ICT
Leadership in
Higher Education

Selected Readings

Edited by
Sanjaya Mishra

Commonwealth Educational Media Centre for Asia
New Delhi

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Preface

Integrating Information and Communication Technologies (ICTs) in education is highly challenging, especially in the higher education sector. While there are several factors for successful integration of ICTs in teaching and learning, strong leadership support and institutional commitment play significant role. Leadership has been regarded as a critical component in successful ICT integration in education (Kirkland & Sutch, 2009). While distributed leadership and shared responsibility are necessary to sustain any innovation and implementation of technology plan in higher education, the vision of leadership with reference to ICTs become important in taking initiatives, and develop action plan for implementation. A successful ICT leader in education should be able to lead from the front to not only give vision, but also manage change and influence major stakeholders to buy-in. With this background the Commonwealth Educational Media Centre for Asia (CEMCA) initiated a programme to engage with the Vice Chancellors in Universities in the Commonwealth Asia over the three years during the period 2013-2015. In the process three events were organised in India, Sri Lanka and Bangladesh to create awareness of ICT integration in teaching and learning, and sensitize institutional leaders about the importance of developing technology master plan. The specific objectives of the programme were to:

- Provide a platform for institutional leaders to discuss issues related to use of ICTs in teaching and learning in higher education; and

- Assist the participant leaders to develop strategic plan and roadmap for ICT application in all activities of the university.

There were several papers presented during the deliberations in these three events. We have made a compilation of selected papers presented in these events for wider dissemination with the hope that universities in Commonwealth Asia will take steps to develop strategic plans for ICT use in teaching and learning. The papers in this publication will assist informed leadership in higher education to drive implementation of technology plan and integration of ICTs in teaching and learning.

I take this opportunity to also thank all the educational leaders who participated in the events organised by CEMCA. Special thanks to Dr. B.R. Ambedkar Open University, Hyderabad, the Open University of Sri Lanka, and Bangladesh

Open University for hosting the events, and many thanks to British Council and Indira Gandhi National Open University for supporting the first edition of the event in 2013 in India. Thanks are also due to all the contributors for their permission to include their work in this compilation. As always, we look forward to your comments and suggestions to further improve our work at CEMCA.

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Information and Communications Technology as a Change Agent for Higher Education*

by Uma Coomaraswamy

"The significant problem we face cannot be solved at the same level of thinking we were at when we created them" – Albert Einstein

How is the World of Higher Education Changing?

The nature of work and expectations about the role of higher education and the basis of the changing role of graduates in economic life are changing as a result of:

- Knowledge society;
- Increasing uncertainty;
- ICT revolution;
- High performance workplaces;
- Globalization; and
- Change of the economic structure.

Universities are expected to produce versatile and engaging graduates with multidisciplinary knowledge and many capabilities. Universities have a commitment to equip graduates with 21st century skills, i.e., a set of essential skills that qualified graduates must possess in order to survive and work in this digital age. 21st Century Learning Outcomes Project has identified eight clusters of such skills (Table 1.1).

Understanding the student body and how they learn, the different trends on the labor market and its efforts on the skills that graduates need to have in order to stay employable is only the first piece of the puzzle.

In order to make use of this knowledge we need to understand the features of higher education that enables students (graduates-to-be) to develop these skills.

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* This is an edited version of the Keynote presentation delivered by Prof. Coomaraswamy at the Regional Workshop on ICT Leadership in Higher Education at Kandy, Sri Lanka in June 2014.

Table 1.1: 21st Century Skills

Technology Skills	Acquiring computer literacy and internet skills retrieving and managing information via technology
Communication Skills	Reading, writing, speaking, listening
Computation Skills	Understanding and applying mathematical concepts and reasoning, analyzing and using mathematical data
Critical Thinking and Problem Solving Skills	Evaluating analysis, synthesis, decision making, creative thinking
Information Management Skills	Collecting, analyzing and organizing information from variety of sources
Interpersonal Skills	Developing teamwork, relationship management, conflict resolution and workplace skills
Personal Skills	Understanding self, managing change, learning to learn, taking personal responsibilities, understanding aesthetic responsiveness and wellness.
Community Skills	Building ethical, citizenship, diversity/pluralism and local community, global and environmental awareness

The major shift in higher education is from instructional paradigm to learning paradigm with the driver in this transformation of education being advances in ICTs. Increasingly aspects of teaching and learning are being mediated through ICTs, both on-and off-campus.

The character of higher education (HE) is also changing. Delivery of HE is changing both in perception and implementation. Research and developments from distance educators, such as practitioners of Open Universities, are now setting the agenda for ICT use in HE in general. Thanks to the global reach of Internet based technologies, virtual education now occupies a point beyond distance at one end of the continuum from distance to F2F, while at the other, flexible, blended and distributed learning which incorporate elements of tutor mediated or self-directed, resource based, online learning feature in the life of most campus situations. Many traditional universities of the developed world are adapting a blended learning approach, that is, merging of face-to-face (F2F) and technology mediated learning (Table 1.2).

In the developing world so far ICT has been introduced into conventional systems largely as a supplement to existing teaching and learning practices. There is still much to be done in terms of exploiting ICT for rich pedagogical uses, (i.e., enhanced forms of teaching and learning) and for serving learners in different target groups.

Vice-Chancellor of the University of South Queensland, in 2004, posed a question – will universities become extinct in the networked world? He argued

Table 1.2: Typical Learning Environments

Proportion of content delivered online (%)	Type of course	Typical description
0	Traditional	Course with no online technology used-content is delivered in writing or orally.
1 to 29	Web facilitated	Course which uses web-based technology to facilitate what is essentially a face-to-face course. Might use black board or WebCT to post the syllabus and assignments, for example.
30 to 79	Blended/Hybrid	Course that is a blend of the online and face-to-face course. Substantial proportion of the content is delivered online, typically has some face-to-face meetings.
80+	Online	A course where the vast bulk of the content is delivered online. Typically has no face-to-face meeting.
100	Virtual	Fully online.

"that present traditional approaches based on conventional classroom teaching and learning and a hierarchical bureaucratic academic structure would not be capable of meeting the escalating demand of HE in the knowledge society and that the universities must therefore adapt or face the fate of dinosaurs".

Primary focus of this presentation/paper is on the use of ICT on teaching and learning. However, ICT has impacted on every aspect of operations of universities. What might be a new paradigm of higher education be?

Paradigm Shift in Higher Education

Education is seen as the macro term which includes the concepts – teaching and learning. Teaching and learning are inherently intertwined. The move towards an information economy and knowledge society necessitates a change in the approach to teaching and learning. Major shift has been from the centuries old model of 'instructional paradigm' (knowledge adoption era) to 'learning paradigm' (knowledge production era).

In its briefest form in *instructional paradigm*, teacher was the 'sage on the stage', and primary source of knowledge (teacher-centred) transferring it to students, whereas in the *learning paradigm* teacher facilitates the learning process as a 'guide on the side'.

Knowledge production is the central issue of what teaching and learning is; thus the focus of learning is on 'creating and producing' knowledge to give

an experience that allows students to discover and construct knowledge for themselves and take responsibility for their own learning (student-centred) in the learning paradigm.

Hence responsibility is a 'Win Win' game where in two agents (teacher and student) take responsibility for the same outcome though neither is in complete control of all the variables. Measurement of success is often based on inputs and processes in the instructional paradigm.

On the other hand success is measured by student learning and success outcomes and quality of exiting students in the learning paradigm (Kelly, 2003). The shift from the 'instructional paradigm' to 'learning paradigm' creates tremendous pressure for change on all components of the educational system and practices. It has a profound implication for what is taught, how teachers teach, how it is learned, how students are tested and how HE institutions are structured. This has significant implications in changes for educational policy.

Reaching the goal of the learning paradigm will require the integration of several critical approaches:

- Ultimate goal is a transition to student centred communities which can be achieved with student centred technology.
- Transitioning to student centred technology will require transformational faculty development.
- Transformational development must be coupled with the institutional change.
- Course management system will be a critical enabling force driving the institutional change.

Putting learning at the heart of academic enterprise will mean overhauling the conceptual procedural curricula and other architecture of university education.

Hastening the potential for that overhaul was the emergence of ICT as a change agent. While the role of the teacher first shifted from 'teaching' to 'learning facilitation' – the later shift is towards 'facilitated and supported enquiry'. The contemporary educational paradigms focus not only on the production of knowledge, but are beginning to focus more and more on the effective application/integration/manipulation etc., of existing information and knowledge.

ICT as a Change Agent:
The Main Driver of the Paradigm Shift

The first revolution relating to education came with the invention of written language which meant that for the first time people could store information and retrieve it without needing to rely on memory.

The second revolution that occurred in the middle of the 15th century came with the invention of the Guttenberg's printing press. With this revolution information in books and pamphlets could be disseminated much more widely and quickly.

The 3rd revolution brought about by ICT which embraces many technologies for capturing, interpreting, storing and transmitting information, is accelerating the dissemination of information and knowledge.

Throughout much of the 20th century efforts were made to introduce new technologies into teaching and learning. Information and communications technology (ICT) is increasingly utilized by higher education institutions worldwide. ICT is emerging as a part of on-campus delivery as well as open and distance modalities of higher education delivery.

In Asian countries, higher education institutions have been using both low and high technologies, and many that have been using low technologies such as analogue broadcast radio and television and print have been gradually moving in tandem with the evolution of technologies, i.e., from analogue to the digital realm using the Internet, the WWW and multimedia.

The advent of the Internet and the transformation of information into digital format and later emergence of newer technologies such as wiki, blogs, podcasts, and mobile telephones have also begun to influence many institutions (ADB, 2012). With the introduction of each new technology bold claims have been made about significant impact they would have on the education system. Each new technology came to be incorporated into the traditional form of instruction but always on the margin and the educational systems remained fundamentally unchanged (Kozma, 2011).

The impact of ICT on learning is currently discussed almost entirely in relation to the use of new technologies. These new technologies are significantly more powerful than the previous technologies; the power of the terms comes from the convergence of the ever increasing information processing capabilities of computers and the information exchange capabilities of networks.

Whereas the old technologies are capable of distributing information in various forms, the new technologies fit with the education system that is tuned to knowledge creation and that is aligned with the emerging technological,economic and social paradigm which demand a very different response from the educational system, one more oriented to the information economy and knowledge society.

Within this paradigm, the multimedia capabilities of computers provide students with personalized instruction and interactive animations, games and simulations that can make complex concepts and systems more understandable. The interactive productive capabilities of ICTs allow both teachers and students to

engage in collaborative projects and investigate and generate their own knowledge products. The networking capability of ICTs allows both teachers and students to work with distant collaborators, participate in knowledge building communities and access outside mentors, experts, scientists and business people. In addition knowledge resources and productive capabilities are available on an 'anywhere' 'anytime' basis inside and outside the institution. Thus ICT enabled education will ultimately lead to democratization of education.

Impact of ICT on Higher Education

Education policy makers want to know the research findings that test the hype and bold claims of technology advocates. They want evidence to justify the significant financial investments that are needed to integrate ICT into the education system. They want to know if the use of ICTs makes a difference in teaching and learning. Many studies have been made to evaluate the educational impact of ICTs, i.e., inputs on students, classroom and institutions and outcomes. We will explore the likely impact of both current and emerging technologies to have on how learning takes place, and for acquisition of 21st century skills. The new ICTs have made it possible to change institutional thinking about how instruction can be delivered, about who learns, how to learn and when and where they learn.

