

Creative Learning and MOOCs

Creative Learning and MOOCs:

*Harnessing the Technology
for a 21st Century Education*

Edited by

Nabil Sultan and Haifa Jamal Al-Lail

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INTRODUCTION

NABIL SULTAN AND HAIFA JAMAL AL-LAIL

This book contains selected articles that were presented at the 11th Learning and Technology Conference held by Effat University in Jeddah, Saudi Arabia in February 2014. The articles represent research and viewpoints by a cohort of academics from different educational communities. The central theme of these articles is the realization that learning and teaching is being impacted by technology and innovation. Schools, colleges and academic institutes took the lead in harnessing this technology and created innovative opportunities for learning that did not exist before, such as e-learning. The emergence of Massive Open Online Courses (MOOCs) represents a new and interesting development in the use of technology and innovation for creating further opportunities for both students and educators.

Chapter One sets the scene for this book. In this chapter Tayeb reflects on the traditional and new modalities of learning and teaching. In doing so, she highlights the importance of creativity and innovation and the use of technology for the development of the twenty-first-century knowledge society. Through this chapter Tayeb advocates the need to empower educational actors in order to unlock the creative and innovative potential of young learners.

Chapter Two by Sultan is a reflection of the disruptive characteristics of some innovations with a focus on online learning and teaching and MOOCs. In doing so the author invokes the theory of disruptive innovations as proposed by Christensen and his colleagues from Harvard Business School to highlight those disruptive qualities. The author reserves much of this chapter for MOOCs by tracing its recent history and potential impact on higher education in developed and developing countries while also highlighting the challenges that this innovation faces.

While Muhammad in Chapter Three reflects further on the potential and challenges of MOOCs he does not see this phenomenon as a threat to established higher education institutes. Rather, MOOCs, according to him, can be used alongside those establishments in order to improve post-secondary school education. Moreover, he sees MOOCs as a useful tool that can be

used to fill gaps of knowledge through training, continuing education and life-long learning.

In Chapter Four Brahimi and Sarirate provide further insights into the recent developments of MOOCs and explain how faculty members and students interact with this learning methodology. In doing so, the study focuses on the analysis of some surveys that were conducted by major survey companies and universities worldwide. The authors see MOOCs as a development that will bring a transformative change to education in general and to the way academic institutions are working.

In Chapter Five El-Jishi and Taylor present a case study exploring opinions of students with regard to MOOCs at a private university in Saudi Arabia. The study is based on a mixed method approach that uses a closed question survey and structured interview questionnaires. The study reveals interesting but mixed views about MOOCs from these students.

In Chapter Six Hyjazie presents a case study aimed at exploring the prospects of MOOCs from a student experience perspective. Issues relating to course size, supporting staff, communications with students and class forums are presented and discussed. In doing so, the author highlights and identifies factors that can be avoided for future online courses in order to ensure their success.

In Chapter Seven Mohammad et al examine some of the challenges that MOOC providers are facing by focusing on marketing and student engagement. In doing so, the authors propose the application of context-awareness techniques and principles to address those challenges. Furthermore, the authors also provide a general structure for storing context using three different database models and compare them in terms of their performance and modelling ability.

In Chapter Eight Alsaqqaf presents a case study to explore the prospects of a pre MOOCs initiative by implementing open courseware through an open education resource system at a Saudi University. The author also examines the motivation and needs for implementing such a project and the opportunities and challenges it presents.

In Chapter Nine Ahmed and Sindhi examine the impact of social media from an education perspective by exploring the advantages of using personal learning networks. The authors devote a great deal of their chapter to examining Edmodo, the social learning platform that was developed in 2008 by two former Chicago education administrators.

Chapter Ten by Ansari examines the merits of using video games to enhance learning. Through using a case study Ansari in this chapter focuses particularly on massive online games as useful educational tools and their

potential for developing other learners' skills such as efficient team work and communication.

Reflecting on his teaching experience, Bozkaya, in Chapter Eleven, explores the application of various hands-on teaching tools, online games and other teaching aids for facilitating interactive teaching and active learning. In doing so he presents his actual experience of using such a tool for a college's junior-level Operations Management course.

In Chapter Twelve Large looks at the impact of songs on learning. She examines the effects of listening to story-songs via YouTube on the vocabulary uptake amongst adult female students who attend elementary classes at the Jeddah British Council in Saudi Arabia. This study also explores the possibility of replicating this approach within the country. Furthermore, the author also examines the possible influence of offering more teacher support in the form of deliberate teaching, compared to conducting a more storytelling or incidental-type learning session, and the repercussions of these methods on the resulting student vocabulary depth of knowledge.

Khalil et al. in Chapter Thirteen investigate an e-learning system that offers help with learning Arabic and English text using sign language for deaf Arab children. The system is designed to improve the children's independence, confidence, motivation and social contact. Moreover, the system can also be used by hearing people who want to learn the language in order to communicate with deaf people.

