Conundrum and Encumbrance of Innovative Teaching and Learning Technologies in the Digital World

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Abstract—*When students write or speak for a broader and more international audience, they pay more attention to polishing their work, think more deeply about the content they produce, and consider cultural norms more thoughtfully...*

Ramirez (2010: 1)
In this rapidly changing environment, which is increasingly based within thecontext of a global, knowledge-based economy, traditional universities are attempting to adapt purposes,structures, and programs, and new organizations are emerging in response Accelerating advances in digital communications and learning technologies that are sweeping the world are fueling organizational changes and new developments Growing demand for learning combined with these technicaladvances is in fact a critical pressure point for challenging the dominant assumptions and characteristicsof existing traditionally organized universities in the 21st century With English reportedly the most commonly 'learned' second language aroundthe world (Crystal, 1997; Special Eurobarometer, 2006: 243), this paper exploreshow information and communication technologies (ICT) can be used to support theprocess of learning for those in the very early stages of education It asks: what innovative approaches to teaching development can be employed tomeet the needs of a new generation of young technocrats growing up within anincreasingly globalized world? The change from a 'read Web' to a 'read/write Web' has encouraged teachers to become increasingly inventive in their approach to engaging technologicallysavvy learners who want to publish their work within an ever expanding arena
The paper focuses on the recent trends in the field of education in the digital era and also identifies the challenges associated with the implementation of these modern techniques

Keywords :*Innovative Teaching, Digitalization, Distance Education, Technology*

1. INTRODUCTION

Technological change – from consumers to producers

Over the last 20 years, there has been a tremendous shift in the way that users integrate technology into their personal lives These changes have taken time to filter down into the educational sector, but slowly teachers have realized the need to adapt their practice in order to reflect the changing nature of technological use in the wider world

In the past, technology has predominately been used to source and consume information, whereas today's learners have become particularly adept at creating and collaboratively developing content for a wide variety of purposes, for example so-called Web 2 0 tools such as blogs, forums and wikis Moreover, children and young people are now becoming increasingly interested in the concept of 'content cu ration' – selecting, sifting, showcasing and sharing content with friends, family and peers The recent developments of the worldwide web, digital satellite technology, and new applications of virtual reality to build simulated learning environments are predicted to have particularly dramatic effects upon learning environments at all levels Universities are experimenting with improving accessibility to existing programs, designing new programs to take advantage of these emerging technologies, and are marketing their programs to new audiences and in new ways Since computers started to be introduced in language learning (and in education in general) people have rightly asked whether the investment we are making in these technologies gives us value for money

The recent developments of the worldwide web, digital satellite technology, and new applications of virtual reality to build simulated learning environments are predicted to have particularly dramatic effects upon learning environments at all levels Universities are experimenting with improving accessibility to existing programs, designing new programs to take advantage of these emerging technologies, and are marketing their programs to new audiences and in new ways Corporations are also engaged in experimentation and have formed both new organizations internal to the corporation and brand new alliances with universities to promote learning using technology Completely new models for universities are also being developed to respond to the opportunities created by a growing worldwide market for learning and new technologies The result is a dynamic competitive environment among traditional universities that are adapting learning processes and administrative procedures, alternative nontraditional universities that are adapting technologies to better serve their existing primarily adult constituencies, and

new universities that are being formed around the promise of virtual environments

2. OBJECTIVES

The paper focuses on the following objectives :

- To study the recent trends of education in the era of digitalization and understand the concept of integration of education and technology in the era of economic development
- To identify the challenges and pitfalls faced by education sector in implementing the modern teaching techniques in educational institutes
- To analyze the contribution of integrating technologies towards the achievement of the ultimate and immediate goals of education of quality and effectiveness

3. LITERATURE REVIEW

In this early part of the 21st century the range of technologies available for use in language learning and teaching has become very diverse and the ways that they are being used in classrooms all over the world,We are now firmly embedded in a time when digital technologies, the focus of this book, are what Bax has referred to as 'normalized'(2003, 2011) in daily life in many parts of the world, although not amongst all people as there are digital divisions everywhere (Warschauer, 2003), and still not always in the world of education However, digital tools, as 'technical cultural artifacts' have long been a feature of the world of education (Bates, 2005), and particularly language education (Salaberry, 2001)

These digital tools are, of course, central in the established and recognised field of computer assisted language learning (CALL), and are also increasingly a core part of the advanced teaching pedagogy in general Levy and Hubbard making the argument for (2005), whilst Dudeneyand Hockly (2012) are rather less convinced Beatty, 2010; Davies et al , 2013) and articles about the use of computers in language education started appearing in earnest in the 1980s, over 30 years ago, at the same time as early desktop computers started to make an appearance and Hockly (2012) are rather less convinced