More and more institutions are using ICTs for many reasons:

- Improved student outcomes with regard to motivation, self-esteem, ICT skills, collaborative skills, subject knowledge, information handling skills, meta cognitive skills etc., and reputation for the programmes;

- Increased engagement in programmes on the part of both teachers and students;

- Increased retention and enrollment;

- Increased flexibility of delivery;

- Increased quality of learning and learner's performance;

- Increased credibility with government, funding agencies stemming from the perception that uses of ICTs increase the institution's ability to serve learners;

- New market niches;

- Facilitates changing the orientation of classroom of conventional systems into a learner-centred environment;

- Impact of open educational resources (OER) movement;

- Removed many of the geographical and temporal constraints;

- Serves as a vehicle and a platform for meaningful educational reform geared toward a shift from didactic instructivism to constructivism.

ICTs have been used far beyond enhancing teaching and learning to include promoting research, scholarly community engagement and administration. Young (2002) describes the convergence of online and face-to-face instruction at several universities as the 'single greatest unrecognized trend in higher education today'. ICT has been a driver for that.

Ample evidence exist that one of the most powerful and unintended consequence of the adoption of web-based learning has been the resurgence of interest among faculty in learning theory, instructional design and pedagogical techniques.

Factors influencing the use of ICT in Higher Education

A number of studies have shown that there are wide ranging factors which influence educator's under-utilization of ICT in their teaching and learning. The fundamental factors influencing the use of ICT in teaching learning have been identified by researchers: teacher's attitudes, professional development of teachers, technical support, leadership support, pressure to use technology, institutional policies and support, e-readiness, access to resources, ease of use, incentives to change, and government policies and support.

Need for Organizational Change

To respond to taking advantages of the opportunities possible through ICT, policy makers need to make crucial changes. These outcomes do not emerge simply by introducing computers into the learning setting. An appropriate policy framework should cover the following:

- Use of ICTs to higher educational problems;
- Significant investment in training teachers and managers to change mindsets and increase their knowledge in ICT application to teaching and learning and in administration;
- Availability of qualified teachers and support staff;
- Funding for maintenance; and
- Access to Internet and upgrading is sustainable.

These conditions are rarely met especially in developing countries. Many argue that the potential impact of the implementation of ICT in higher education will not be observable without organizational change at the level of the whole system (Youssef and Dahmani, 2008). ICT should be integrated in the educational system. At present ICT integration remains sporadic without clear direction. Access to ICT by students and teachers has begun. Yet, its use supports traditional teaching rather than the shift to new roles and pedagogical practices. Too often the emphasis is on equipment than on opportunities for teachers to teach and experiment effectively.

Conclusions

There are massive benefits that can be derived from effective usage of ICT in HE. But there are intervening issues, conditions, and situational contexts that encourage or hinder effective use of technology in different settings, and therefore the impact that technology would have on different audiences. The impact of ICT on teaching and learning would therefore vary according to circumstances of a given case, and we should be weary of "one-size fits-all solutions". ICT interventions should meet an educational need and add value to the educational activity.

HE in developing countries has to be innovative and leverage on the development of ICT to provide more accessible, affordable, efficient, and relevant quality HE. For those institutions who accept the challenge, this will be an exciting adventure. For those who do not accept the challenge or perhaps do not believe that it is necessary to do so for the sake of our youth I suspect might be on their way to becoming 'dinosaurs'.

We cannot do it alone. This is not a time for competition, for winners and losers, but rather a time for collaboration. It is also a time for strong intellectual leadership.

Today's job should be done with today's tools. You can't expect to meet the challenges of today with yesterday's tools and expect to be in business tomorrow".

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ICT in Higher Education: Policy Perspectives[*]

by Adrian Kirkwood

Introduction

Information and Communication Technology (ICT) is bringing changes in societies throughout the world – often, but not always, for the better. One thing that cannot be denied is the differential impact that ICT has upon various groups within society, with younger and more affluent people likely to have greater access to technologies and to make use of them for a wider range of purposes than others. In particular, mobile phones, the Internet and social media have been associated with significant social changes over the last 15-20 years.

Just as in the wider society, ICT can and does impact on Higher Education throughout the world. It can have influence in at least 3 main areas of activity: administration, research and teaching & learning. This presentation focuses on ICT for teaching & learning, as this is probably the least well-understood area of activity. However, from the outset I must declare my position. While accepting that technology influences changes in society, I will argue against *technological determinism*, by which I mean the view that technological developments are the central determinants of social change – what makes things happen – rather than individuals and social contexts shaping the ways in which technological tools are used.

Fundamental to the effective educational deployment of technology is an approach that should be informed by inquiry and evidence rather than assertions and hyperbole. Have rigorous studies been undertaken to evaluate the impact of ICT for particular educational purposes? The evidence considered must be relevant and derived from appropriate sources: just because a technology can add value in one particular context does not mean that it can be applied successfully in others. Inquiry and evidence must be related to the nature of teaching and learning processes and outcomes, not technology-led with a focus on specific

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[*] Paper presented at the Workshop on ICT Leadership in Higher Education held at Hyderabad, India in February 2013.

technologies or applications. Unfortunately, fashion and novelty often dictate that a technology-led focus prevails, despite the fact that educational issues tend to be more long-lasting than ICT artefacts. A kind of collective amnesia seems to prevent decision-makers and practitioners from taking account of lessons learned from research into the use of educational media conducted over many decades.

Access

One factor that influences most of the others is **access to technology**, which can affect HE institutions in different ways. It is only right that this be considered in terms of the implications for each individual institution. For example, some universities attempt to *provide* student access to ICT equipment by maintaining 'computer labs' or something similar. Some universities *require* access for certain courses, but not for all. Some institutions *expect* students to use their own equipment, but make access available to an institutional 'learning environment' or similar system requiring extensive infrastructure. Each of these has cost and support implications for the institution, its staff and its students. The investment required of all parties includes not only the costs associated with equipment, but also the time necessary to develop and maintain the systems, resources and skills necessary to achieve the desired benefits (Laurillard, 2006).

This can create policy dilemmas for distance teaching universities, particularly those with a remit to widen access and participation. Targeting potential students who have been 'hard to reach' becomes even more difficult when they are further disadvantaged by poor access to ICT. The digital divide, between those that have good access to ICT and those who don't, requires constant monitoring to inform policy making.

Clarifying Institutional Aims and Goals

Since the 1990s there has been considerable growth in the adoption of ICT within higher education. It is often taken for granted that technologies can 'enhance learning' and the term 'Technology Enhanced Learning' (TEL) is increasingly being used in the UK, Europe and other parts of the world. However, it is rare to find explicit statements about what this actually means. But we should be asking *what* precisely will be enhanced when technology is used for teaching and learning and *how* will enhancement be achieved? Is the enhancement concerned with

- increasing technology use?
- improving the circumstances/environment in which educational activities are undertaken?
- improving teaching practices?
- improving (quantitatively and/or qualitatively) student learning outcomes?

However, the adoption of ICT should never be viewed as a means of reducing institutional expenditure. Although costs can probably be reduced in certain administrative transactions, the overall financial commitment is likely to increase.

Many campus-based universities in western countries now offer some courses for distance learners, often seeking enrolments from international students. However, it still seems to be the case that ICT is used mainly by university teachers to *replicate* and *supplement* existing teaching practices rather than to transform educational processes. The potential for ICT to help bring about qualitative changes in *how* and *what* students learn remains largely unexploited.

Learning

I turn now to discuss some of the implications of the increased use of ICT by learners.

A 'Net Generation'?

Much has been written in recent times about generational differences with regard to using ICT. Terms such as 'Digital Natives' and 'Net Generation' have been used to describe young people who have grown up in the age of digital technologies and are presumed to have greater familiarity with using a range of technologies. Claims have been made that higher education needs a radical overhaul to enable the needs of the new digital generation to be met. However, those assertions were not founded on plausible evidence. Recent studies conducted in several technology-rich western countries (for example Helsper and Eynon, 2009; Jones *et al*, 2010; Kennedy *et al*, 2008) not only fail to support those claims, but indicate that there are considerable differences between *technical skills and competency* (which young people do tend to possess) and the *intellectual skills* necessary for effective use of ICT in educational contexts (which they do not).

Young people entering higher education might use a search engine like Google™ on a regular basis to find information or resources about a topic of interest, but they usually lack the evaluative skills to select the most trustworthy and appropriate sources for their particular purpose. New students often have very restricted expectations about how ICT might contribute to their learning at university.

> We cannot assume that being a member of the 'Net Generation' is synonymous with knowing how to employ technology based tools strategically to optimize learning experiences in university settings (Kennedy, et al, 2008, 117-18).

Universities cannot assume that their students already possess the necessary intellectual skills for effective use of ICT. They need to ensure that their academic programmes help students to develop the necessary approaches to using technologies and tools.

Assessment and Plagiarism

Growth in use of ICT has increased the potential for plagiarism among students. The 'copy and paste' facility makes it easy for students to assemble an assignment from a variety of sources, while sophisticated search engines make it easy to locate sources from around the world. There are two main forms of plagiarism. The first involves a *deliberate* intention by somebody to pass off the work of other people as if it were their own. This is observed when students submit assignments that have, to some extent, been written by somebody else. In the second form, the intention is not so deliberate. Students might include elements of other people's work in their assignments, not because they were trying to pretend it was their own, but because they failed to understand the accepted academic practices relating to acknowledging and referencing the work of others.

At an institutional level, two main approaches to minimizing plagiarism and cheating can be adopted. The first involves measures to detect and deal with inappropriate behaviour by students in their assessed work. Many universities now use software to scrutinize the students' assignments to detect evidence of plagiarism. The second approach addresses the causes of the problem by making students more aware of what is expected of them and by designing assessment tasks that increase students' personal involvement and rely less on the simple reproduction of course materials and resources. Guidance is available to help teachers design assessment tasks that reduce the likelihood of plagiarism (e.g. Carroll, 2007; McDowell and Brown, undated).

Qualitative Improvements in Learning

Despite ongoing debates about the outcomes of higher education, certain themes remain fairly constant. ICT can contribute to these, and other, developmental goals:

- Students should develop and deepen their knowledge and understanding of their chosen subject or discipline. This is not simply a matter of *knowing more* (facts, principle, procedures, etc.), but of *knowing differently* (more elaborate conceptions, theoretical understanding, etc.);

- Individuals develop their capacity to participate in a community of practice related to their discipline or profession;

- Students should have 'learned how to learn', developing greater self-direction and the capacity – and aspiration – to continue learning throughout life. They should understand that knowledge is contested (differing perspectives) rather than absolute;

- Students should have developed a range of 'generic' or 'life' skills. For example, critical thinking and discernment, coping with uncertainty, ability to communicate appropriately with different audiences, working effectively with other people, capacity for reflection upon practice, etc.

Teaching

Factors influencing how Teachers employ ICT

The factors that determine how university teachers employ ICT to change their teaching practices and/or the learning practices of their students are many and complex. Evidence from studies into how ICT can enhance or transform educational processes constitutes only one influence upon teachers. Some others, often more pervasive, include:

- Individual differences in teachers' attitudes to the adoption of innovations;
- Individual differences in teachers' conceptions of and approaches to teaching;
- The established departmental/faculty/institutional ethos and ways of working; and
- Competing demands of discipline-based research and administration.

There is still much to be learned about its effective educational contribution. A recent review of research in this field (Price and Kirkwood, 2011) highlighted variations in both the purpose of TEL interventions and the ways that *enhancement* had been conceived. Underpinning this is a conflation of two distinct aims:

- Changes in the *means* through which university teaching happens; and
- Changes in *how* university teachers teach and learners learn.