In Chapter Fourteen Hamdan uses a survey conducted at a Saudi university for female students in order to investigate the relationship between culture and online learning and explore the ways in which culture and cultural values affect the application and success of online-learning strategies. Particular attention in this chapter is directed at learners' perceptions of the advantages and disadvantages of online communication.

In Chapter Fifteen, Farooq, Hafeez, and Shah use a case study to explore online learning from the perspective of moral values and ethical training given that learning, according to these authors, is not only about the transmission of knowledge but also about character building and producing a skilled workforce equipped with sound moral values.

CHAPTER ONE

INNOVATIVE TEACHING AS A MEANS FOR ENHANCING CREATIVE LEARNING

AGHAREED TAYEB

Abstract

Creativity and innovation are becoming increasingly important for the development of the twenty-first-century knowledge society. They contribute to economic prosperity as well as to social and individual wellbeing and are essential factors for a more competitive and dynamic community.

Education is seen as central in fostering creative and innovative skills. Creativity is a form of knowledge creation; therefore stimulating creativity has positive effects for learning. Thus, educational actors should have the power to unlock the creative and innovative potential of the young. *Creative learning* is therefore any learning which involves understanding and new awareness, which allows the learner to go beyond notional acquisition, and focuses on thinking skills. It is based on learner empowerment and centredness. *Innovation* is the application of such a process or product in order to benefit a domain or field – in this case, teaching. Therefore, *innovative teaching* is the process leading to creative learning, the implementation of new methods, tools and content which could benefit learners and their creative potential. In this respect an innovative teacher is someone who teaches in a way that is new or groundbreaking at the school, while integrating ICT to support that teaching, i.e., is someone who uses ICT in new or groundbreaking ways. Meanwhile, to be innovative, teachers need to reflect, consider possibilities, interact with others, and try out ideas.

Teaching will be highly effective if teachers start to use the recent multimedia technologies like computers extensively or modify the conventional mode of teaching.

A comparison between traditional learning and multimedia learning is given in the text. The article also provides an overview of the theoretical foundations for creativity and innovation in the context of education. It emphasizes the need to encourage the development of pupils' and students'

creative and innovative potential. Also, the article develops the notions of “creative learning” and “innovative teaching”.

Keywords: Teaching; Learning; Creativity; Innovation; Multimedia Teaching

Introduction

Education is an engine for the growth and progress of any society. It not only imparts knowledge and skills and inculcates values, but is also responsible for building human capital which breeds, drives and sets technological innovation and economic growth. Information and knowledge stand out as very important and critical inputs for growth and survival. Rather than looking at education simply as a means of achieving social uplift, the society must view education also as an engine of advancement in an information era propelled by its wheels of knowledge and research leading to development (Damodhara & Rengarajan, 2007).

Creativity has been defined as a product or process that shows a balance of originality and value. It is a skill, an ability to make unforeseen connections and to generate new and appropriate ideas. Creative learning is therefore any learning which involves understanding and new awareness, which allows the learner to go beyond notional acquisition and focus on thinking skills. It refers to the potential for learners to develop their creative skills and learn in a new, creative way.

Innovation is the application of such a process or product in order to benefit a domain or field – in this case, teaching. Therefore, innovative teaching is the process leading to creative learning, the implementation of new methods, tools and contents which could benefit learners and their creative potential.

Creative learning requires innovative teaching. Innovative teaching is the practice both of teaching for creativity and of applying innovation to teaching practices. Both aspects call for an educational culture which values creativity and sees it as an asset in the classroom (Ferrari, Cachia & Punie, 2009). Teachers are key figures in constructing a creative climate, but they need support from both policymakers and institutions. In particular, curricula and assessment are key areas to be addressed in order to allow creativity in the classroom.

Motivation is one of the main factors conducive to creative output. Amabile (1998) specified that intrinsic motivation is more important than extrinsic. For Amabile, intrinsic motivation is about passion and interest, an internal desire to do something. She sees motivation as one of the three components of creativity, the other two being expertise and creative thinking skills (see Figure 1-1).

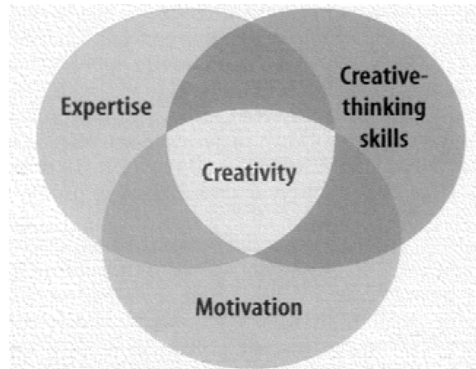


Figure 1-1. The three components of creativity (Amabile, 1998)

Even if all three components of creativity can be improved, motivation is the one that can be most immediately influenced by the work environment, as expertise and creative-thinking skills are difficult and time consuming to influence (Amabile, 1998).

