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NOTES

DIGITAL TECHNOLOGY MANAGEMENT AND EDUCATIONAL INNOVATION: THE MARKETABILITY AND EMPLOYABILITY OF THE HIGHER EDUCATION DEGREES**

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ABSTRACT

Universities have discovered that learning need not dwell inside the confines of the four traditional classroom walls. The internet provides a vital link to information like never before. As the number of internet users has increased, universities have begun to rely more heavily on technology in the delivery of course content and instruction. The use of technology has been purported to have the potential to lead the way in developing more competent technology and educational leaders in schools as well as reforming leadership preparation and reaching a more inclusive population of administrator aspirants. Online education seems set on its course to overtake traditional colleges within the next few decades, especially as society becomes ever more dependent on the internet to get work done. This research paper examines areas in which educational programs can meet today's global standards, allow for the greatest flexibility in meeting student needs, and yet continue to increase leadership and educational opportunities for all student groups. The purpose of the study is to outline: whether distance technology is indeed used; what types of distance technology are employed; what goals drive the implementation of distance technology; and what factors inhibit the successful use of distance technology in higher education engagement graduate employability. The paper aims to focus on the issues involve the role of higher education in improving employability in developing the students' potential and flexibility to adapt their knowledge, skills, and attitudes to the labor market. In view of this, distance universities may have an important role in designing and implementing accreditation standards for employability. The attention should be paid to the development of transferable skills such as critical thinking, oral expression and team work to promote employability while raising the quality standards of the Higher Education Degree.

JEL Classifications: I2, J400, J480

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INTRODUCTION

As the main factor influencing the sustainable development of the social economics, the technological innovation has become more and more important for the national economic policies. It is widely accepted that the technological innovation is the core composition of the enterprises competitiveness.

Universities have discovered that learning need not dwell inside the confines of the four traditional classroom walls. Learning becomes separated from the classroom. Courses created organically and formed around an on-demand, any-time, and any-place delivery models. The internet provides a vital link to information like never before. In fact, "The information and resources offered on the internet, or the Worldwide Web, are becoming a normal part of the academic lives of students in institutions of higher education throughout the world"(McFerrin, 1999).As the number of internet users has increased, universities have begun to rely more heavily on technology in the delivery of course content and instruction. The use of technology has been purported to have the potential to lead the way in developing more competent technology and educational leaders in schools as well as reforming leadership preparation and reaching a more inclusive population of administrator aspirants. The use of distance technology offers opportunities for improvement in the teaching and learning process, an expansion in geographic reach, and more effective service (Broskoske and Harvey, 2000).Further, "the emergence of e-learning also poses a potential source of market competition for traditional leadership programs if these learning options are captured first by more aggressive for-profit enterprises" (Glasman et al., 2002, p. 259). More globally, distance technology has pushed the concept of international higher education, once described as what takes place when students cross their own national borders, to ". . .encompass a wider range of activities, including distance learning, offshore and onshore courses, and the establishment of overseas campuses" (Dixon, 2006, p. 319).

The higher education sector is characterized by immense change (Apps, 1988; Bensimon and Neumann, 1993; Greene, 1988; Leslie and Fretwell, 1996; Lucas, 1994; Millard, 1991; Munitz, 1995; Tierney, 1993.), influenced by external pressures (e.g. demand for improved business practices, distance learning and virtual universities, competition for students). Moreover, nature of the student body is changing in many ways. Among others, university students are generally older and students demand creative use of technology in instruction. In such a fast-changing context, the questions what kind of leadership strategy is needed for universities and colleges to survive and remain competitive. To many leadership scholars, leadership with vision as a core component is the answer (Bass, 1990; Conger, 1991; Conger and Kanungo, 1987; Tichy and Devanna, 1986). Educational leaders can no longer be passive, but will need to look ahead to the future and scan the environment for change forces coming from the outside, a CEO-like function called "visioning" (Bolman and Deal, 1992; Deal and Peterson, 1990; Leithwood, 1994).