In a world where we increasingly see laptops, tablet computers, or mobile phones as the technology of choice, it might be argued that we are at a tipping point when this common term will soon disappear Issues of methodology and technology Evidence suggests that there can be significant variability in practitioner and pupil confidence with ICT (Wild, 1996; Lam, 2000; Ertmer and Ottenbreit-Leftwich, 2010, Ertmer et al 2011), although this is a rapidly changing picture as new generations of pupils who have grown up in a digital world come into classes, and graduates who don't remember a time when they didn't havea mobile phone train to

be teachers and enter the school systems around the world There is also unequal access to the technology itself and while there is increasingaccess to technologies throughout the world there are still 'digital divides', both in,and between, countries (Warschauer, 2003)

4. DISTANCE EDUCATION/TECHNOLOGY BASED UNIVERSITIES

Keegan categorizes distance education universities as originating from two distinct traditions The first of these traditions is correspondence study, and the second is the extension of traditional classrooms to new locations through the use of new technologies such as satellite, broadcast television, cable television, and more recently, compressed video and desktop video More recently, a third category of institution has emerged that does not neatly fall into either of these traditions Using asynchronous learning and taking advantage of new computer mediated conferencing systems and the emergence of the world-wide Web, online universities offer a third model organized around a technology approach

The distance education/technology-based universities are all organized around a technology-based approach to learning that seeks to minimize the physical separation of the learner from the instructor or from other learners They also tend to be more adult and workforce oriented, although the large national universities enroll substantial numbers of traditional college-age students largely due to the incapability of traditional universities, especially in countries with rapidly growing populations

In traditional universities, students attend campuses with classrooms where a primarily full-time faculty teaches Many traditional universities attract students from across the globe, but they are not global universities because students must come physically to a campus that operates within a recognized geographic service area and within a specific local cultural context In traditional universities, students attend campuses with classrooms where a primarily full-time faculty teaches Many traditional universities attract students from across the globe, but they are not global universities because students must come physically to a campus that operates within a recognized geographic service area and within a specific local cultural context

Table 1: Characteristics and Assumptions of Traditional Residential Institutions of Higher Education

Input	Characteristics and assumptions of traditional residential institutions of
Measurement	higher education
Philosophy	Students come to campus
Mission	Mission defined by level of instruction--offering graduate level programs often
	implies increased quality, as does student and faculty selectivity

Funding	Measured by $ expended per full-time student equivalent
Curricula	Relatively stable and comprehensive curriculum
Instruction	Primarily face-to-face lecture, teacher-centered formats prevalent at undergraduate
	level Instruction is measured by clock hours of seat-time (Carnegie units of
	credit) and evaluation of student content acquisition; seminars at graduate level
Faculty	Full-time faculty; faculty preparation and credentials, research productivity, and
	external grants imply increased instructional quality
Students	Greater selectivity at admission suggests higher quality programs— very little
	measurement of change in overall learning from entry to exit
Library	More volumes in library, with greater depth of disciplinary holdings, implies
	greater quality (although with advances in electronic sharing of resources this
	assumption is beginning to be challenged)
Learning	Generally used to supplement or enhance lecture format; tiered high technology
Technology	lecture halls are one example
Physical Facilities	Central physical plant includes residence halls, student unions, health facilities,
	classrooms, and campus environment, which together are believed to add to the
	quality of the education received
Productivity	Productivity is measured in student credit hours and degrees Student credit hours
Outcomes	are measures of classroom seat time and content acquisition; degrees are measures
	of completion of pre-approved courses
Governance	Independent Board of Trustees--Independence from political or business
	environment is a goal
Accreditation	Institutional by region; individual programs or disciplines are also accredited by
	professional accreditation associations

Distance education/technology based and online institutions may be state funded (such as Thomas Edison in New Jersey), privately held (such as International University), or they may be organized as a consortium institution (such as National Technological University) which offers engineering degrees by satellite They may be focused upon a state, a country, a national, or an international market; whatever market they select, their focus is on reaching that market through providing remote access to the programs they offer While all distance education/technology based universities share many characteristics

5. EMERGING ONLINE WEB-BASED UNIVERSITIES

With the development of computer conferencing systems and the worldwide Web, many new online universities have been established in just the past five years These universities are coming into existence specifically to utilize new web technologies that support learning independent of time, location, anddistance, but allow for students to study together They offer opportunities for students to learn through asynchronous interaction with each other and a faculty member A classroom environment with student and faculty interaction is created, but students are not all in the classroom at the same time On-line universities define their competitive market advantage based upon the convenience of electronic computer based access they provide to specific programs Unlike the national distance learning universities, which have a historical tradition tied to correspondence study and the post office, these new universities focus on the use of new technologies to provide not only improved access but also improved interaction between and among students

a Correspondence Tradition

Many distance education universities have developed from a print and correspondence tradition, and were primarily established to increase access to higher education They are usually operated as governmental entities and were originally organized to serve a national development function Daniel [22] refers to these universities as "mega-universities " Several of these universities have enrollments that number in the hundreds of thousands