Many ICT interventions concentrate on the *means* : replicating and supplementing existing teaching practices. Fewer tackle the second aim – *how* – although it is increasingly important to re-appraise university teaching to better prepare learners to cope with the demands upon graduates in the twenty-first century. The ways in which academics conceptualize teaching and learning with technology have significant and interrelated impacts upon their students' experience of learning (Kirkwood and Price, 2012). The potential of ICT to transform teaching and learning practices is only likely to be achieved by developing HE teachers' own understanding of their teaching and its impact upon students.

Responding to Educational rather than to Technological Imperatives

The lack of precision and clarity about ICT and educational processes suggests that technology-led conceptions are predominant among university teachers and policy-makers. Too much emphasis is given to technology (rather than teaching and/or learning) as the *object* of attention and as the *agent* of change. Teachers often seem to ask "What can I use this technology or tool for?" rather than "How can I enable my students to achieve the desired or necessary learning outcomes?" or "What forms of participation or practice are enabled for learning?"

Just as the content of a book can take many different forms and can be used in a variety of ways for various purposes, so too can most technologies and digital tools support varying patterns of use and activity types. For example, in educational contexts a blog might be used by individual students for their reflections on topics of interest or on their personal and educational development. However, the same tool could just as easily be used as a resource for sharing ideas among all the students taking a module. If a teacher uses PowerPoint or a video-enhanced podcast to deliver a lecture, it does not make it anything other than a lecture. ICT might make the lecture accessible to learners 'any time, anywhere', but does not change it into something different. In any educational context, the technology is secondary to the main object of attention, i.e., the educational purpose and activity that is being enabled or supported.

Unfortunately, it is not uncommon to find expressions of *technology as agent* in the research literature. These fail to value the professional role of the academic teacher as originator and designer of educational activities that promote the development of learning. Technological determinism endorses the notion that using technology for teaching will *in and of itself* lead to enhanced or transformed educational practices. However, ICT projects that put technology first often result in disappointment for both teachers and their students.

Professional Development

To senior managers and policy makers, it may seem that enabling academic staff to make appropriate use of ICT for teaching and learning is a technical matter. After raising teachers' awareness about the possibilities offered by new technologies and tools, technical assistance might be necessary to get them up to speed in adopting new practices. Professional development activities are more likely to be concerned with 'how to' issues rather than with explorations of 'why?' or 'for what purpose or goal?' (Price & Kirkwood, 2008). As pedagogical issues and models of learning are infrequently addressed in an explicit manner, the validity and appropriateness of such a technical focus has been questioned (e.g. Benson & Brack, 2009; Oliver & Conole, 2003). If the adequacy of existing beliefs and practices remain unchallenged, technology is unlikely to be used in ways that are not consistent with and supportive of a teacher's current ways of teaching. Too often ICT is viewed mainly as a means of delivering information.

A deeper examination of the problem shows that even if pedagogic issues are considered first, the adoption of ICT might make little difference to student outcomes if teaching is not reconceptualized in relation to technology use. More fundamental issues are related to beliefs about teaching and whether the teacher is engaged in passing on information or transforming a learner.

A teacher's conception of teaching can influence their expectations of and engagement with professional development activities. Nicholls (2005) reported that in her study of new university lecturers –

> Those who associated teaching with the transmission of knowledge, where students had to acquire a well-defined body of knowledge, were most anxious to develop more sophisticated skills to facilitate the transmission. Those who associated teaching with facilitating learning were anxious to understand and conceptualize the learning process, to help their students (p. 621).

Transmissive teaching beliefs permeate the sector and often determine the teaching context in departments or institutions. This is often evident in professional development programmes that institutions adopt that focus primarily on teaching 'how to' approaches with technologies as opposed to engaging activities that support teachers to reflect on and reconsider their deeply held beliefs about teaching. A more holistic approach to academic professional development is imperative for effective innovations.

Conclusions

ICT has the potential to enhance and transform higher education in many ways. Unfortunately, too few educators have the vision, imagination and drive to realize that potential for the benefit of their students; too many constrain themselves within models of teaching and learning that are no longer sufficient or appropriate.

University policy makers need to be clear about the aims and purposes of using ICT in support of teaching and learning. Achieving effective innovation has implications for many aspects of institutional culture, including:

- Policies for infrastructure and technical support;
- Policies and strategies relating to student assessment;
- Policies for developing the *digital literacy* of students appropriate for higher education;
- Policies and strategies for the professional development of academic staff;
- The research and scholarship agenda;
- Policies for promoting and rewarding scholarly activities relating to learning and teaching with ICT.

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ICT and eLearning in Higher Education: Policy Perspective*

by Palitha Edirisingha

Introduction

This chapter considers how information and communication technologies (ICT) could be used in a wider scale in universities, and it does so from a policy perspective, drawing also from pedagogy. It reviews how some of the policy and contextual factors can serve as fertile ground for the growth and development of ICT in higher education. We take the policy context in the UK as the background for this analysis and the development of eLearning policy at the Leicester University as a case to illustrate the use of relevant policy to support the adoption of eLearning in a higher education institution. A key objective of this chapter is to get policy makers and senior managers to think about how they can play a significant role in supporting the use of ICT in universities and in other sectors. In looking at policy, we will draw on from some of the pedagogical approaches that need to be the backbone of any policy initiative. This chapter will be drawing on from the works of three key authors and their contributions to pedagogical innovation through technology. They are Betty Collis, Gilly Salmon, and Diana Laurillard. Readers are encouraged to follow up their work by referring to the material mentioned in the list of references.

In this chapter we look at some of the policy initiatives in the UK, especially driven by three organizations that play key roles in UK higher education sector. These are the Higher Education Academy (HEA), the Joint Information Systems Committee (JISC), and the Higher Education Funding Council for England (HEFCE). We will analyse some of the key documents published by these organizations to learn about their role in driving the use of ICT in UK higher education sector from a policy perspective. The HEA is a very significant player in the UK higher education sector in terms of offering funds to carryout ICT-related projects and generally higher education related research initiatives.

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* Revised version of the presentation at the Regional Workshop on ICT Leadership in Education held at Kandy, Sri Lanka in June 2014.

As far as policy is concerned in terms of technology, or higher education in general, these three agencies are involved and they tend to work together. They also have close collaborations with research councils as well, for example, the Economic and Social Research Council (ESRC) – one of the major funders for social science research. It would be useful for the readers to visit the relevant websites and see what is latest.

The Terminology

First, we need to address the issue related to terminology, or rather, confusion that can arise from the use of different terms. One of the problems that we encounter in any discussion of ICT is that we come across a variety of names or terms in the same context. eLearning, learning technologies, technology-enhanced learning, and ICT in education/learning are quite often used interchangeably. But these terms can mean different things in different contexts. The phrase ICT began as an umbrella term in the early days of the promise of ICT such as telephone, television and computers in education. We use the term today to mean a variety of technologies in education including the many uses of the Internet. More recently we use the terms such as eLearning and technology-enhanced learning, also to mean the use of information and communication technologies in the service of education. The policy documents that we analyse in this chapter will show how, at least in some countries in the west such as the UK the use of these terms can be associated with different policy directions or phases. In the remainder of the chapter we will use both eLearning and ICT interchangeably.

It is useful to start by looking at what we mean by eLearning. Like many other terms in education, eLearning is a difficult one to define. It is useful to look at how some well-recognized authors define it. In a book chapter, Laurillard (2006) has defined eLearning as follows: 'a student who is learning in a way in which they use information and communication technologies (ICTs) is using eLearning'. So, here ICT is linked to eLearning. ICTs are the tools and technologies while eLearning is the process of learning using those tools. In the same book chapter, Laurillard (2006) offers another view of what eLearning is: 'the use of any of the new technologies or applications in the service of learning or learner support.'' Here the definition of eLearning has broadened to include any new technology as long as they are used for learning. So the use of Blackboard® or Moodle will be one part of eLearning.

Having started to look at what we mean by eLearning and learning technologies, it would be useful to get an overview of what kind of technologies we are talking about. Table 3.1 developed by Laurillard (2006) offers a snapshot of the kind of technologies that are available, at least in some parts of the world, and what they can be used for.

Table 3.1: eLearning Technologies - Old and New

Time period	New technology	Old technology equivalent	Learning support function
1970's	Interactive computers	Writing	New medium for articulating and engaging with ideas
	Local hard drives and floppy discs	Paper	Local storage with the user
1980's	WIMP interfaces	Contents, indexes, page numbers	Devices for ease of access to content
	Internet	Printing	Mass production and distribution of content
	Multimedia	Photography, sound, and film	Elaborated forms of content presentation
1990's	Worldwide Web	Libraries	Wide access to extensive content
	Laptops	Published books	Personal portable access to the medium
	Email	Postal services	Mass delivery of communications messages
	Search engines	Bibliographic services	Easier access to extensive content
	Broadband	Broadcasting, telephones	Choice of elaborated content and immediacy of communication
2000's	3G Mobiles	Paperbacks	Low-cost access to elaborate content
	Blogs	Pamphlets	Personal mass publishing

Source: Laurillard, 2006

In Table 3.1 Laurillard attempts to map what we might call new technologies on to their counterpart old technologies. Laurillard also draws our attention to the learning functions offered by technologies – whether they are old or new. As you can see from the table, very often we can achieve the same learning function from an old technology. But as teachers our task is to investigate the potential of a new technology to achieve a certain learning or pedagogical function in a better way.

What is missing in this table (or rather, what you can add to this table) is to consider what kind of technologies are available since the latter part of 2000. What technologies, services and tools do we have over the last 10-15 years? The answer can vary depending on the geopolitical context we live and work.

An Assessment of eLearning

In the same book chapter, Laurillard makes a critical assessment of eLearning in terms of its aims and reality.

> While the ostensible aim is to use e-learning to improve the quality of the learning experience for students, the drivers of change are numerous, and learning quality ranks poorly in relation to most of them. Those of us working to improve student learning, and seeking to exploit e-learning to do so, have to ride each new wave of technological innovation in an attempt to divert it from its more natural course of techno-hype, and drive it towards the quality agenda. We have to build the means for e-learning to evolve and mature as part of the educational change process, so that it achieves its promise of an improved system of higher education (Laurillard, 2006).

Laurillard's assessment is that although teachers in general have aspirations to improve their teaching and student learning through technologies, they constantly need to work against many obstacles that are in their way towards achieving their objectives. Most of the time the ICT products and services, such as virtual learning environments (VLEs) and software tools, are presented to us (by their developers and vendors) as tools that have power to improve learning. But most of this can be 'techno-hype' which can lead to replicating poor teaching using technology. Mere use of technology itself will not help improve teaching. Much of the classroom use of PowerPoint slides and using a VLE as a repository for lecture notes and slides is an example of using technology to replicate the same one-way approach to teaching using acetate slides and a blackboard (the original, not the VLE!). After all, lot of what we might call new technologies – smartphones, tablet computers, and software tools have been developed for consumer and business market – not for education. Therefore, teachers and senior managers in educational institutions have a big task of developing approaches to use them for teaching and learning activities.

Salmon (2005) also offers her own assessment of the trajectory of eLearning. Although this was written in 2005, her views are valid in today's higher education context.

> E-learning is in a rather extraordinary position. It was born as a 'tool' and now finds itself in the guise of a somewhat wobbly arrow of change. In practice, changing the way thousands of teachers teach, learners learn, innovation is promoted and sustainable change in traditional institutions is achieved across hundreds of different disciplines is a demanding [task] that will not be achieved by learning technologies alone. It involves art, craft and science as well as technology (Salmon, 2005, p. 201).

