

Radical and disruptive innovation in higher education

Zulkifli Khair, Mohamad Shah Kassim and Shafudin Mohd Yatim

Faculty of Management, Universiti Teknologi Malaysia,

81310 Johor Bahru, Johor, Malaysia

(E-mail: zulkiflih@utm.my)

Abstract

Information and communication technology (ICT) has grown so rapidly, changed and keep changing the world including higher education. This concept paper tends to review radical and disruptive innovation in higher education. Blended learning could be the practical way in applying ICT. We found that radical and disruptive innovation in higher education could be explained in two perspectives; implementation in transforming the university and in developing innovative university as well as producing graduates that could create future radical and disruptive innovation. We also establish that there are at least three patterns of the leading innovative universities; first, able to get big funding from the privates, second, could produce high impact research and third, focus on technical and engineering as core programs.

Keywords: Radical innovation, disruptive innovation, higher education, adult education, heutagogy.

Introduction

Most probably the word 'innovation' was first introduced by the Nobel Prize Laureate in Economics, Joseph Schumpeter in 1930s. He believes that innovation as an important process in business and economy. After reviewing numerous literatures on innovation, Kotsemir et al. (2013: 12) concluded that innovation not only deals with new and novelty but also in 'making change and efficiency in terms of market conquest and fast promotion of new products'. Without doubt, innovation is based on technical and engineering research, as well as in other field including in education that involves with new system and method of learning, teaching and management.

In early years, innovation was divided into radical and incremental. Radical is generally really original based on scientific ideas and have impact to the society. Examples of radical innovations are microwave oven and smartphone. Meanwhile, the best example for incremental or upgraded innovation is smartphone with new models based on new features. Later on, types of innovation became expanded. Mohd. Azhar (2004) for example outlined types of innovation into four; radical, incremental, modular and design. Disruptive innovation term then has being coined by Clayton Christensen in 1995.

Disruptive innovation is directly deals with ‘technological core’. Internet is the best example of radical and disruption innovation. This is supported by Christensen and Raynor (2003) and even Isenberg (1999) described internet as ‘mother of all disruption’. The radical and disruptive nature of internet stood up with ‘technological core’ particularly with the technology of internet protocol (IP) and wireless. This leads to the rapid growth of information and communication technology (ICT). ICT has keep going implemented intensively in education and training including at higher education institutes.

According to Christensen (2017), if cellular phones are disruptors fixed line telephony is disruptee, meanwhile if community colleges are disruptor four-year colleges became disruptees. These explain the concepts of disruptive innovation in ICT as well as in higher education. Clayton Christensen also produced books *Disrupting Class* (focused on K-12 public school) and *The Future University* that based on his theory of disruptive innovation. Christensen and Eyring (2011) believe that low-cost, convenient online learning blended with periodic classroom-based instruction could boost the performance of university without denying the severe criteria and quality by the authorized body.

The digital information and communication has transformed the form of learning. Learning can happen more easily and relaxed. It can also be flexible, beyond time and boundaries, thus enabling lifelong learning (Norazah et al., 2010). Jay Cross claimed himself as the founder of ‘e-learning’ term (Cross, 2004; Cross et al., 2002). According to Cross (2004) computer-based learning and computer-based training (CBT) began in 1984. When internet has been globally introduced in early 1990s, few terms of new kind of learning existed; digital learning, online learning, m-learning, blended learning and deeper learning.

In fact, the practical way of learning in almost higher education institutes in developing countries is blended learning, which combine between face-to-face learning and non-face-to-face learning (online and offline learning). Massive Open Online Courses (MOOC) plays important role as sources of knowledge. According to Collier (2013), best courses in MOOC should have strong content, well-designed instruction, meaningful assessments, and effective creation of course communities. Besides that, social media including Facebook, Twitter, blogs, wikis and even Youtube also play important role in non-face-to-face learning.

Blended learning in Universiti Teknologi Malaysia (UTM) for example has few digital resources such as UTM MOOC, UTM-MIT Blossoms, Video of Exemplary Professionals and UTM e-Learning. UTM promotes 30 per cents of collaborative e-learning that consist of four components (UTM Centre for Teaching and Learning, 2017):

- a) Information; course outline.
- b) Resources; at least seven items like file, page, URL etc.
- c) Activities; at least three items like chat, choice, database, forum, survey etc.
- d) Assessment; at least two items like assignment, quiz and workshop.

Higher education moreover cannot deny the power of gamification in teaching and learning process. For instance, MonsoonSIM provides an experiential learning platform to students and also assists transforming education using this platform (MonsoonSIM, 2017). MonsoonSim has been used by Faculty of Management of UTM since 2016. In total, it is about two thousand (2000) students from various faculties in UTM got benefit even for some students there was no prior knowledge about business at all. Twelve concepts of learning in field of business, accounting and finance, and human resources management could be learned through playing games unconsciously.

At the end of the class, the evaluation showed that most of the students appreciated very much. They learnt by fun through playing enterprise resources planning (ERP) simulation game and we received positive feedback from them. On the other hand, the annual cost of server is another issue. At the moment, the faculty is now considering to put off the subscription due to a limited budget. In one hand the software is the best tool for teaching and learning; however on the other hand the budget is limited. At the bright side, recently Monsoon Academy provides a few choices of server options available. It is projected many universities will consider using MonsoonSIM in the future.