The British Open University is the best known of these national universities that utilize traditional distance learning methods such as correspondence, audiotapes, and videotapes Generally the pedagogical method employed by distance education national universities is a student studying independently of other students, working with an instructor who guides the student in his or her learning activities and courses Most of these universities were established in the past 30 years, and they are rapidly adapting their content and delivery to new technologies, markets, and alliances

b Extended classroom tradition

Just as the distance education national universities were originally organized to take advantage of improved mail delivery, several universities have been organized specifically to take advantage of a particular delivery technology while overcoming other organizational weaknesses of traditional universities The extended classroom tradition assumes that face-to-face instruction in traditionally structured teacher-centered classrooms where students can interact with each other and with the instructor is a preferred mode of learning, even at a distance

The extended classroom tends to be the most traditional of the approaches to distance education; very often the class members learning at a distance are simply connected to a

regular on-campus classroom and are taught as part of the extended class

c Emerging online web-based universities

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d Corporate Universities

During the 1980's a number of corporations established umbrella organizations to provide for the corporation's comprehensive human resource development, education and training needs Their reasons for developing comprehensive training and educational programs included the need to develop basic educational competencies in the workforce, acculturate employees into the company, improve cooperation, communication and competencies of individual employees and teams of employees, and improve recruitment, advancement, and retention incentives

Many corporations have labeled these education and training units or sub-units as universities, and a few of these units have developed academic degree programs that sought and received accreditation Corporations that have created units designated as universities include American Express, Apple, Disney, First Bank of America, Intel, MasterCard, Motorola, Xerox, McDonalds and Hart Schaeffer & Marx While most of these do not offer degrees, it is clear that these corporations view learning by employees as important to their future

Table 2: Comparison of Major Differences Among Types of Distance Education/Technology Based Universities

Input	Correspondence tradition	Extended classroom tradition	Emerging online/web-based universities
Funding	National and state investments common	Industry often a driving force in funding programs	Tuition and industry funding likely to drive funding
Instruction and	Most courses are	Greater variety of	Courses are online on the WWW,

learning modes	print and readings based, interaction between instructor and student only	methods, including real-time, student-student, and student-instructor interaction	interaction among students and with instructor occurs asynchronously and in real time using computer conferencing; use of other technologies as appropriate
Readings	Print syllabi and readings often provided	Print syllabi and readings often provided	Online access to specific documents and resources appropriate to program
Productivity Measures	Costs per student compared with traditional higher education	Dependent upon funding model selected, but access to instruction is a key consideration	Not yet established, but revenue generation and cost reduction are two probable criteria
Learning Technology	Generally one-way technologies to enhance lecture-oriented instruction	Generally two-way technologies to enhance simulation of face-to-face classroom environment	Generally two-way interaction supplemented by online instructional references and resources

Evaluations that have been conducted so far show that the confidence andmotivational level of the Kitarissei children rose from the experience of usingauthentic oral language with the native speakers from the Australian schools

Children also developed a keener interest in global issues, as well as stating a desireto find out more about Australia Interestingly, the children also reported that theyneeded to pay special attention to their oral presentations, ensuring that they wereboth clear and interesting to their peers One student commented that 'I tried to usesimple sentences matching thePowerPointslide shows' and another that 'I thought ofthe ways of sending our message clearly'

Case Study: Video conferencing – Developing spokenlanguage skills and cultural understanding

Recently, Japan has made the teaching of English compulsory in all its elementary schools This has posed significant challenges for schools and teachers, not least because many teachers lack the necessary oral competency to deliver lessons

through English as well as providing effective speaking models for their students

At Mie University, Nagata Shigefumi, a researcher in the field of social studies and Hiroko Arao, a researcher in English education, formulated a four-year international school linking project to facilitate learning between local students and peers from schools in other countries

In the pilot project, Year 6 children from Kitarissei Elementary School visited Mie University for video conferencing sessions with children in Australia The focus of the work was to develop oral competency for the Japanese children as well as sharing cultural experiences In preparation, both classes researched a topic of interest to share with each other during the Polycom VC sessions; these included environmental and nutritional themes

Each session followed a similar pattern:

1 Greetings and introductions from both schools
2 Japanese children did a presentation followed by a question and answer session
3 Australian presentation followed by a question and answer session Each class used the VC whiteboard facilities to show a PowerPoint, aiding the flowof their presentations During follow-up discussion, the Kitarissei children mostlycommunicated in Japanese – a Japanese interpreter present in the Australianclassroom subsequently translated this during the sessions

Issues of methodology and technology :