MOBILE MEDIA IN EDUCATION

There has been very little broad adoption of mobile media devices in education (with the noted exceptions of calculators in secondary mathematics classes and probe-wear in

science (Roschelle and Pea, 2002; Soloway et al., 2001)), but outside of classrooms mobile media have extraordinarily high rates of adoption for entertainment, communication, and learning. Within e-learning more broadly, the subfield of mobile learning (or mlearning) has emphasized “learning anytime/anywhere” capacity – that they enable access to content regardless of time or place. Most often the focus is on presenting static content to users – for example, carrying around a foreign language dictionary or book-on-tape. Curiously, the most interactive mobile media applications are coming out of the mainstream videogames industry. Thus, while mobile media for learning lags in formal educational contexts, there is an emerging market for self-study and learning sold as entertainment. The flipside of this erosion between “online” and “offline” activity is a reshaping of how we experience place, creating a multiplicity of place. Along with the inability to “unplug” or getaway also comes the constant ability to “be” in multiple places at once. As a result, mobile media are remediating our experience of place, creating a new world where we are neither entirely here, nor there but in multiple, occasionally hybrid, places of our own choosing.

AUGMENTED REALITY

(Klopfer and Squire, 2008), has investigated the potential of augmented reality (AR) games for learning within schools. AR games use mobile media devices to create a virtual context layered over real world places. Through AR games, (Squire et al., 2007) explored many game scenarios including having students investigate mysteries (such as an unexplained death), redesign land use around urban features such as lakes, report on historical events as journalists, and even design their own games about local neighborhoods. Although game designs span a range of ages and curricular domains, they share five features in common (Squire and Jan, 2007):

1. All learning is situated within roles
2. All learning is driven by emotionally compelling challenges
3. Learning experiences are rooted in particular places
4. Learning experiences are designed around authentic resources
5. Learning experiences are designed for sociability

Emerging research on mobile media use outside of schools suggests that such technology may be deeply disruptive to classrooms as currently known, promoting practices at odds with the social organization of schooling. Outside of schools, mobile media are helping to redefine information seeking, learning, and entertainment; inside of schools, internet access will be shut down, ban mobile phones, and strictly police students’ access to their outside worlds. Even college campuses are no exception (Chronicle.com, 2008). Perhaps it is time we finally consider a new pedagogical approach.

IMPROVING SKILLS AND EMPLOYABILITY

The skills learned by students during their academic career can be placed into the two broad skill categories of technical and non-technical. Technical skills refer to subject-specific or content-specific knowledge and competence relevant to, or within, a particular discipline such as information technology or psychology. Technical skills then are those

skills necessary for competent functioning within a particular discipline, while non-technical skills are those skills which can be deemed relevant across many different jobs or professions (Sherer and Eadie, 1987, p. 16): Employability Skills are not job specific, but are skills which cut horizontally across all industries and vertically across all jobs from entry level to chief executive officer. Because of their relevance to professional functioning, non-technical skills are commonly referred to as employability skills and include basic skills such as oral communication, reading, writing and arithmetic, higher order skills such as learning skills and strategies, problem solving, decision making, and affective skills and traits such as dependability and responsibility, a positive attitude, interpersonal skills (co-operation, team work), self-discipline and self-management and ability to work without supervision (Cotton, 2001). Cotton (2001) reports that the literature surrounding employability indicates that whilst employers may be satisfied in general with the level of technical skill of new graduates, they are not convinced by their competency in non-technical abilities or employability skills. In her extensive review of key issues in employability, Cotton (2001) found that: employers want employees to possess employability skills; that employers value generic employability skills over specific occupational (technical) skills; and that employers consider many entry-level job applications to lack the required employability skills and express deep concerns regarding this deficiency. It is a fair conclusion then that those skills bracketed within the term “employability skills” are fast becoming a requirement for employment rather than desirable, and that employers see the responsibility for the development of such skills lying with educational institutions. With this in mind, and given that a primary aim of many undergraduate – if not all – programs is employability, then course development, delivery and assessment should include the development of employability skills as a major focus. Employability remains high on the agenda for Higher Education Institutions (HEIs) in many nations, as students become more selective in their choice of courses and institutions. Yet, despite extensive development and evidence of innovative practices to foster employability within universities, employability remains a complex and problematic area without clear or obvious solutions. Increasingly, enterprising students and graduates are regarded as more employable, and there appear to be advantages in integrating career and enterprise development themes within the curriculum. However, such approaches can pose challenges to the structure, system and culture within HEIs. The concept of employability has been a hotly debated issue, especially in the light of adverse employment conditions currently affecting many countries. Higher education institutions’ concern with providing their students with those skills demanded by employers (Mason et al. 2003) has given way to a body of academic literature dealing with different aspects of this issue, such as students’ employability expectations before graduation (Gedye et al. 2004; Rothwell et al. 2008), employability skills in the curriculum (Andrewson and Mitchell 2006; Cox and King 2006), and the employment actually achieved by graduates (Gough 2008). The notion of employability implies that individuals are responsible for acquiring those skills demanded by their future employers. So, in a way, they are ultimately responsible for their own welfare. Employability is therefore regarded as ‘a (multi-faceted) characteristic of the individual’ (Yorke 2006: 10). However, the development of employability skills is increasingly viewed not only as a personal achievement, but as an institutional or even governmental enterprise. Graduates’ employability potential has become the focus of European governments, which are