Creative experience can be seen as opposite to reproductive experience (Taylor, 1988). Moreover, creativity is the ability to see possibilities that others haven't noticed (Craft, 2005), the critical process involved in the generation of new ideas (Esquivel, 1995), the ability to make connections that are not common. It requires cognitive and creative thinking skills, in other words divergent thinking (Runco, 1990) and imagination (Craft, 2005), and also evaluation (Runco, 1990). Creativity also demands a set of personality traits which can be enhanced or modified by the environment. For this reason, the environment needs to nurture creativity and to boost intrinsic motivation. Besides, creativity is not limited to the arts, as it can be manifested in all ambits of human knowledge. Moreover, it should not become an instrumental term to be filled with any kind of content and used in every kind of context (Gibson & Ewing, 2011). Figure 1-2 shows a summary of these characteristics: in the outer circle what creativity requires, in the inner shape what creativity is.

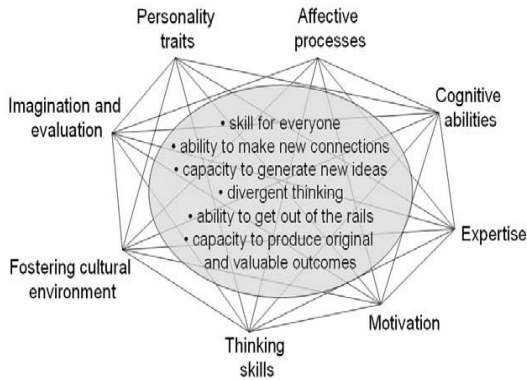


Figure 1-2. What creativity is and what it requires

Technologies play a crucial role in learners’ lives and can enable educational change towards an innovative and creative school environment. They could act as a platform to foster creative learning and innovative teaching and are currently offering a variety of opportunities for constructive change. However, access to technology is not enough. Accordingly, this report argues that both teachers and learners must acquire the critical skills in their use of technologies to be able to benefit from them in an effective, innovative and creative way.

Educational systems should also take into account the empowerment culture brought about by new technologies, putting the learner at the centre of the learning process. Otherwise, there is the risk that education policies and systems become irrelevant for students’ real and future needs.

There are other factors, alongside technologies, that support creative learning and innovative teaching. These factors have been called enablers and are the circumstances or support mechanisms that make creativity and innovation more likely to thrive. These are: assessment; culture; curriculum; individual skills; teaching and learning format; teachers; technology; tools. The co-existence of several of these factors would give rise to an enabling environment where creative learning and innovative teaching could blossom. If enablers are not present, creativity will be less likely to flourish. If, on the other hand, all enablers are in place, it is still not possible to deduce that creativity and innovation are happening, as teachers and students will still have to actively engage in the creative and innovative process. Enablers

are therefore indicators of the kind of environment which could nourish creative learning and innovative teaching.

Traditional Teaching Method

In the pre-technology education context, the teacher is the sender or the source, the educational material is the information or message, and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message using “chalk-and-talk” and overhead projector (OHP) transparencies. This directed instruction model has its foundations embedded in behavioural learning (Skinner, 1968) and it is a popular technique, which has been used for decades as an educational strategy in all institutions of learning.

Basically, the teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge. In other words, the teacher delivers the lecture content and the students listen to the lecture. Thus, the learning mode tends to be passive and the learners play little part in their learning process (Orlich, 1998). It has been found in most universities by many teachers and students that the conventional lecture approach in the classroom is of limited effectiveness in both teaching and learning. In such a lecture students assume a purely passive role and their concentration fades off after 15–20 minutes. In this context, teaching in classroom using chalk and talk is “one way flow” of information as seen in Fig. 1-3.

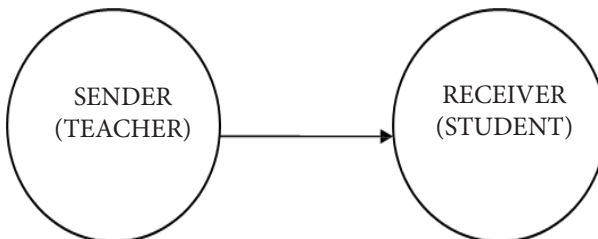


Figure 1-3. Traditional learning: A one-way flow learning process (Teo & Wong, 2000)

Innovative Methods of Teaching (Multimedia Learning Process)

Traditional educational approaches have resulted in a mismatch between what is taught to the students and what industry needs. As such, many institutions are moving towards problem-based learning as a solution to producing graduates who are creative, thinking critically and analytically to solve problems. In this paper, we focus on using multimedia technology as an innovative teaching and learning strategy in a problem-based learning environment by giving the students a multimedia project to train them in this skill set.