As digital technologies have taken a holdin society in general, this particular question is not asked quite so often, but it isstill important to make sure that the technologies that we have available are usedeffectively People are always tempted to try to make an argument for technologyhaving an impact on the development of pedagogy and in many cases we can seethat the use of technology has enabled teachers to re-think what they are doing

We also see people trying to populate this domain by talking about notions like the'flipped classroom', ostensibly a methodology that sees input as occurring at 'home'and physical classrooms being used as spaces to explore what has been presentedin the input This is far from being a new idea, but these agendas are pushed fora while and then disappear again What is a contender for a methodology that iscentral to the world of technology and language learning is that of blended learning(Motteram and Sharma, 2009) We see this methodology still being developed, butwhen handled best it is the most likely candidate for a starting point for gettingteachers to work with technology in their practice It is still the case that mostteachers work in physical classrooms and looking at ways that these spaces canbe augmented with

digital technologies is a very good starting point In our recentproject for Cambridge University Press, Diane Slaouti, Zeynep Onat-Stelma and myselfadded the idea of the extended classroom to the notion of blended learning An extended classroom is one that allows learnersto engage in material beyond the regular class period, so while a blended classroomis looking at ways that an activity might be enhanced by a technology, we also seetechnologies being used to make it possible to cover areas of the curriculum thatthere is just not enough time for in the busy world of formal education, particularlyin primary and secondary schools Thorne and Reinhardt (2008) have also proposedthe notion of 'bridging activities', which simplistically is about getting learners to talkabout how learners are using technology in their 'out of class lives' in the classroom

Thorne and Reinhardt (2008) are interested in fan fiction, the sort of narrativematerial that is created around digital gaming What they propose is that teachersencourage learners to bring this activity into the classroom with them and they useit as the foundations of lessons Technology continues to be used for all sorts of specific language learning activities,such as oral practice and reading and writing skills development However, ICT seemto be particularly successful when integrated into project-based language learning(ProjBLL)1 (Beckett and Miller, 2006), where English can be acquired naturallythrough themed activities and different subject disciplines

As leaders of universities and organizations consider and evaluate strategies for gaining additional advantage in this new educational marketplace, the following concepts are key to further experimentation and development

a. Ambiguous boundaries
The clarity of boundaries between organizational models is likely to diminish even further This blurring of boundaries is an inevitable outcome of greater communication and interaction made possible by increasingly powerful technologies Traditional universities will begin to look more like online universities, and they will increasingly operate more like businesses What is "on-campus" and what is not will be less and less apparent, and less and less an issue for students and the faculty

b. Interdisciplinary programs
As learning becomes more connected with personal and professional experiences in all of the models, learning and instruction will become increasingly interdisciplinary Academic departments will be encouraged administratively and driven economically to reformat and reorganize courses, programs, and structures to respond to increasingly sophisticated and market-knowledgeable students Technology support units that in traditional universities have been concerned only with improvements in on-campus instruction will find that their work intersects with continuing education

units whose role has been to extend access to programs through use of technology

c. Student support services

In all organizational models, student support services such as admissions, advising, registration, and placement will focus more on helping the university and its programs reach out to serve students where they are rather than centralizing services in a single location These direct and immediate contacts with students will become increasingly central to organizational and educational quality And institutions will increasingly focus on helping students to develop the skills necessary to be successful in today's economy, which values the ability to work in teams, to develop creative approaches to problem-solving, and to learn constantly In this sense, universities will be more and more concerned with ensuring that students know how to learn and to apply what they learn to real situations, and less concerned with measuring learning in abstract and relatively unconnected assessment processes such as content examinations and multiple-choice tests

d. Bureaucracy and assumptions regarding change

Traditional universities and national distance education universities will be forced to shed bureaucratic decision-making processes and past operating assumptions that were more appropriate in a shielded government or industrial environment These changes will occur in order to compete with aggressive for-profit institutions which will communicate by their success in gaining market share in the adult marketplace the need for adapting curricula, programs, courses, and delivery more quickly The concept of time to market will become more critical

e. The need for faculty

All universities will require full-time faculty and staff dedicated to engaging a diversity of learners who will increasingly bring more complex learning needs to universities For-profit and online universities will especially discover the necessity of having this core team of professional faculty and staff, whether physically located together or across distances, whose members can perform the many complicated tasks necessary to build any new organization focused upon building quality learning experiences for students

6. CONCLUSION

All universities have the potential to become the educational equivalent of global multinational corporations that operate across national boundaries While traditional campus-based higher education is organized around a physical place, the evolution toward global transnational universities will result in content and delivery mechanisms designed to minimize cultural and geographic barriers to attendance Universities of all types will have new opportunities to build upon diverse views of the world, of organizations, of opportunities, and of issues and problems The ultimate result will be the eventual

reduction of barriers to cross-national study, just as international trade and competition is removing the barriers to the creation of a global economy

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