requiring universities to take responsibility for the development of transferable skills relevant to employment in their students, thus shifting the perception of employability as an individual accomplishment to an 'institutional achievement' (Harvey 2001: 97). Universities 'engagement with employability is partly justified by the positive effects at a broader economic level. As R. Bridgstock(2009: 39) points out, there would appear to be economic benefits if higher education providers begin to play a more active role in developing students' career managing skills. This suggests that universities must begin to comprehensively and actively engage with the employability agenda, including career building and self-management skills, in order to remain competitive in a diverse training market where providers vie for students and funding.

This view suggests the acceptance of human capital theory (Becker 1964; Schultz 1971). Under this theory, education is re-conceptualized as an economic device essential to participation in the global economy, as western countries' economic performance is connected to their knowledge stock (Foray and Lundvall 1996). The analysis of the impact of technological skills on manager's employability draws on Kanter's view of employability as an employee's "increased value of internal and external labor markets" (Kanter, 1989, p. 92). In modern dynamic corporate environments, post-corporate career paths (Peiperl and Baruch, 1997) are conditioned by a new more entrepreneurial employment relationship, which assumes that managers are responsible for their own career and for increasing skills highly transferable between companies or industries (O'Reilly and Chatman, 1994). On the other hand, employing companies that replace gradually employment security with employability need to match individual's knowledge and competencies with job opportunities that encompass rewarding and stimulating working conditions in order to retain their best people (Ghoshal et al., 2001).

ORGANIZATION AND TECHNOLOGICAL EMPLOYMENT

Business owners today are actively deciding whether their next hire should be a person or a machine. Technology is automating jobs out of existence at a record high, and it's only getting started. But at the same time, new jobs are also coming out of the woodwork. Virtual reality professionals were nowhere to be found on the list of hot skills graduate triggered an instant demand for virtual reality designers, developers, and engineers. Also, we began seeing a dramatic uptick in the need for solar-drone engineers, drone-pilots, air rights lobbyists, global network planners, analysts, engineers, and logisticians. Bold companies making moves like this are instantly triggering the need for talented people with skills aligned to grow with these cutting edge industries. In these types of industries, it's no longer possible to project the talent needs of business and industry 5-6 years in advance, the time it takes most universities to develop a new degree program and graduate their first class. Instead, these new skill-shifts come wrapped in a very short lead-time, often as little as 3-4 months. Every new technology creates a need for more training. Very often it ends up being niche learning that takes place in-house with existing employees. But we're also seeing a growing refinement of industries driving the need for huge new talent pools that currently don't exist. Whether its virtual reality, specialized 3D scanning, 3D printing, mobile apps, Internet of Things (IoT), flying drones, or reputation management, the need for tech-savvy fast-to-adapt talent pools is

growing, and growing quickly. This is also an area where traditional colleges have missed the boat. Their attempt to put everything into a 2-year or 4-year framework has left the largest untapped opportunity ever for short-term full-immersion courses that help workers reboot their career (Frey, 2015).