Salmon says that the use of technologies for education is not a straight forward matter and therefore implementing eLearning across a university requires not

only technology, but it involves drawing on knowledge from different disciplines. It is an art; it is a craft; and it is a science. Those who are in charge of eLearning in universities should try to develop their strategies and approaches not only from technology/computer science perspective, but also from other disciplines like social science and education. ICT policy should be based on what we already know about how people learn and how people use technologies for learning. We look at the ICT policy landscape in the UK with a view to drawing some lessons.

National Policy on eLearning – a UK Perspective Since 2000

In terms of ICT policy in the UK we consider the time since 2000, because that period was a pivotal time in the UK higher education in terms of the use of ICT. Many universities were beginning to use Virtual Learning Environments (VLE) or Learning Management Systems (LMS) such as Blackboard. Each university would have its own story tell about how it began to use a VLE. For example, Kingston University began to roll-out Blackboard in the academic year 2000/01 with approximately about 500 academic staff trained on its various functionalities (Edirisingha, Heaton-Shrestha, Linsey, Hill, Gipps and Gant, 2005). In the pilot stage, Blackboard had been used in about 70 modules (course units) with about 2,000 students taking these modules. As reported by Salmon (2005), by 2005, almost every higher education institutes in the UK was using a VLE for one or more reasons such as teaching, administration and assessment. Leicester University was also using Blackboard VLE from the early 2000.

The key agencies that we review in terms of UK national policy on ICT are the HEFCE and its two partner agencies: JISC and HEA. HEFCE is the agency that provides a significant portion of funds to higher education institutions in England according to various criteria. JISC and HEA also rely on funds from HEFCE for various teaching and learning related activities including the promotion of the use of ICT.

Two key documents that would be relevant for our analysis and for gaining an insight into how the ICT policy landscape has been formed are:

• HEFCE 2005 policy document entitled "Strategy for e-learning" (HEFCE, 2005), and

• "HEFCE's plan for the ten-year period from 2005"

These two documents were published in 2005, which can be considered as the time when most UK universities were making headway towards implementing their eLearning initiatives. The objectives of these policy documents were to offer guidance to universities on implementing their eLearning

strategies and initiatives. The HEFCE's vision, encapsulated in these two documents, was:

> To support the HE sector as it moves towards **embedding** e-learning appropriately, using technology **to transform higher education** into a more student-focused and flexible system, as part of lifelong learning for all who can benefit (Plenderleith and Adamson, 2009, emphasis added).

We can see that these key agencies' objective was to support the higher education sector as it moves towards using ICT. The use of the word embedding implied integrating the use of eLearning into the higher education system in a profound way so that eLearning becomes a normal, everyday activity or part of the system. Embedded state is something that can be seen at an advance stage of development of eLearning. Also the policy documents talked about transforming higher education. Transforming also is a strong word. Transformation implies a situation from which you cannot go back to its original state. Another feature of the policy, as stated in the HEFCE documents was that the use of ICT was to transform higher education that was going to be more student–focused. So, here the idea was that ICT would change the pedagogy as well, moving from teacher-centred to student-centred learning. A further aspect of the policy was using ICT in such a way that students will be supported in their lifelong learning process.

As can be seen from the 2005 policy documents, the policy agencies had ambitious plans or high expectations for the use of ICT or eLearning in higher education in the UK. A question to be asked is to whether these ambitious objectives were realistic. Can ICT or eLearning be able to transform higher education along the lines stated above? How realistic was this vision from top-level agencies compared with the experiences of teachers who are on the ground, in the classroom, dealing with day-to-day issues of teaching, learning, assessment and meeting the demands expected of them by their senior managers? Many day-to-day realities can drive teachers to use technologies in the easiest possible way – like using PowerPoint slides in a face-to-face class and uploading them to their VLE for students to download. This is not transforming higher education.

According to Plenderleith and Adamson's (2009) review of the HEFCE 2005 policy documents, following are some of the further key ambitions of the policy set out by the HEFCE. Bold letters show the emphasis that I have added.

- To enable institutions to meet the needs of learners and their own aspirations for development;

- To support institutions in the strategic planning, change management and process development that are necessary to underpin their development and **embedding eLearning**;

- To promote learning research, innovation and development that begins with a **focus on student learning** rather than on developments in technology

per se, enabling students to learn through and be supported by technology; and

• To support lifelong learning by joining up our strategy with those of other sectors of education, enabling connections between academic learning and experiential learning in the workplace and other aspects of life.

The timing of the publication of the policy documents was important from a number of perspectives. As mentioned earlier, many universities were either beginning to, or well into piloting or using VLEs. Around 2005 the web was developing into what we might call participatory Web or Web 2.0. Many free Internet and web-based tools were becoming available too. Some universities were giving free laptops or iPods for students on some specific courses. HEFCE policy documents need to be considered within a background of these positive trends towards developing ICT or digital devices and services that were proliferating in the consumer market. In a way, the consumer electronic market was developing into a fertile ground for realizing HEFCE's vision for ICT use in education. Since about 2005, year on year, we have seen an increasing trend towards students coming to classrooms in UK universities armed with a range of digital devices that can be used to access internet (and email and their course sites on the VLE).

This is how the HEA translated HEFCE's policy in a visionary statement (the emphasis added):

> ICT is commonly accepted into **all aspects of the student experience of higher education**, with innovation for enhancement and flexible learning, **connecting areas of HE with other aspects of life and work**.

The Higher Education Academy (one of the partner organizations of HEFCE) wanted to 'see' that ICT is commonly accepted into all aspects of the student experience of higher education. They wanted to see innovations in ICT enable flexible learning. Furthermore, HEA's vision was to make a seamless connection between higher education, life and work. This is a big vision, which again needs to be analysed in terms of real achievements. It is important to ask to what extent we have achieved this vision. The answer will depend on whom you ask. I think it is important to ask what teachers think about this based on their real on the ground experience.

Revision of eLearning Policies

In 2008, 3 years after the initial policy statements, the major agencies responsible for promoting the use of ICT in higher education revised their policy. This sort of revision is not unusual; but it would be useful to examine what did the revised policy stated and to learn lessons from these revisions. Was this a mere change of 'goal posts'?

Following bullet points provide a summary of the key changes in the revised policy document (HEFCE, 2009). Bold fonts have been used to add emphasis.

- Updating **language** and the **tone** of the strategy;

- More outward looking approach, **not embedding** but **appreciating the potential** of technology;

- Technology… to become a normal part of students' and teachers' activities;

- From 'embedding' to **'enhancing learning and teaching through technology'**;

- Institutions to take responsibility to develop their own strategic plans (HEFCE, 2009).

It is interesting to see that the revised policy document moved away from the idea of 'embedding' and placed an emphasis on 'enhancing learning and teaching through technology'. The revised policy also shifted the responsibility towards individual institutions in terms of promoting the use of eLearning. The national policy makers appeared to have realized the difficult task of achieving original policy objectives. Changing the wording and tone of the objectives reflect more realistic targets and objectives. For example, "appreciating the potential of technology" can be interpreted locally by institutions; they might set their own policies to realize this objective.

The 2009 revisions then did not place a heavy emphasis on teaching and learning, but teachers and students were expected to be making use of technology as "a normal part of [their] activities". It is again important to look at the role played by the consumer electronic market in realizing this vision. At least in countries like UK, the majority of students (and teachers) in universities have access to handheld digital devices as well as laptop computers that they bring to the class. Access to Internet via their mobile device is affordable to them. It is common to see these days students accessing their university emails regularly (even during class time, which can be annoying!) and checking on Wikipedia and other Internet resources for things that they don't understand in the classroom.

The change of language from embedding to appreciating the potential of technology in the revised policy statements is also important. The previous policy did not give institutions a lot of responsibility, but in this case they knew that institutions should take their own initiative to develop their own policy strategy.

A more recent changes or revisions on ICT policy can be found on the HEFCE website at http://www.hefce.ac.uk/whatwedo/lt/enh/techlearning/. In this revision, the HEFCE states that–

> Technology-enhanced learning is a key part of learning and teaching in higher education (HE). We believe institutions need to consider how they can enhance learning, teaching and assessment using appropriate technology in a way that is suited to the underlying infrastructure and practice of the institution.

You can notice the use of phrase 'technology-enhanced learning' in place of eLearning or ICT. This change of terminology can be interpreted in many ways. Perhaps this is to follow the language used in European Commission. Learning technology-related projects funded by the European Commission are labeled under the banner of technology-enhanced learning.

No more money!

National policies and implementation strategies require financial resources as well. A brief look at the HEA and JISC website shows a number of research and implementation projects and programmes that were funded by these two organizations. The national policy framework on learning technologies in the UK has also been not immune to national and global economic conditions. The following post on the HEA website (www.heacademy.ac.uk/funding) summarizes where we are with national level ICT policy frameworks and implementation strategies.

> The Higher Education Academy's core funding for 2014-15 and beyond has been **reduced in line with many parts of the sector** and, regrettably, as a result the **HEA is no longer in a position to commit funds for grants and awards** from the next academic year… Grants already underway remain funded.

This reflects what the former Chief Secretary to the Treasury (Ministry of Finance) Liam Byrne wrote in a small piece of notepaper that he had left for the attention of the incoming Chief Secretary to the Treasury David Laws as a well-come note when the current government assumed office in 2010:

> "Dear Chief Secretary, I'm afraid there is no money. Kind regards - and good luck! Liam".

So, as we have seen from the policy documents and their revised versions during the last 10-14 years the ability to sustain national ICT policies are dependent on the financial resources available to support and sustain. Institutions need to take responsibility for developing their own ICT policies, where relevant taking guidance from national policies, in order to improve teaching and learning at our institutions. This is the focus of the next section of this chapter.

Developing an Institutional Policy and Strategic Framework

How we might go about developing an ICT policy framework for our own institutions? In this section we will draw on from Professor Gilly Salmon's work on developing an eLearning policy for the University of Leicester. Salmon's (2005) analysis of what institutions (or people in responsible positions at institutions!) do in trying to implement eLearning is relevant:

"I am amused by human's early attempts to fly and especially at the focus on frantically flapping feathered wings, inspired by the observation of birds. The breakthrough to powered flight and subsequently flying for all came when the inventors rethought the conceptual approach and developed aircraft based upon fixed wings in a steady airflow" (Salmon, 2005, p. 201).

What she wrote in 2005 is still relevant for many institutions – to review their approach to implementing eLearning at the institutional level. Trying to copy or replicate what we do in face-to-face learning will not work for eLearning. We should think differently. Many approaches to implementing ICT for teaching and learning are like how people tried to build flying machines in the old days. Trying to fly by imitating birds didn't work. It required people to re-think the approach. It required an understanding of laws of physics involved. Therefore we need to make a complete change in the way we think about it. As a start, we need to think about whether we are going to use new technologies to do the same things in the same way (e.g., upload PowerPoint slides on to the VLE); or are we going to do something different, innovate our teaching using technologies. In using new technologies to do what we have been doing so far and thinking about the VLE as a simple content delivery mechanism, we are making a mistake in thinking that we are doing something innovative (Westera, 2004). Laurillard's books (1993, 2002, and 2012) provide really useful advice on thinking about technologies in more pedagogically innovative ways. Tackling these fundamental questions head on was key to the development of eLearning strategy at the University of Leicester. And Salmons (2005) is a useful read for anyone interested in developing an eLearning strategy for an institution.