Problem-based learning is becoming increasingly popular in educational institutions as a tool to address the inadequacies of traditional teaching. Since these traditional approaches do not encourage students to question what they have learnt or to associate with previously acquired knowledge, problem-based learning is seen as an innovative measure to encourage students to learn how to learn via real-life problems (Boud & Feletti, 1999).

Being in the information era (though many futurists claim that we have passed into a post-information age) it is rather straightforward to realize that a new agenda has been introduced in our lives, where Information and Communications Technologies (ICT) play an important role in regard to education, collaboration, communication, etc. Education (compulsory, higher schools, universities, etc.) seems to be a particularly important sector that is being influenced by new technologies, having in mind the important role that education has in today's world (Vagelatos, Foskolos & Komninos, 2010).

In contemporary pedagogical theories, the cooperation between educators and students is considered the most efficient way to learn in the so called framework of "active participation in learning". People who interact experience cognitive conflicts that drive them to new cognitive models. Students learn through cooperation with other students. On this basis, cooperative activities which promote active learning are encouraged, as well as respect for different approaches to and emphasis on authentic situations (Paraskeya & Dimakos, 2009).

The Internet evolution that we have experienced in the last two decades, and more specifically the so called Web 2.0, has as main characteristics exactly what was described above, the most important being the cooperative environment. Thus the question that arises is what innovation Web 2.0 brings to the educational system where ICT has already (one way or another) taken place.

The teacher uses multimedia to modify the contents of the material, which will help the teacher to represent the subject in a more meaningful way. The media elements can be converted into digital form, modified and customized for the final presentation. By incorporating digital media elements into the project, the students are able to learn better since they use multiple sensory modalities, motivating to pay more attention to the information presented and retain the information better.

Multimedia, is the combination of various digital media types such as text, images, audio and video, into an integrated multi-sensory interactive application or presentation to convey information to an audience. A representation of multimedia learning is given in Fig. 1-4.

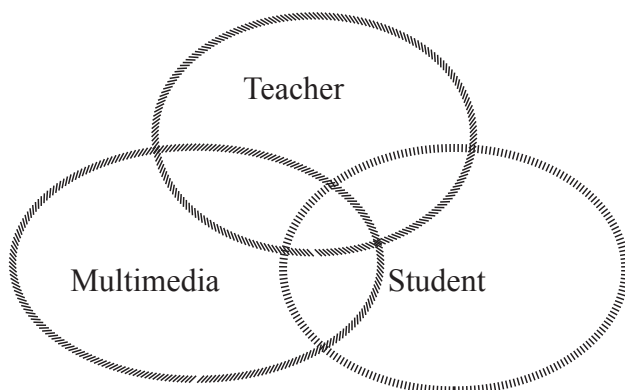


Figure 1-4: Multimedia learning (an interactive learning process)

Enablers are indicators of the kind of environment which could nourish creative learning and innovative learning. The most effective of these enablers are:

Appropriation of technology

There are different ways in which users interact with technology in learning processes (Loveless, 2008). Interaction with technology is primarily based on how users understand the capacity of technology. Loveless calls this level of learning the “active learning process”.

Interaction with ICT provides users with new ways of doing things:

“extend or enhance ability; novel ways of dealing with a task which might change the nature of the activity itself or provide limitations and structure which influence the nature and boundaries of the activity”. When learning to use a new technology, there are different ways users interact with it.

As Loveless argues, it is the interplay of human intention and activity which exploits the potential of a technology.

Literature in this area demonstrates that the digital generation, which is assumed to be totally proficient with technology, often lacks basic technological skills and IT knowledge (Herold, 2009). Thus if we want children to be creative with technology, we have first and foremost to teach them how to use it. A longitudinal study carried out by the CIBER research team demonstrates that the Google Generation tends to rely heavily on search engines and does not possess the critical and analytical skills to assess the information they find on the Internet (Rowlands & Fieldhouse, 2008). This is another example which demonstrates how the potential of a medium is not exploited because students have not been taught the basic skills which are required when searching for information online.

The role of teachers

Literature and research suggest that technology is endowed with a potential to innovate education (Blandow & Dyrenfurth, 1994; Tarrago, 1993). However, teachers need to modify their teaching methods to accommodate the changed interaction patterns. The effective use of new technologies requires innovative teaching skills. When students are not provided with adequate understanding of what technologies can do, there is a high probability that they will replicate familiar forms and ideas using the new tools, as opposed to using the new tools to explore new connections and different ways of fashioning. A study conducted in primary schools on how students used online tools to communicate and participate in online communities highlights the same point (Turvey, 2006).

