succeed in today's world must develop ICT proficiency among their students. And given the developments of ICT technologies in general and Web technologies (Bonk, 2009) in particular, the demands of employers as a result of and social, economic and political developments, and especially on how well these have impacted on the daily habits of the millennials, education must change. It was also noted (New Media Consortium, 2005) that 21st century literacy has the potential to transform the way we learn, and if properly applied, learning is pleasurable and happens more rapidly.

Connected learning approaches

To remain relevant, institutions of higher learning must change or become phased out. Is this why some of the older elitist institutions have moved from traditional ways of teaching to the provision of podcast lectures (see Academic Earth at <http://www.academicearth.com/>), OpenCourseWare (see MIT OpenCourseWare at <http://ocw.mit.edu/index.htm>) with more than 2,000 of its courses online, and Carnegie Mellon University through its Universal Digital Library project (see <http://www.ulib.org/>)? They not only have strong Web learning presence but are well-acknowledged by the education communities who believe in keeping up with the needs



and requirements of the 21st century. It appears that soon, learning means having access to such a wealth of resources. Or, in the words of Elliot Massie (in Bonk, 2009), fingertip knowledge, that is, knowing how to access information will be more important than memorising information.

The iPods, iPhones and iPads have and will continue to revolutionise education and learning. It is “learning on the go” or having a “teacher in the pocket.” Universities such as Drexel, Duke and Oklahoma Christian University have given away such mobile devices to their freshmen. Connecting their students to learning resources, podcasted lectures appear to be the right thing to do. It is about having a second “C” “in the form of “Connected learning approaches” for 21st century learning.

Competent teachers and students

The primary facilitators of learning are the professors who will no doubt need to be competent in the preparation of learners for the 21st century and using new media appropriately. They need to be able to engage their students in the learning process and activity, and they need to instil joy and fun in learning. Learning must be collaborative and participatory and learners need to be provided the opportunities to create and be active in the learning community. The strengths and personal preferences in terms of media and learning style of the Millennials should be appropriately met. The various modes of learning must be well-supported by professors. Losing one’s authority as the “sage on the stage” may be uncomfortable as he or she moves towards adopting the role of being a “guide on the side.” Competency is the third “C.”

Summary and Conclusion

The paper has proposed and highlighted the need for the **3Cs framework for higher education 2.0**. It is expected that institutions will be able to cater to the millennial generation and ensure relevance in today’s world. The primary responsibility of higher education institutions is to prepare students to succeed in the real world and being able to connect and engage in an increasingly globalised and networked world is key. In view of devices that are increasingly mobile, portable and inexpensive; and where connection to the world is one huge wireless environment, seamless, quick and easy, it is timely for institutions today to also consider the adoption of digital learning resources or platforms for personalised learning. Learners will benefit. Professors will find it challenging at first but more meaningful and rewarding later. Ubiquitous learning or u-learning will soon result from this approach to learning. It is “learning on the go” taking place at any time and at any place, yet purposeful and meaningful for the 21st century.

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