Developing an institutional ICT policy framework can be informed by ideas developed by Senge (1990) who write about business innovations. His main idea is that to innovate (as opposed to invent) something, we need to think about how a number of components need to come together. He used the example of the very first commercial flight. Although the Wright brothers invented the aeroplane, that machine was not commercially viable; it was not safe for the general public to use. The Wright brothers tested the idea of flying and shown that it was possible, but the machine in its existing form was not scalable. In the case of commercial aero planes means, taking the idea/principle of flying and making it an affordable and safe opportunity to many. Innovation means taking the concept and making it more viable so that everyone can use. According to Senge (1990), in the case of commercial flights, the innovation involved five individual components to come together. These five components were:

1. The propeller
2. The landing gear, so you can land and take off
3. A lightweight body

4. The engine that can be cooled over a long distance

5. The wing flaps.

What Senge says is that all those 5 were needed. There were people who tried with four but it didn't work.

Thinking about ICT from a policy perspective, for us to think about the use of technology more widely and to achieve pedagogical aims, we can also consider what components need to come together like in the case of a commercially viable and safe aeroplane. The questions for the policy maker would be:

- What are the critical components that should come together to form 'an ensemble of technologies that are critical to one another's success?'

- How might policy framework(s) contribute?

Policy Considerations – A Pedagogical Perspective

In a discussion of technology – be it ICT, eLearning, learning technologies, technology-enhanced learning – it is quite easy to forget the role of pedagogy which should be the driving force behind technology. Pedagogy should be one of the 'critical components' that need to be considered for developing successful eLearning strategy. Salmon (2005) illustrates this point well in her paper on strategic framework on eLearning:

> No VLE will ever be enough in itself to create great e-learning (Salmon, 2005, p. 203).

What Salmon says is very relevant in the context of some debates about which VLE is better. It is quite common to hear some academics say that they prefer one VLE to another. Some prefer Moodle and they don't like Blackboard. Others have different preferences. It is interesting to see the discussions (by senior management) on which VLE to be installed in their institutions. It is as if the VLE itself is going to do the magic of transforming teaching and learning (to student-centered or whatever). The VLE itself will not do the teaching. They just have some affordances.

It is surprising that a lot of the time what goes under the banner of innovative approaches to teaching and eLearning are replications of what we are used to doing, apart from the fact that what is delivered is in an electronic form. The use of PowerPoint or other form of presentation material and lecture notes within a VLE is a good example. Not much is going to be improved in the way the students learn. They sit down, watch the lecturer presenting PowerPoint slides and listen (maybe appear to be listening) to the lecturer. If the lecturer uploads the slides to the VLE, students have the option of downloading them along with any other documents that are available on the VLE. There is nothing innovative about this approach apart from the fact that the VLE functions as an electronic

repository; slides and notes are available for students to download (just in case they have misplaced the material that they have already downloaded!). Maybe students can annotate on the slides – but that is just a function available for any electronic document. Apart from that, there is nothing magical about this sort of eLearning. Laurillard's books (2012, 2002) provide a really good critique of what passes as eLearning.

There are some very good reasons why it is rare to see pedagogically innovative uses of technology. One is that the teachers needs to be able to consider carefully what needs to happen, or what pedagogical functions need to be carried out if learning were to take place. Teacher then needs to think carefully how the various functions of technology can be best used for different pedagogical functions. Laurillard's two books (1993, 2002) offer a comprehensive treatment of this topic.

This process of developing a pedagogically sound use of technology need some dedicated time from the teacher and others who are supporting teaching and learning activities. In the absence of such effort and support, what happens with new technologies is that they are deployed to replicate the same way of teaching. VLEs, Smart Boards or Interactive White Boards, and other technologies are used to deliver material electronically. This is an all too familiar scenario.

So how can we develop this policy framework? Back to Salmon (2005) article again:

> [creating great e-learning] … just cannot be successful without appropriate, well-supported and focused human intervention, good learning design of pedagogical input and the sensitive handling of the processes over time by trained online tutor" (Salmon, 2005, p. 203).

Here Salmon identifies a number of key considerations for good eLearning to happen. Some key components are needed in this process. We need appropriate, well-supported and focused human intervention. It is easy to think that technology alone can do the teaching and forget the value of contributions to be made by good teachers to provide tutorial support and feedback on assessments. The success of the UK Open University model is partly attributed to its personal tutorial approach. The second key component of success is good learning design. In most aspects of our life, good design is important – be a cloth that we wear, a kitchen or a living room that we design, or a house that you are going to build. Design dictates how the object is going to be used. The third one is the sensitive handling of the process of teaching and learning.

Pedagogical Approaches

Good pedagogy is the overarching consideration in ensuring that technologies are used in the service of learning. Thinking about appropriate pedagogical approaches is one approach to achieving this aim. As educators we are all

familiar with learning theories such as behaviourism, constructivism, social constructivism, and many others. Some of these theories have been developed based on psychological experiments, while others have their origins in sociology. However, authors such as Sfard (1998), Collis and Moonen (2001) argue that abstract ideas such as constructivism and behaviourism do not give adequate guidance for developing teaching and learning activities. They are 'the abstract concepts about the learning and teaching process that underlie the [particular pedagogical] approach' (Collis and Moonen, 2001, p. 20). So what we need is a language that captures and explains the actual pedagogical approach; to think about what exactly to do in the classroom.

Sfard (1998), and Collis and Moonen (2001) proposed that what is more important is the role that students play in teaching and learning context. Based on this principle, they considered that how teaching and learning can be categorized into three pedagogical approaches (Figure 3.1). These are 'acquisition-oriented' (Sfard, 1998), 'participation-oriented' (Sfard, 1998), and 'contribution-oriented' (Collis and Moonen, 2001).

One approach – perhaps the dominant one, too – is to organize learning activities as acquisition-oriented. Here learning is through "the acquisition of pre-specified knowledge and the development of pre-determined concepts" (Sfard, 1998). Needless to say that this pre-specified knowledge is that of the teacher or written in a textbook. That means that the majority of the learning activities are designed with the aim of transmitting knowledge so that students 'acquire' this knowledge. So we provide knowledge in a particular way through lectures, handouts or books. And what students do is they sit down – perhaps most of the time quietly – and take notes. The teacher can use eLearning technologies to help him or her in this process - such as using PowerPoints and VLE to store them.

The second pedagogical approach – 'participation-oriented' (Sfard, 1998) – is predominantly one of participation. In this approach a student becomes "a member of a community of practice, learning from the community, and contribution to it" (Sfard, 1998). Here the teacher develops activities in such a way
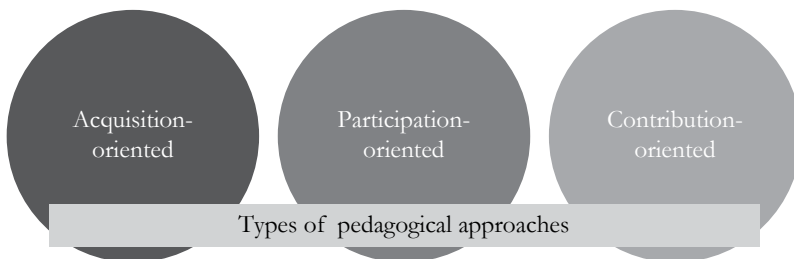

Figure 3.1: Types of pedagogical approaches according to students' role in teaching and learning *(from Sfard, 1998; Collis and Moonen, 2001)*

that the students can participate in them. Learning happens through participation. Technologies can be used to create a platform and activities for students to take part. A good use of discussion forums using 'e-tivity' approach (Salmon, 2013) is one successful way of getting students to participate in learning activities. The teacher has an important role here in designing such activities.

The third pedagogical approach – 'contribution-oriented' was proposed by Collis and Moonen (2001) in recognition of the important role that learners play when they take part in learning activities. The considered "learners as contributors" (Collis and Moonen, 2001) stressing that a student is not only learning by participating in activities, but they are active contributors to knowledge as well. Students can play an important role as co-creators or co-authors of learning activities. Knowledge or information pool that one cohort of students have created can be used as source material or sparks for another/forthcoming cohort of students. In universities students write essays, discuss their project findings through presentations, and complete dissertations based on primary data. But in most cases these are read by only one or two markers/examiners. These are not available as learning material for students. Openly accessible technologies such as wikis (e.g., the use of Wikipedia as an assessment tool) and blogs can change this scenario and students as contributors to knowledge base can be achieved.

These three pedagogical approaches – 'acquisition-oriented', 'Participation-oriented', and Contribution-oriented – can be useful in thinking about how technologies can be used to achieve good pedagogical aims and objectives, which should underpin the policy frameworks.

Policy Considerations – A Management Perspective

Laurillard (2006) stressed the key role that the university management plays in any kind of teaching and learning innovation: "If universities are to re-think their methods of teaching, they need a management structure that is capable of supporting innovation" (Laurillard, 2006).

Top-down vs. Bottom-up Approach

Laurillard (2006) recognizes the importance of 'top-down' policy approach as well as a 'bottom-up' approach to innovation.

The top-down approach can be useful as long as the *power and influence* is exerted in a positive spirit and by creating the fertile conditions for the use of ICT in teaching and learning. However, the university management may not have the required *knowledge* about using technologies for pedagogical purposes. This gap can be fulfilled by a bottom-up approach in which a small number of early adopters of technology (mostly teachers, learning technologists and student

support staff) who may have been experimenting various approaches to using technologies for learning. They certainly have the *knowledge of pedagogy*. This bottom-up approach can be encouraged and supported by the having right policy frameworks developed by the senior management. For example, like many other higher education institutions in the UK, Leicester University has a teaching fellowship scheme that encourages academics and other staff to develop innovations in teaching and learning (including the use of technologies). Those who are recognized as teaching fellows receive a small amount of funds to further their academic activities. The University also has a number of funding schemes to encourage academics to develop innovative ways of teaching.

The 4-E model

Another approach to thinking about the role of policy from a management perspective is the "4 E Model" proposed by Collis, Peters and Pals (2000) (Figure 3.2). This model aims to answer the question: What can the university do in order to make things easier for academic staff to use ICT, or any new innovation? It also considers what makes ICT easier for academics to use.