Despite relative autonomy in virtual spaces, most children did not attempt to experiment with the potential of the tools but rather followed predictable patterns of behaviour. This shows that provision of creative spaces and freedom for exploration does not necessarily lead to creative learning. The role of the teacher within and outside virtual spaces is important in teaching students how to be creative and innovative. Teachers' proficiency in using technology is another issue covered in the literature (Shaffer, 2006). Teachers who are not conversant with the technologies they use in their

teaching may not feel comfortable with showing their lack of expertise in front of their students. As Shaffer argues, if a teacher cannot read, it would be difficult for him/her to identify whether a book is bad or whether his/her reading is adequate to judge the book. When it comes to technology, similar behaviour is noted. In order for innovative teaching to take place, teachers need to be aware of the available resources and how such resources may be useful.

Teachers also need to be able to identify creative processes when they take place. An example given at a conference captures this point clearly. In the UK, it has been observed that one way for teenagers to be popular in class is to download music at home and then be the first to share it with their classmates through a Bluetooth application. While for one teacher such an activity may appear frivolous or even a waste of time, for another teacher this activity may represent new ways for youngsters to engage with technology. These teachers may thus use their technical knowledge and try to integrate new ways of teaching using their students' technology. Another example could be integrating the downloading of e-books in classrooms or sharing school resources for a language class.

Many teachers today recognize that a new generation of computer literate learners demand sophisticated e-learning resources and 'support from their instructors' (Wang, Huang, Jeng and Wang, 2008). However, it is not always clear how teachers should integrate technology in their teaching. Lack of technical personnel to help teachers manage laboratories, as well as the fact that teachers are often not compensated for the extra time needed to integrate ICT in their teaching, are some challenges and limits imposed by school systems with an ever increasing number of subjects (Bottino, 2003).

Emerging technologies, like for example SNS (Social Networking Sites), are based on notions of networking. In the educational context, networking could enable people to develop collaborative forms of learning. However, most school systems are still based on transmissive models (Bottino, Forcheri & Molfino, 1998; Noss, 1995). Within such systems, the role of the teacher is fundamental, if creative learning is to take place. Other challenges for teachers highlighted by another study conducted in Denmark relate to: team teaching on the Internet (organizational challenges and difficulties); taking ownership and group leadership amongst the students/learners and new aesthetic norms and standards for learning projects (Borgnakke, 2004). This highlights fact that ICT training for teachers is an important step in making education how it should be today. Teacher training, learning digital competence within context and innovative learning approaches have indeed

been highlighted as enablers for pedagogical innovation in the context of ICT in an IPTS Policy Brief (Ala-Mutka & Redecker, 2008a).

Another study conducted in Korean schools show that there are six factors which hinder teachers from using games in their teaching, namely: inflexibility of curriculum; negative effects of gaming; students' lack of readiness; lack of supporting materials; fixed class schedules and limited budget (Baek, 2008).

Technologies for Learning, Creativity and Innovation

The debate on the role of ICT for creativity and innovation in education has become an important one over the past decade. The rapid development of technology, mainly as a result of the Internet, has brought about an upsurge of technological tools which young people are appropriating for use in their everyday lives. As explored by the domestication theory, the arrival of ICT in homes has brought the mobilization of material resources, skills, cultural values and social competences and capabilities (Silverstone, 2006). The recent rise of social media is also having an impact on education. The potential of relational communities, as opposed to locational communities (Bess, Fisher, Sonn & Bishop, 2002), allows the expansion of interests and expertise with people outside one's local community who are interested in the same topics. These new forms of communities facilitate collaboration across space and time.

Evolution in communication practices suggests that developments for pedagogy need to address what it means to be educated in our times (Loveless, 2007), so as to avoid "yesterday's education for tomorrow's kids" (Prensky, 2005).

In the past few years, the emergence of a new wave of technologies has been observed. The rapid uptake of these technologies, which are generally referred to as social computing applications, has also taken many by surprise. Social computing applications vary from social networking sites (like Facebook and MySpace); the sharing of bookmarks (del.icio.us; Citeulike); the sharing of multimedia (Flickr; YouTube); online gaming (Second Life); and blogging, to mention but a few. These applications offer new opportunities for people to express their creativity, make it available to a large audience and get feedback (Cachia, Compañó & Da Costa, 2007). Analysis of creative people and artistic innovation demonstrates that scientific and artistic innovation also emerges from collective effort. This is commonly

referred to as social creativity (Fischer, Giaccardi, Eden, Sugimoto & Ye, 2005).

As discussed by Fischer et al. (2005), an appropriate socio-technical setting can amplify creativity amongst a group of people by augmenting individual creativity and also social creativity.

Blogging is an example of how youngsters are using technologies to express their creativity and to be innovative.

These applications demonstrate the variety of ways in which users learn how to learn, which according to Rogers (1983) is a major component of creativity. The example of blogging shows that children learn how to write for a public, how to link their work to other works, how to network with other bloggers and how to utilize the blog for their eventual career paths, amongst other skills. This facilitates creative learning, as it enables users to use technology to learn in new, creative ways. Such learning processes demonstrate that technology has great potential for creative learning.