DISCUSSIONS

The digital society requires individuals to develop generic skills over their lifespan which, combined with personal skills and the knowledge acquired, they should be able to apply to the world of work. As agents of an increasingly competitive market, employers have contributed to the debate, challenging the education systems of many countries. The new labor market requires graduates to have a different attitude towards their career management since the expectation of a 'job for life' has lost its meaning in the context of organizational changes. Thus, the roles of education and technological skills are essential in preparing students for an active working life. An important strategy to boost employability skills could include explicit approaches to these skills in online higher education. Measures could be taken, such as the development of specific modules and a review of the curricula, in order to include the areas of competence, the assessment of non-cognitive skills, the integration of professional experience, and practice in real projects, as mentioned in the literature review (Harvey, 1999, p. 22).

Although there is a tendency to develop these skills in higher education, the difficulty still remains in deciding which employability skills should be addressed in the curriculum or which can be learned by other means (Harvey, 1999, p. 22), that is, deciding whether to develop a skill, such as oral communication, as part of a course. The focus of the matter is not so much on skills development, but rather on how we should develop critical skills in students through lifelong learning, which means that employability represents a subset within this set. That is, as the online student is confronted with new challenges, he/she should be able to decide, solve problems, and make choices autonomously. One way to address the issue is to focus on developing a critical approach to online learning, challenging the preconceptions of both students and teachers (Zambrano, 2007).

It is important to think of knowledge as a process and not as an object or something stable and fixed. The online teacher assumes the role of moderator, facilitator, and knowledge-provoker, fostering autonomy and the self-assessment of learning (Harvey, 1999). Knowledge must be valued and recognized as no longer being confined to formal institutions; it may have occurred outside the formal systems and be based on life experience, the experience of working in a family environment, or in other structural contexts that have contributed to the development of the individual. Thus, distance and online universities may play an important role in changing traditional perspectives about *why*, *where*, and *how* adults learn. Planning, problem-solving, decision-making, and willingness to learn are important referents of pedagogical narratives about online adult education (Garrison & Anderson, 2003; Conrad, 2009).

CONCLUSIONS

Entertainment, news, and other information/media industries adapt to this mobile media reality, but as educators, particularly those of us working within the formal learning systems of schools, we have been relatively slow to respond. Our materials, classes, and courses are generally not designed to speak to an information-rich, constantly connected student body. The large number of courses banning laptop computers is but one high profile example of formal schooling structures attempting to respond to this change. However, if colleges are currently struggling with these issues, their challenges pale in comparison to university educators who work in a system dominated by nearly complete control over students' attention, engagement, empowerment and activities. Mobile media may threaten basic power dynamics, such as control over information, expression, and literally "where" the student is.

In this paper, the concept of employability reveals particularities when it is transposed to online higher education. It should be noted that obtaining employment is not a valid indicator for measuring employability; it depends, among other factors, on economics, including the supply and demand of employment, which vary over time. The role of higher education in improving employability is concerned with developing the students' potential and flexibility to adapt their knowledge, skills, and attitudes to the labor market. In view of this, distance universities may have an important role in designing and implementing accreditation standards for employability.

Current emphasis on employability is making higher education institutions increasingly aware of their responsibility in the development of certain transferable skills and competencies that are both relevant for employment. In this respect, technological learning has leaned heavily on the use of ICTs, which has represented a useful – and welcome – addition to the classroom's dynamics: it has promoted autonomous learning and facilitated communication with the teacher and among peers while at the same time incorporating the reality of many students' Internet experience to their learning processes. Apart from this, the attention should be paid to the development of transferable skills such as critical thinking, oral expression and team work to promote employability while raising the quality standards of the Degree.

ENDNOTE

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