What can the senior management (at the top) do to help the academics, learning support staff and learning technologies (at the bottom) to help in the adoption and sustained use of learning technologies to teaching, learning and other pedagogical activities? Collins and Moonen (2001) have identified that three
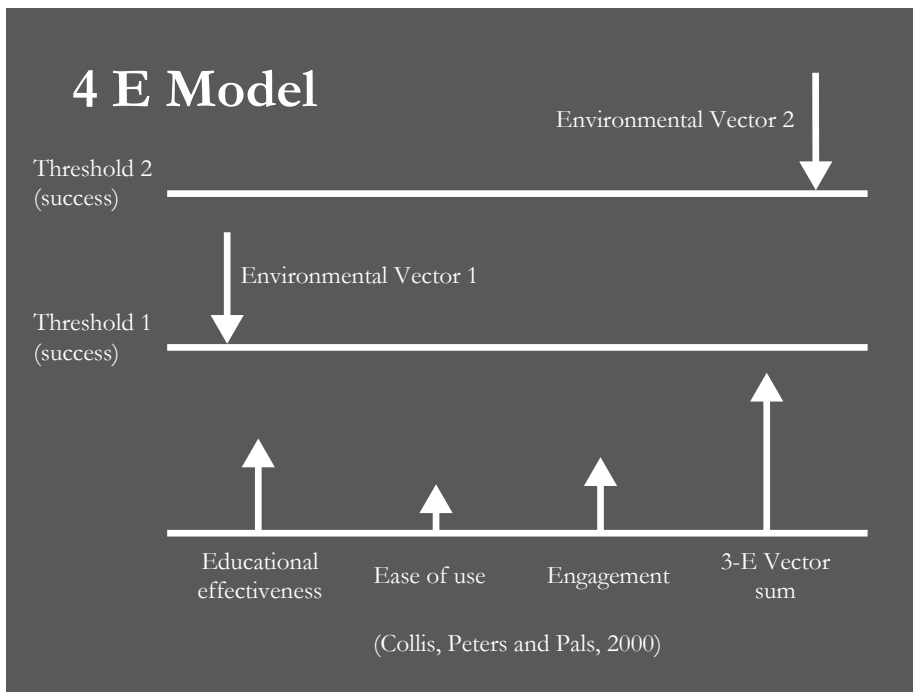

Figure 3.2: The 4 E Model to promote learning innovation

things need to happen. First, academic staff needs to be able to recognize the **education effectiveness** of using learning technologies. Second, the learning technologies need to be **easy to use** by academics. Third, teaching staff needs to feel a sense of **engagement** with technology. All these three aspects can pose as barriers to engagement by academic staff. In Figure 3.2, the 3-E vector sum is the totality or the sum of the three barriers. What the senior management can do is to lower the threshold in the academic environment so that the academics feel at ease in terms of using technologies for their teaching. Not only providing training, but also opportunities to take time away for training and development activities, funding for trialing the use of technologies are some ways this can be achieved. Academics might recognize the potential of technology, but if the environmental threshold is far too high, then they might not want to use technology. Again taking an example from Leicester University, both academics and students now have access to the internet via Eduroam wireless service and connecting to this service is fairly easy. All the teaching rooms are equipped with a computer, an LCD projector and internet service. The ease of use, at least from a technical perspective is less of an issue these days.

What we have discussed so far are the considerations in developing an institutional eLearning policy framework. We illustrate this via the case of Leicester University.

An Institutional eLearning Policy Framework – The Story of Leicester

The story of Leicester University's institutional eLearning policy or strategic framework can be traced back to the early 2000, and can be contextualized in the activities that were happening in the wider eLearning policy direction that we have summarized in the first section of this chapter. Like many other universities, Leicester has been using Blackboard VLE from the early 2000. Again, like in many other academic institutions, small groups of academic staff were innovating their teaching activities through technology engaging in small-scale projects. However, national policies were inadequate for large-scale adoption of eLearning practices. As pointed out by Salmon (2005), many universities were not able to engage their majority of students and staff in eLearning. There were many small-scale projects that did not have, for one reason or another, the capability to scale-up.

This was the context in which the University, under the management of its former Vice Chancellor Professor Robert Burgess (a sociologist by training, en.wikipedia. org/wiki/Robert_Burgess_(sociologist)) considered developing a strategy to implement eLearning on a much wider scale in the university. The University appointed Professor Gilly Salmon (an educator and 'a digital learning innovator',

en.wikipedia.org/wiki/Gilly_Salmon) to develop Leicester's eLearning policy and to spearhead the integration of ICT into teaching, learning and student support activities.

The development Leicester's eLearning strategic framework is documented in Salmon (2005) in great detail.

As Salmon (2005) outlines, in developing the eLearning policy, she has considered the key characteristics of the university, the available IT and learning resources, and many other local contextual factors into account. Leicester University can be characterized as a conventional university (a traditional, brick-and-mortar). It also is a significant player in distance education, especially at the postgraduate level. A significant portion of its postgraduate students are distance learners. So it has developed a considerable expertise in distance education. Leicester also has a good IT system that has been integrated with the learning resources available in its library. There was also a Staff Development Centre that was offering training to academics on various aspects including the use of ICT for teaching and learning. The eLearning policy drew on these existing areas of expertise and practice. Box 3.1 below highlights the key points that were central to the development of Leicester's eLearning strategy (Salmon, 2005).

The main purpose of the eLearning policy was to think about a research-driven (Leicester being a research-driven university) approach to develop expertise among academic staff (*knowledge*) to use eLearning approaches in their teaching and learning activities and help a gradual developmental process. This can be considered as a bottom-up approach.

Box 3.1: Key Considerations Central to the Development of Leicester's eLearning

- Researching the use of innovative pedagogy and technologies, building on research evidence.

- Considering how to make use of and integrate both 'core' and 'peripheral' learning technologies.

- Developing realistic approaches to engaging students both for distance and blended learning.

- Embedding in the university's overall aspirations (articulated in formal plans and strategies interpreted through formal and informal discussions).

- Being explicit about the purpose of pedagogical innovation and the objectives of the scaling-up of eLearning.

- Institutional eLearning strategy to sit within wider national policy frameworks.

(Salmon, 2005)

'Core' and 'Peripheral' Technologies

It would be useful to look at what Salmon (2005) refers to as 'core' and 'peripheral' technologies in developing an institutional policy framework. For example, the virtual learning environment is a 'core' technology because the university already has this technology, and it is fundamental to many activities including student administration (but this might not be the case in some contexts). From the time students register for a course and to the time they leave, they use VLE for a variety of purposes including submitting their assignments. The library service, like the e-library, is a core technology. The university has already invested in this service. Email is another core technology which is reliable and fundamental to the university's daily business. The purpose was to build on what is considered as 'core' technologies.

'Peripheral technologies' are new (depending on the context of course). Most often these technologies and tools originate elsewhere, not in education. They can be tools, technologies and services developed for consumer market, business and for recreation activities and they gradually penetrate into education. For example, at Leicester, we considered podcasting, blogs, wikis, variety of social media (such as Facebook, Twitter) and virtual worlds as peripheral technologies. Academics can teach without these technologies. In the long term, these peripheral technologies can become core as well.

It is important to note that this distinction between 'core' and 'peripheral' technologies is dependent on the context. What is 'core' in one context can be 'peripheral' in another.

The 4-Quadrent Approach

The eLearning strategic framework developed by Salmon for Leicester University was illustrated in terms of a '4-quadrant approach. As Salmon (2005) pointed out, this particular way of thinking of an eLearning strategic framework was based on the product-market scope developed by Ansoff (1965). The idea behind this is to think about innovations in the use of technologies in teaching, learning and assessment and getting academics and students to 'buy into' these approaches as if we were a commercial firm thinking about its products and services (old and new) in terms its markets (old and new). As Ansoff (1965, p. 94) pointed out, a firm needs 'direction and focus in its search for and creation of new opportunities.' The 4-quadrant framework (Figure 3.3) developed by Salmon (2005) was to provide that direction and focus for Leicester University in its approach to innovating teaching and learning through the use of technologies.

In the 4-quadrant framework the left quadrants deal with core technologies while the quadrants on the right are concerned with the peripheral or new technologies. In the top two quadrants we are working with existing programmes, students and
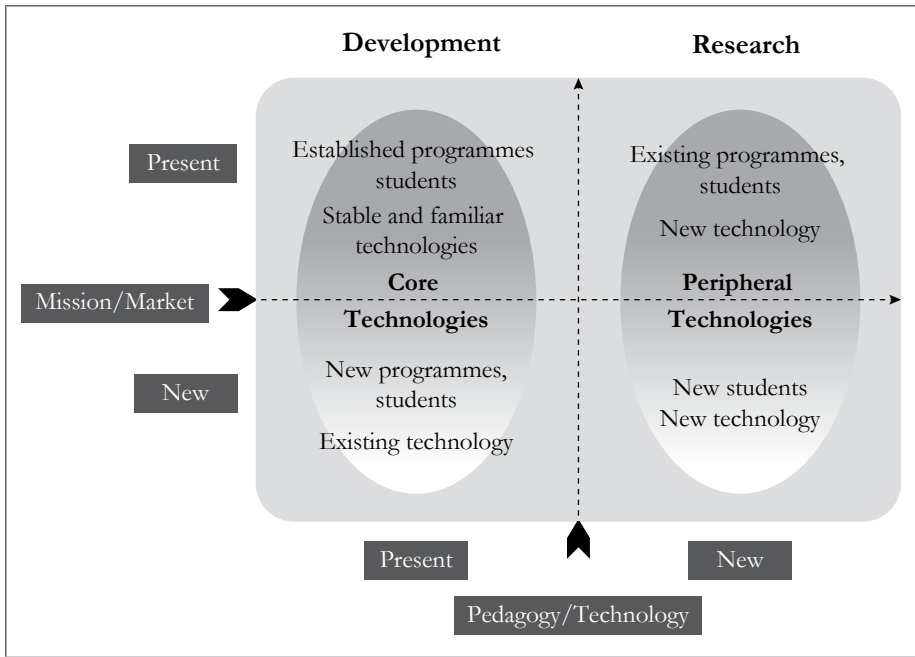
**Figure 3.3: A learning innovation framework for ICT policy
in universities** *(Source: Salmon, 2005)*

markets while the bottom two quadrants are concerned with new programmes, new missions, and new students.

In the top left-hand corner of the 4-quadrant framework, the objective is to work with core/existing/current technologies to best serve the current programmes and students. We are not putting too much pressure on innovations as such but the objective is to make best use of existing technologies based on what we already know (literature reviews and desk research can help here) about good pedagogy and potential of technologies to support learning. The bottom left quadrant, on the other hand, is concerned with the use of core technologies to explore and serve new markets and to develop new programmes of study. In this activity, a university might want to explore how existing technologies can be used to extend their teaching programmes through blended or distance learning offerings. The aim of the activities in both quadrants in the left-hand side of the quadrant is to make best use of existing technologies.

The quadrants on the right-hand side of the framework deal with peripheral technologies. Here we are trying to explore and experiment the use of newly emerging technologies to develop innovations in teaching and learning. One of the activities in this quadrant is to scan the horizon of technologies to monitor the emergence of new technologies and experiment with their use in education, in most cases as trials. At Leicester we have carried out a number of such

experimental uses of technologies such as podcasting, wikis, blogs, e-readers, open educational resources, virtual worlds, amongst others. More about these projects (some are in archival stage) can be found by using the following methods:

- The URL http://www2.le.ac.uk/departments/beyond-distance-research-alliance/projects

- Search using the following keywords: "bdra projects"

The fourth quadrant – the bottom right-hand corner deals with new technology and the purpose is to explore the use of these technologies to cater to new markets and originate new educational missions – the sort of things that haven't been considered before. This is an exciting area of activity for learning innovators, and as in commercial sector, it can be a high-risk area in terms of investment, because you are exploring new territory. At Leicester we are carrying out research in this area such as those on virtual words and Massive Open Online Courses. The pedagogical models for developing courses using these approaches are still emerging and the return to investment is not known yet.

Concluding Remarks

If you are working in a higher education sector with the responsibility and/or passion for improving learning through the use of technologies, it can be a frustrating experience when you realize that your vision is not shared by many of your colleagues. Very often, the good uses of learning technologies can be seen in isolated pockets in university departments or faculties, with a small number of enthusiastic individuals' trialing innovative uses of technologies to improve their students' learning. Their colleagues do not share their passion and values, and their efforts are not valued and supported by senior managers. This chapter considered the issues associated with integrating ICT or eLearning in universities and how appropriate policy can be developed to drive change. The context that was used for the analysis was the UK higher education sector and its policy landscape. However we hope that you will be able to analyse and draw on from the ideas presented in this chapter so that ICT can be used in the service of learning.