Technological skills are important not only for children at schools but also for lifelong learning (EC, 2008). The different levels of interaction and collaboration characteristic of new technologies facilitate personalization of learning paths. Learners become active stakeholders, who are “empowered to shape their own learning spaces and resources” and collaborative learning processes.

In order to foster creative learning and innovative teaching, curricula need to undergo a skilful and thorough development, where re-balancing is a key factor. The literature identified several aspects for enhancing the curriculum: the balance between different areas of education; the balance along the curriculum (from pre-school to higher education); the balance between prescription and freedom; and finally the balance between students' interests and other educational stakeholders' agendas.

Traditionally, creativity has been associated with the artistic world (Ferrari, Cachia and Punie, 2009); however, as Florida (2002) argues, creativity is an important component of economic growth and social transformation. Technology is one of the major components for fostering future creative communities, together with talent and tolerance (often referred to as Florida's 3 Ts – Technology, Talent and Tolerance). In terms of innovation, social computing interfaces are particularly interesting in this debate because in various ways they harness the emerging and increasing role of the user in the innovation-development process, as well as the ongoing shift towards open innovation (Lindmark, 2009). Various online applications could be used to empower teachers to become innovative in their teaching, as well as students to develop their creative skills and learn creatively.

Enabling Innovative Teaching and Creative Learning

In addition to what has been understood about creativity and innovation, there is also a profusion of implicit theories on creativity, which allow people to judge what is creative and innovative without being able to explain or define what creativity and innovation are (Runco, 1999). Both aspects – research and innovation – contribute to the vagueness and elusiveness of the terms, complicating the tasks of looking for creativity and innovation in practice.

At the same time, there is a gap between policies and practices. A support mechanism is needed to facilitate the implementation of policies. This also applies to the discourse of creativity and innovation in education. If member states promote creativity and innovation in their educational policies, this does not guarantee that schools will show creativity and innovation in their day to day practices.

As many researchers found, one of the barriers to creativity and innovation in schools consists of teachers' overloaded schedules. The demand for creative learning and innovative teaching from policy-makers has to be matched with a support mechanism, i.e. with policies and tools that help all educational actors to pursue creative and innovative paths. Besides, policies for creativity and innovation in education need to be in line with other policies and with what is demanded from teachers and students, as contradictory messages will increase uncertainty and further impede the adoption of necessary measures for a creative learning environment. Moreover, policies need to be mirrored by practices, for instance by establishing a nurturing school culture or by finding support in the availability of certain tools, in order to be applied in an effective way and to have a positive impact.

It becomes evident therefore that looking for manifestations of creativity and innovation is challenging for several reasons:

- Creativity and innovation are processes which do not always result in tangible outcomes and as a result it can be difficult to find evidence of them;
- Creativity and innovation are exposed to subjectivity, arbitrariness and interpretation; thus making it challenging to compare data;
- Policies are not necessarily mirrored in practice: encouraging creativity and innovation in policies is not enough, as there is a need for a support mechanism.

The fostering of creativity and innovation does not uniquely rely on the intention of educators and pupils, as there are several conditions to be met before a creative and innovative environment can be promoted. In

this sense, policies and common practices may provide the circumstances for creative learning and innovative teaching or, on the contrary, obstruct them.

It is therefore interesting and necessary to examine which conditions can trigger creative learning and innovative teaching in order to support and allow them to spread. As Burke (2007) puts it, “if creativity is difficult to define, one certain thing is that it is possible to create the conditions in which creativity is more likely to thrive”.

As demonstrated, the role of the teacher in formal educational environments is fundamental to bring about new pedagogies or to stimulate change (Ala-Mutka, Punie & Redecker, 2008). Hence, teachers need institutional support to be creative and innovative. Nonetheless, an assessment of creativity and innovation in educational practices cannot rely on the fortuitous and incidental number of individuals with the will and the inspiration. It was hence decided to investigate and assess the “enablers” for change. This will allow an understanding of the basic conditions for fostering creative learning and innovative teaching.

Conclusion

The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve human development goals for a country.

Across the world, information technology is dramatically altering the way students, faculty and staff learn and work. Internet-ready phones, handheld computers, digital cameras, and MP3 players are revolutionizing college life. As the demand for technology continues to rise, colleges and universities are moving all sorts of student services to online delivery.

ICT has made many innovations in the field of teaching and also made a drastic change from the old paradigm of teaching and learning. In the new paradigm of learning, the role of the student is more important than teachers. We need to have interactive teaching and this changing role of education is inevitable with the introduction of multimedia technology.

Although technology is endowed with a potential to foster creative learning and innovative teaching, unless teachers change their teaching methods positive results will be limited. Teachers also need to have the required knowledge to be able to identify creative and innovative skills and processes amongst their students.