Radical and disruptive innovation in higher education from one perspective is in the context of delivering and acquiring the knowledge, blending the principles of heutagogy (self-determined learning and being supported by web 2.0), andragogy and pedagogy in the harmony way. Self-directed learning (SDL) as essential pillar of andragogy and heutagogy should be promoted to ensure success in blended learning that need self-monitoring and self-management process. Meanwhile, SDL, self-monitoring and self-management which are driven by motivation and the sustainable motivation should be beyond the boundary of materialistic inspiration – intrinsic motivation and divine motivation (Zulkifli et al., 2013).

From another perspective, radical and disruptive innovation in higher education is in enhancing innovative thinking among the graduates so that they could generate innovation practices as benefit to the nation and humankind. The higher education should not only use radical and disruptive innovations in learning nevertheless able to produce new generation that could create future radical and disruptive innovations. Higher education and (ordinary) Innovation has been essential for economic growth in the last centuries (Mokyr 1990; Baumol 2004), however the recent challenge is not the ordinary one instead of extraordinary and disruptive innovation.

Perhaps, global innovative universities could be the benchmarks. Top three the world's most innovative universities according to The Reuters 100 are Stanford University, Massachusetts Institute of Technology (MIT) and Harvard University. Korea Advanced Institute of Science & Technology (KAIST) University which ranked number six becomes Asia Pacific's most innovative university. Meanwhile, National University of Singapore (NUS) is ranked

number one in Southeast Asia. Online and blended learning is not a simple solution to become innovative university. We notice that there are at least three patterns of the leading innovative universities; first, able to get big funding from the privates, second, could produce high impact research and third, focus on technical and engineering as core programs.

All of the universities should not being left behind in implementing blended learning including learning through gamification. Radical and disruptive innovations in teaching and learning process could upgrade the quality of higher education, and without doubt it has a financial implication to be initiated. Smartphone, laptop and personal computer are just tools of learning as the professors and students need to optimize their usage in acquiring knowledge and getting wisdom. The gadget and device are free values but could be great tools in shaping the universal man and man of *adab* (ethics) as education has been described by Prof. S.M. Naquib al-Attas as ‘the instilling and inculcation of *adab* in man’ (Wan Mohd. Nor, 1998).

References

Baumol, W.J. (2004). ‘Education for Innovation: Entrepreneurial Breakthroughs vs. Corporate Incremental Improvements’. NBER Working Paper No. 10578. Retrieved from <http://www.nber.org/papers/w10578.pdf> on 1 July 2017.

Collier, A. (2013). Introducing A Framework for Design and Evaluation of MOOCs Apr 7, 2013 <https://teachingcommons.stanford.edu/teaching-talk/introducing-framework-design-and-evaluation-moocs>

Cross, J. (2004). ‘The future of eLearning’. *On the Horizon*, 12(4): 151-157.

Cross, J. A., Cross, J., and Dublin, L. (2002). *Implementing e-learning*. Dublin: American Society for Training and Development.

Christensen, C.M. (2017). ‘Disruptive Innovation’. Retrieved from <http://www.claytonchristensen.com/key-concepts/> on 12 August 2017.

Christensen, C.M. and Eyring, (2011). ‘The Innovative University: Changing The DNA Of Higher Education’. Forum the future higher education. Retrieved from <https://net.educause.edu/ir/library/pdf/ff1207s.pdf> on 13 August 2017.

Christensen, C.M. and Raynor, M.E. (2003). *The innovator’s solution: creating and sustaining successful growth*. Boston: Harvard Business School Press.

Isenberg, D.S. (1999). 'Mother of All Disruptions. The Internet Combines Disruptive Technologies of Many Component Markets'. *America's Network*, 15 July.

Kotsemir, M.N., Abroskin, A.M. and Meissner, D. (2013). 'Innovation Concepts and Typology – An Evolutionary Discussion'. Higher School of Economics Research Paper, February 20, 2013. Retrieved from <https://ssrn.com/abstract=2221299> on 12 August 2017.

Mohd. Azhar Abd. Hamid (2004). *Pengenalan Pemikiran Kritis & Kreatif*. Skudai: Penerbit UTM Press.

Mokyr, J. (1990). *The Lever of Riches: Technological Creativity and Economic Progress*. New York: Oxford University Press, Inc.

MonsoonSIM (2017). 'About us'. Retrieved from http://www.monsoonsim.com/guide.html?stage=ABOUT_MSIM on 14 August 2017.

Norazah Mohd Nordin, Mohamed Amin Embi, Melor Md Yunus and Mohamed Amin Embi (2010). 'The mobile learning environment for the in-service school administrators'. *Procedia - Social and Behavioral Sciences*, 7: 671-679.

UTM Centre for Teaching and Learning (2017). 'UTM e-learning'. Retrieved from <http://ctl.utm.my/nali/projek-projek-dibawah-nali/collaborative-e-learning/> on 14 August 2017.

Wan Mohd Nor Wan Daud (1998). *The Educational Philosophy and Practice of Syed Muhammad Naquib Al-Attas – An exposition of the original concept of Islamization*. Kuala Lumpur: ISTAC.

Zulkifli Khair, Rosman Mohd. Yusoff & Mohd Azhar Abd Hamid (2013). 'Divine Motivation and Adult Learning' in Proceeding Conference of Management Entrepreneurship and Technology (COMET), UTM, 18 February 2013.