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Developing an Institutional Strategic Plan for Open, Distance and eLearning

by Stylianos Hatzipanagos and Mark Russell

Dimensions of Open and Distance Learning: Implications for Strategy Development

Three important conceptual frameworks seem to operate in and influence Higher Education today:

1. Lifelong learning has become the leitmotif and dominant slogan of most higher education institutions worldwide (Guri-Rosenblit, 2005);

2. Technology Enhanced Learning (TEL) has exploited the affordances of learning technologies to support student learning; and

3. Open and Distance Learning (ODL) which by its very definition, denotes the physical separation of the learner from the instructor, at least at certain stages of the learning process, offers opportunities to bridge geographical distance and engage learners remotely.

TEL and ODL

As learners seek increasingly more flexible learning opportunities, and as information and communication technologies become integrated into the curriculum, the traditional distinction between face-to-face contact and distance learning is starting to disappear (JISC, 2004). In the context of distance learning, frequently, the terms TEL and distance learning are used interchangeably, assuming that distance learning provision has embraced fully learning technologies and uses TEL as the predominant paradigm of engaging students. However, there is evidence that boundaries between 'distance education' and TEL blur in some areas, but they never totally merge (ibid.)

Any technology-enhanced distance learning provision must address three core constructs in order to be effective. These are:

• **Content:** What online content do we need? What do we want participants to experience or learn in an online environment?

- **Tutorial support:** How will teaching courses utilize the communication capabilities of the new interactive media? (Godwin, Thorpe, and Richardson, 2008): How do we structure online support that improves learning experience? What kinds of computer mediated communication are involved?

- **Assessment:** How do we support assessment using an online environment? The emphasis should be on formative or on a combination of formative and summative rather than just on summative assessment.

TEL has contributed to a re-conceptualization of distance learning, influencing organizational development and infrastructure, student and staff support. While, there are obvious advantages in enhancing flexibility, the current problems are characterized by a call for diversity in response to the changing needs of learners and the transition to more informal and learner-centred spaces (Hatzipanagos & Warburton, 2009). This is compounded by a need for flexibility in the time and place at which learning occurs and determining learner needs depending on background knowledge, expectations and preferred methods of learning.

Dimensions of ODL: Implications for Strategy Development

The dimensions of ODL, according to the United Kingdom's Quality Assurance Agency for Higher Education (QAA, 2010) are:

- System design
- Programme design, approval and review
- The management of programme delivery
- Student development and support
- Student communication and representation
- Student assessment

Maintaining quality and standards for universities in all these dimensions has implications for the development of learning and teaching strategies in higher education institutions.

Developing a TEL Strategy: The King's Example

At King's College London, the objective was to construct a regularly updated TEL Strategy. The Strategy should be integrated with the generic Learning and Teaching Strategy and related Distance Learning Strategy of the College. A major influence was the Higher Education Funding Council for England, HEFCE's, revised approach to strategy for eLearning (2009). To ensure there were strong links between strategy and implementation, it was decided that the TEL strategy

would benefit from a linked implementation time plan that could have a positive impact on TEL uptake.

Collecting Evidence to Inform Strategy and Planning

To inform the strategy, aTEL benchmarking exercise was undertaken and led by the King's Learning Institute. The benchmarking methodology was based on the HEFCE-funded eLearning benchmarking and Pathfinder programme led by the Higher Education Academy (HEA) and Joint Information Systems Committee (JISC) in the UK. The main goal for the benchmarking of TEL was to undertake a fundamental analysis of

- eLearning processes
- provision and
- practice, upon which future development decisions could be based.

Other key conceptual elements that informed the strategy were (1) the need to understand and manage change, (2) the development of an organizational vision, and a strategy by which to reach as a critical step, (3) Linking TEL to the need for institutional transformation (HEFCE, 2009), and (4) the need for a flexible institutional strategic plan that recognizes the importance of TEL as a necessary prerequisite to the successful implementation of TEL (Bullen, 2013).

The King's College TEL Strategy

The strategy included a vision statement that declared that: 'By 2015 all students and staff in the College will experience the benefits of technology enhanced learning.'

The principles of the strategy addressed the needs of the stakeholders under three broad categories: students, staff and students, the Institution. The strategy comprised dimensions on:

- Resources
- Reward and recognition
- Staff and student development
- Using technology enhanced learning in the curriculum
- Research
- Culture
- Future innovations

What the strategy put forward was an institutional partnership between a Centre for Technology Enhanced Learning (which was established at the College in April 2013) as the key driver of TEL in the College, the academic development unit,

King's Learning Institute and the College Information Systems and Services. This alliance when it comes to the development of ODL includes another partner, the College's Central Unit of Distance Learning.

The Centre for Technology Enhanced Learning, whose director reports directly to the Vice Principal (Education) has a significant mission to support and facilitate student learning by the use of technology within the College. Alongside the strategy, the Centre seeks to ensure its work is distributed over five 'activity' areas'. These are not projects but rather areas that are important if TEL is to have a positive impact. The activity areas are:

- Exploring and embedding innovation
- Building capacity and influencing culture
- Developing digital literacies and digital professionalism
- Future-proofing the curriculum through TEL
- Stimulating and contributing to research vibrancy in TEL

An Emerging Landscape in TEL Provision and How It is Affecting ODL Strategies

The emerging ODL landscape in Higher Education is characterized by the establishment of strategic alliances between institutions to explore new pedagogical models. There is still a strong emphasis on developing pedagogical models that focus on student centred learning and teaching. The logistics of achieving something like this are complex and include an evolving adaptive short term and long term strategic plan and a business model.

MOOCs (massive open online courses), for example, aiming at large-scale participation and open access seem to dominate current debates and represent a short term significant experiment to engage large numbers of participants in online learning. From the point of view of their TEL strategies, institutions need to consider seriously how MOOCs align with strategic directions and how they fit into their existing TEL practices and infrastructure. MOOCs offer much potential but the use of such needs careful consideration if the institution is to leverage benefit and the MOOC activity is not to be distracting.

Collecting Evidence to Inform Future Strategy and Planning

As mentioned, a TEL strategy needs to be frequently updated to monitor TEL uptake and identify progression towards the identified vision. To this end, a number of initiatives and tools that facilitate this have been developed such

as observing learner behaviour in online learning environments, using learning analytics, to inform the development of ODL and strategic planning. Learning analytics employs sophisticated analytic tools and processes in investigation and visualization of large institutional data sets, in the service of improving learning and education (Buckingham Shum & Ferguson, 2012).

Summary

Developing any sustainable and impactful TEL activity is non-trivial and does not happen by chance. Institutional progress requires leadership, vision and the connection of various strategies that respond to the prevailing and emerging priorities of the institution. The importance of working with the culture of the institution cannot be over-stated nor can the need to focus activity on a number of fronts (e.g., innovation and capacity building).

Benchmarking and action planning activities are extremely helpful endeavours as is the need to constantly remind ourselves that it is the staff of the organization that are going to help enact and operationalize the strategy. And so, in addition to having a grasp of technology, engage in strategy development and associated action planning, we need also to consider the ways in which staff are being supported and motivated by the institutional ODL agenda. When such endeavours are mutually aligned then the ODL agenda and ODL practice will flourish.

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Strategic Planning for eLearning in Higher Education*

by Mark Bullen

Introduction

In 2007 I argued that higher education institutions were not, for the most part, responding appropriately to the rapidly changing needs of society by planning effectively for eLearning:

> "Organizational arrangements, funding, development processes, faculty and learner support and other policies vary widely from institution to institution. Quality is also variable and often unflattering. Long pages of lecture notes, poorly designed Web sites, lack of interaction, and the inadequate use of the rich resources available on the Internet characterize much of the present world of online eLearning" (Bullen & Janes, 2007, p. vii).

Six years later, this description of the state of eLearning in higher education remains fairly accurate. To be fair, there have been improvements and many more institutions have developed and implemented eLearning strategic plans but most institutions are still reacting to issues as they emerge rather than taking the time to plan for the future. Witness the recent response to the emergence of Massive Open Online Courses (MOOC). Institutions, fearing they will be left behind, have rushed to jump on this technological bandwagon without serious consideration of how MOOCs fit into their existing eLearning practices or how they align with their strategic directions (Bogost, 2012; Kim, 2013; Vaidhyanathan, 2012).

If anything the pace of change has accelerated since my 2007 assessment and higher education is facing much more serious challenges as it struggles to respond to growing demands for quality, relevance, accountability, efficiency and responsiveness. eLearning is not the magic bullet but it can play a role in addressing some of these issues if it is dealt with strategically. We cannot simply add eLearning on to our existing ways of operating. We must integrate eLearning into the core operations of our higher education institutions, align it with

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institutional strategic plans and develop strategic plans specifically for eLearning. As Haughey (2007) argues, "the place of digital technologies in the entire mission of the university needs to be clarified. Without such a vision, an organization will find it difficult" to make effective use of eLearning (p. 30).

In this chapter I discuss the key reasons for developing institutional strategic plans for eLearning and the key components of an effective eLearning strategy and I draw on my recent experience developing an institutional eLearning Strategy to highlight the key elements of the strategy development process.

Introducing eLearning into Higher Education

Bates (2007) argues that there are usually five fairly distinct stages in how eLearning is introduced into higher education institutions:

Stage 1: Lone Rangers
Lone rangers are the early adopters and at this stage in an institution there is little or no formal support for eLearning. All eLearning is the result of the initiative and enthusiasm of individual instructors.

Stage 2: Encouragement
In the second stage, the creative work of individual instructors comes to the attention of some administrators who then provide support and encouragement with various incentives such as reduced teaching loads, recognition awards or small financial grants.

Stage 3: Chaos
The modest encouragement provided in stage 2 stimulates growing interest in eLearning from other instructors and at some point the growing number of instructors who have undertaken their own eLearning initiatives starts to create concerns related to quality, duplication of effort, the lack of consistent technical standards and the cost and sustainability of all of this uncoordinated activity. Of particular concern is the cost of scaling up individual initiatives to support large numbers of students.

Stage 4: Planning
At some point the chaos becomes too much for senior management. Instructors complain they are not getting the support they need. Students complain that they are being forced to learn how to use different platforms and technologies depending on the courses they take and they wonder why some courses are available online and others are not. Senior management realizes there is a need to set some priorities, to establish common technical standards, provide for support and training for faculty, and establish processes for developing eLearning cost effectively.

Stage 5: Sustainability

eLearning has been integrated into the core activities of the institution. It is part of the institutional planning process and embedded in the strategic plan.

Most higher education institutions are in stage 2 or 3 but an increasing number are at stage 4 and have developed or are developing institutional eLearning strategies. Few conventional higher education institutions have reached stage 5.

As the use of eLearning continues to grow, it is becoming increasingly important for institutions to focus their efforts on moving from Stage 3 (Chaos) to Stage 5 (Sustainability). The critical ingredients are an eLearning strategy and the implementation of the eLearning strategy.

What is eLearning?

One of the problems we face in trying to motivate institutions to develop eLearning strategies is the lack of clarity around the term. There is no universally-accepted definition and everybody seems to have his or her own unique perspective on the meaning of eLearning. Even in the literature the term is used and defined differently by different authors. It is essential, then, that we begin with a common understanding, or at least acknowledge there are different understandings.

Figure 5.1 depicts one conceptualization of eLearning. It situates eLearning on a teaching and learning continuum showing face-to-face teaching without the use of information and communication technologies (ICT) at one end and fully online distance learning at the other end.