Creativity and innovation are understood as interrelated concepts; the first refers to a product or process which shows a balance of originality and value, and the second to the implementation of such a process or product in a given sphere. However, creativity is more strongly linked to learning, and innovation to teaching, hence the notions of creative learning and innovative teaching.

Creativity should be understood as a skill which may be developed through creative learning and innovative teaching. The fostering of such a skill depends substantially on the development of curricula, where a balance among the different subject areas, between prescription and freedom should be a priority. Assessment in schools also needs to be addressed as current methods often do not take into account creativity and may even stifle it.

The fostering of creativity and innovation cannot rely on the intention of educators and pupils, as there are several conditions to be met to promote a creative and innovative learning environment. Therefore, a set of “enablers” is proposed as a framework for understanding the conditions or the support mechanisms that allow creative learning and innovative teaching to emerge and thus facilitate creativity and innovation. These are: assessment; culture; curriculum; individual skills; teaching and learning format; teachers; technology; and tools.

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CHAPTER TWO

EDUCATION AS A SERVICE (EAAS):
THE MOOCs PHENOMENON

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Abstract

Some new innovations tend to have a great impact on the lives of people and organizations. Some of those innovations have disruptive characteristics whose effects have deep implications for the way we develop both as individuals and as organizations. Online learning and teaching (L&T) is one of those innovations, made possible by another disruptive innovation, namely the Web. The response of educational institutes was to incorporate online learning into some aspects of their curriculum delivery. However, online L&T has the potential to meet many needs that traditional class-based education is currently unable or unwilling to meet.

But online L&T is currently experiencing a major disruption itself. With the advent of Massive Open Online Courses (MOOCs) online L&T is entering a new phase of its development and many higher education institutes are currently wondering how to react to this new modality of L&T. This article explores this new phenomenon (within the concept of disruptive innovations) and its implications for Higher Education (HE) and for the prospect of education as a whole in some of the developed and developing countries of the world.

Keywords: Massive Open Online Courses; Disruptive Innovations; Higher Education; Learning and Teaching

Introduction and Methodology

Online L&T is entering into a new phase of its development. The “newness” comes from two main developments: being free and available to an unlimited number of students. This is of course what MOOCs offer. MOOCs are being provided free of charge and are being made available to an unlim-

ited number of people. This model differs from the online L&T model that existed before. Online L&T had been (and continues to be) used by educational institutes throughout the world as a tool that complements their class-based curriculum delivery.

The MOOCs model therefore has great implications for educational institutes. They raise many issues that impact on several important aspects of traditional education in terms of income, quality, student experience, employability and acceptability. Most importantly, they raise a big question mark on the future of education (especially HE). This article will seek to explore this phenomenon from this angle and attempt to foresee some directions where this new L&T model is likely to follow. The theory of disruptive innovation (proposed by Clayton Christensen and his colleagues) will form the theoretical framework within which the case of MOOCs will be explored. This approach will be preceded by an introduction of the MOOCs phenomenon and its recent historical origins.

The History of MOOCs

The history of MOOCs is traced back to early efforts by two Canadians: George Siemens (a Professor at the Center for Distance Education) and Stephen Downes (an online learning designer and researcher). In 2008, Siemens and Downes offered a free online learning course entitled “Connectivism and Connective Knowledge 2008 (CCK08)”. The course was offered formally through the University of Manitoba and informally through open enrolment (at no cost) to anybody in the world (Fini, 2009). Some initiatives aimed at providing free university education have emerged since. One of those was initiated by the University of the People (UoPeople). UoPeople was founded in 2009 by educational entrepreneur Shai Reshef and is affiliated with the United Nations GAID, the Clinton Global Initiative and Yale Law School ISP. Courses provided by UoPeople are free but students are required to pay a one-time application processing fee of US\$50 and a subsequent examination processing fee of US\$100 levied per course. The free university has signed collaborative partnership agreements with New York University (NYU) to accept students; and with Hewlett-Packard (HP) – through the Catalyst Initiative – to provide student internship opportunities. It offers undergraduate programmes in business administration and computer science and has more than 1500 students from 135 countries.

However, what is very interesting about new developments in free online L&T is a surge of interest in MOOCs by leading US universities

who seemed keen to deliver their own online courses “free”. From 2011, MOOCs began to attract a great deal of interest, especially from highly prestigious US universities. Examples include Harvard, Stanford, Michigan, Pennsylvania, Princeton and MIT (to name but a few). Several start-up companies since then have developed partnerships with universities and professors to offer MOOCs. These include companies such as Coursera, Udacity, edX, Udemy and Khan Academy. Coursera, Udacity and edX are among the leading (and high profile) providers of MOOCs and will be covered briefly in this article.

Coursera

This is a business founded by two computer science professors (Andrew Ng and Daphne Koller) from Stanford University. The company’s model is to sign contracts with colleges and universities that agree to use its platform to offer free courses and to receive a percentage of any revenue and it has already enlisted the support a number of respected US (and international) universities including Stanford University, Princeton University, the University of Michigan and the University of Pennsylvania. Coursera, according to one of its founders (Ng), serves as a hub for learning and networking. The teaching comes free from an impressive array of elite universities offering a wide range of courses, from computer science to philosophy to medicine. While Coursera can make suggestions, all pedagogical decisions, according to Ng, are ultimately made by these universities. Moreover, most course offerings are adapted from existing courses which means that a Princeton Coursera course is, in effect, a Princeton course (Pappano, 2012).

Udacity

This is also a private educational organization founded by Sebastian Thrun, David Stavens and Mike Sokolsky which specializes in computer science and related fields. The name suggests an “audacious” venture that aims to “democratize” education. Udacity was founded in 2012 following an attempt by Thrun in 2011 to make his Stanford course “Introduction to Artificial Intelligence” available online to a much larger audience (beyond Stanford’s students). The course attracted 160,000 online students from all over the world and was the catalyst for the founding of this company. The company, which is funded by venture capital firm Charles River Ventures and personal

investments, works with individual professors rather than institutions and has attracted a range of well-known scholars.

edX

Unlike the previous two MOOC providers, edX is a non-profit company. It was formed in April 2012 as a joint effort by the Massachusetts Institute of Technology (MIT) and Harvard University and was later joined by Georgetown University, 10gen (a software company) and University of California, Berkeley. The company plans to provide (free of charge) its online learning and teaching platform (based on open source software) to anyone who wants to provide free MOOC courses.

Two events helped boost interest in MOOCs. The aforementioned event when Stanford University offered a free online course entitled “Introduction to Artificial Intelligence” to everyone in the world is one of them. Following this experience, Thrun, the leading author of this course, left Stanford to form his own MOOC company “Udacity”. He commented:

Having done this, I can’t teach at Stanford again. I feel like there’s a red pill and a blue pill, and you can take the blue pill and go back to your classroom and lecture your 20 students. But I’ve taken the red pill, and I’ve seen Wonderland. (Lewin, 2012)

Reflecting on the scale of the people who registered for his course, he said “Peter and I taught more students AI [Artificial Intelligence] than all AI professors in the world combined” (Shirky, 2012).

The second event took place in June 2012 when the Board of Visitors at the University of Virginia sacked its president Teresa Sullivan for not jumping on the MOOC bandwagon. Sullivan was later reinstated by the same board that sacked her, following revelations that the University was in late state discussions to join Coursera (which it did the following month) and also following a huge outcry by faculty, students and alumni (Watters, 2012).

In an interesting and extended blog article hailing the potential merits of MOOCs, Shirky (a keen advocate of MOOCs) argues that MOOCs are unlikely to replace traditional education. He comments:

Anything that could replace the traditional college experience would have to work like one, and the institutions best at working like a col-

lege are already colleges. The possibility MOOCs hold out is that the educational parts of education can be unbundled. MOOCs expand the audience for education to people ill-served or completely shut out from the current system, in the same way phonographs expanded the audience for symphonies to people who couldn't get to a concert hall, and PCs expanded the users of computing power to people who didn't work in big companies. (Shirky, 2012)

The Power of Disruptive Innovations

Some past innovations have had a great impact on our lives. They have changed (among other things) how we communicate as individuals and businesses, indulge in leisure and produce printed material. It is probably safe to claim that the Web is one of the recent innovations to have had (and continue to have) a great impact on our lives by changing some aspects of the way we do business, interact with people, learn and enjoy leisure. Such innovations, according to Christensen and colleagues from Harvard University, have disruptive powers (see Christensen, 1997; Christensen and Raynor, 2003; Christensen et al., 2004; Christensen, Anthony and Roth, 2004)

The concept of disruptive innovations was first proposed by Christensen and his colleagues and developed into a theory known as the “theory of disruptive innovation”. According to this theory, there are two types of innovations: sustaining innovations and disruptive innovations. Sustaining innovations, according to these authors, are often innovations that occur frequently and are implemented by established large companies in order to improve the performance of some of their existing products or services that have strong market shares. Disruptive innovations, on the other hand, occur less frequently and tend initially to have performance problems. Furthermore, there are two main disruptive innovations: new market and low-end disruptions. Disruptive innovations that create new markets, according to this theory, can occur when characteristics of existing products and services limit the number of potential consumers (i.e., nonconsumers are abundant) or force consumption to take place in inconvenient or centralized settings. Think of the PC as one example. Prior to using the PC, gaining access to software and hardware for business and personal tasks could only be provided by gaining access to a minicomputer or a terminal connected to a mainframe computer. Minicomputers and mainframe computers were very