As we move along the continuum from fully face-to-face teaching, more and more technology is used to replace the face-to-face elements. Initially, this has very little impact on how teaching is organized because the technology is used

Figure 5.1: The eLearning Continuum

primarily to enhance the face-to-face teaching. But as we move further along the continuum (from left to right) the nature of teaching and how it is organized is increasingly affected by the use of ICT. Somewhere around the middle of the continuum we have blended learning where significant amounts of the face-to-face elements are replaced by ICT. Fewer class sessions are held as technology is used increasingly to deliver the teaching and to facilitate the learning. Once we reach the right end of the continuum there is no longer any face-to-face teaching. The last box on the right represents fully online learning in which all teaching is technology-mediated. According to this framework, eLearning is that part of the continuum that begins when technology is used to replace some of the face-to-face teaching to the point on the continuum where it replaces it all.

It is also important to understand the relationship between eLearning and distance education. Increasingly, distance education is fully online but historically it has used other technologies and there is still a considerable amount of distance education that would not be considered eLearning. Accordingly, we can have what we call blended eLearning in which there is a combination of face-to-face and technology-mediated teaching or distance education eLearning in which all teaching and learning is done without teacher and learners ever meeting face-to-face. And there can be distance education that is primarily print-based and would not be considered eLearning. May open universities in developing countries, for instance, use a distance education model that relies heavily on printed study guides and telephone or drop-in centres where students can work with tutors. This kind of distance education would not be considered eLearning.

Three Types of eLearning

Zemsky & Massy (2004) have developed a useful framework for understanding eLearning because it allows us to capture a diversity of understandings of the concept in three fairly easy to understand categories.

The three categories are:

1. eLearning as distance education
2. eLearning as facilitated transactions software
3. eLearning as electronically-mediated learning

Three Waves of ICT

Bereiter and Scardamalia (2006) offer another framework that looks at the use of ICT in education and suggests it is helpful to think of it happening in three waves. Although they use the term ICT, their framework can be used to understand how eLearning has diffused through our higher education system.

Wave 1: Technology as imperative. Computers (and eLearning) were seen as essential to the preparation of our students for the information age.

Wave 2: In the second wave, the focus shifted to using computers (and eLearning) in appropriate ways. It was no longer technology for technology's sake but "pedagogy before technology".

Wave 3: ICTs as affordances. In the third wave, the focus, according to Berieter and Scardamalia (2006) is where it should be: on the educational ideas. It is not so much about integrating technology into educational activities as it is about understanding the potential of various technologies and designing educational activities that take this into account.

eLearning and Open Education

The final perspective to consider in thinking about what eLearning means, comes from the growing open education (OE) movement. According to its proponents, OE has the potential to radically change education by promoting and facilitating the sharing and reuse of educational resources and pedagogical practices and by making this all freely available to anybody who has Internet access. According to Baraniuk (2008) the OE movement is based on the idea that "knowledge should be free and open to use and reuse; that collaboration should be easier, not harder; that people should receive credit and kudos for contributing to education and research; and that concepts and ideas are linked in unusual and surprising ways and not in the simple linear forms that today's textbooks present" (p. 229).

Why Should HE Institutions Develop an eLearning Strategy?

There is much skepticism about the value of strategic planning, particularly in public higher education institutions. Birnbaum (2001), for example, argues that higher education has blindly adopted business planning practices that often have already been tried and rejected by business. Bates & Sangra (2011) describe planning and decision making as "messy processes... driven as much by personalities, departmental priorities, empire building, and plain jealousies, as they are by logic, vision, the desire to improve services, or other lofty goals" (p. 94). Nonetheless, while there may be much to criticize in how planning is actually conducted, there is a consensus that planning is essential to any organization. As de Freitas and Oliver (2005) conclude, "eLearning policy does drive change. It first leads to organizational redevelopment (whether formally through staffing structures or informally through locally-negotiated changes in staff roles), then this is expressed through the changed pedagogic practices of

staff" (p. 94). The focus, however, should be on the strategic *thinking* that goes with the planning. This means dealing with issues such as:

- The learning outcomes that are required in a knowledge-based society and how technology can help develop such outcomes;

- Developing competencies in the use of information and communications technologies within specific areas of study;

- More flexible delivery of programmes to accommodate a more heterogeneous student body;

- The redesign of courses and programmes to integrate technology better;

- Better services to students;

- Greater efficiencies in both teaching and administration (Bates & Sangra, 2011, p. 101).

When it comes to strategic planning for eLearning, there are a range of factors or pressures facing higher education that highlight the need for institutions to develop an eLearning strategy. Social and economic changes have had a profound impact on the way students pursue their post secondary education and training. Going to college or university is no longer a one-time event with students completing a degree or diploma and entering the workforce. Students increasingly need to work part-time to pay for their studies. Once in the workforce, graduates will increasingly find they need to return for technical and professional upgrading. Learning has truly become lifelong. To meet this growing demand for continuous learning, higher education institutions are facing increasing pressure to provide flexible access to their programmes, and eLearning is seen as a key tool for achieving this goal. This is particularly relevant of higher education institutions in the developing world where there is a need to address a growing demand for skills training in many sectors.

As well, most institutional strategic plans explicitly acknowledge student expectations for quality, convenience and access to technology. Students increasingly expect to access their educational institutions, their services and their instructors online. While this is more relevant to institutions in developed countries, particularly in North America, it is increasingly a global expectation of students. Increased connectivity is seen as an essential component of a quality post secondary education.

The rationale for eLearning, then, is tied to the need to increase access to education, to make it available as flexibly as possible and to the expectations for quality, convenience and connectivity and a desire to enhance and transform our teaching and learning practices to make them more relevant to today's world.

eLearning at any educational institution should be driven by the needs of students for personalized, flexible and convenient access to high quality programmes that prepare them to learn and work in a globally networked, digital environment. It should also enhance and transform our teaching and learning practices.

Components of an eLearning Strategy

An eLearning Strategy is a document that articulates the strategic thinking about how to use eLearning to transform teaching and learning at an institution. It should represent the collective thinking of the key stakeholders, i.e., faculty, staff, students and administrators and it should provide a roadmap for implementation. While eLearning strategies will differ from institution to institution depending on their specific needs, they should all include the following components:

- A vision for the use eLearning at the institution;

- A rationale for the use of eLearning at the institution;

- Core principles that frame and guide the eLearning strategy;

- Strategic goals or outcomes;

- Outputs tied to the strategic goals or outcomes; and

- Specific activities that will be initiated to produce the outputs and achieve the goals.

Rationale

The rationale and vision for eLearning need to be developed concurrently. Unless there is a shared understanding of why eLearning is seen as critical to the institution, it would be difficult to develop a clear, coherent and shared vision. Likewise, developing a rationale without having some preliminary ideas about what the future state of the institution will look like is difficult. A generic rationale for eLearning was described earlier (Why Should HE Institutions Develop and eLearning Strategy?). Institutions may have unique reasons for wanting to develop and eLearning strategy. The following are the most common reasons that higher education implements eLearning on an institution-wide basis:

- To meet the flexible needs of students;

- To increase access to programmes;

- To distribute programmes across multiple campuses;

- To enhance teaching and learning;

- To better prepare our students for the requirements of business and industry;

- To better accommodate the differing learning styles of students.

Vision

This is a concrete description of what the organization will look like if and when the eLearning strategic plan is fully implemented. It is often useful to develop a vision by describing specific scenarios related to key areas of the plan. For example, what will it be like to be a student when eLearning is fully-implemented? What will it be like to be an instructor etc? As mentioned earlier, the vision and rationale should not be developed in isolation.

Ideally, faculties, departments and /or programme areas should develop their own visions that are consistent with the institutional vision. These departmental visions should be integrated into a broader vision or plan for teaching and learning. Ideally these visions should be reviewed every two to three years and revised as necessary.

Administrative departments need to be involved in the process of developing an eLearning vision as well, as eLearning involves both academic and administrative services. Core support departments such as Registrar's Office, the Library, Bookstore, and Programme Advising need to develop their own visions for eLearning.

Guiding Principles

As well as a rationale, it is essential that eLearning be governed by core principles. Bates (2007) suggests the following core principles:

- The benefits of using eLearning must be clearly identified before programme development begins;

- Faculties and academic departments should make decisions about how eLearning will be used to support their academic goals;

- eLearning will not displace instructors but will strengthen their role in teaching and learning and improve teaching practice;

- Increases in instructor workload will be avoided by following best practices in eLearning. This includes providing support to course and programme development through the services a central learning and teaching centre;

- Faculty development will be given a high priority so that instructors have adequate training in the use of eLearning;

- Costs of developing eLearning programmes will be controlled by using a project management approach and the centralized resources of a learning and teaching centre and the IT department.

Strategic Goals/Outcomes

These describe in concrete terms what the institution hopes to achieve by implementing the plan. Achieving the goals entirely would make the vision a

reality. The goals of the eLearning strategy should be aligned with the goals of the institutional strategic plan.

Outputs and Activities

Outputs and activities are key to achieving the strategic goals. The outputs are the products of the activities that will be undertaken to achieve the goals. One or more activities may need to be undertaken to produce the outputs for a specific goal. The table below illustrates how Guiding Principles, Strategic Goals, Outputs and Activities are all related.

Principle	Goal	Outcome	Activities
Educational Quality	Quality and innovation in the use of eLearning.	• Quality standards for instructional design, assessment, learner support, teaching and technology. • Applied research focused on eLearning practice at BCIT.	• Research, develop and implement quality standards. • Develop standards for instructor responsibilities and expectations in online courses. • Develop an applied research agenda focused on eLearning practice at BCIT.

An eLearning Strategy Case

The rest of this chapter describes an example of an eLearning strategy development process at one Canadian higher education institution, the British Columbia Institute of Technology.

Institutional Context

The British Columbia Institute of Technology (BCIT) is a large public technical/ vocational institution in province of British Columbia on Canada's Pacific coast. It offers a broad range of technical, professional and vocational programs at the diploma, baccalaureate and Masters level to approximately 18,000 full time and 28,000 part time students. It has over 2000 full and part time instructors and operates with a budget of approximately $CDN 280 million. It is a face-to-face institution organized into six schools (Business, Computing & Academic Studies, Construction & the Environment, Energy, Health Sciences, Transportation) with five campuses throughout the Greater Vancouver area. It emphasizes an experiential learning approach and prides itself in developing "job ready" graduates who possess high level skills that meet identified labour-market needs. In addition to its face-to-face, experiential learning focus, BCIT is also one of the largest providers of online and distance learning in the province of British

Columbia and is increasingly using blended delivery approaches to meet the needs of working students.

Background to the Planning Process

Developing an eLearning strategy at BCIT has proven to be a long and difficult struggle. The first attempt to develop a strategy was in 2006 shortly after I took over as Associate Dean of the Learning & Teaching Centre (LTC). The LTC is a central department funded out of the institutional operating budget with responsibility for curriculum and instructor development, educational technology, online course development and general instructor support for teaching and learning.

In my first attempt to develop an eLearning Strategy, I first sought and gained the support of the Vice-President, Learning & Technology Services, to whom I reported and then, developed a short concept paper with a rationale for an eLearning strategy. The concept paper included a recommendation that it be taken to the institutional leadership team for review and approval so that the development of an eLearning strategy could be undertaken. Unfortunately, shortly after putting this forward, the institution was hit with a serious financial crisis that resulted in cutbacks and layoffs. It also diverted the attention and energy of the leadership team to dealing with the immediate crisis at the expense of planning for the future. To further complicate matters, there was significant instability at the senior management level with the departure of the President and Vice-President, Education within the space of a year, followed by the departure of the new Vice-President, Education less than six months after taking over the position. It was nearly three years before the senior administration of the institution had been stabilized and there were any serious attempts at institutional planning.

Four years later, in 2010, with the return of organizational and financial stability, the leadership team was able to move away from its focus on day-to-day operational issues and begin to look to the future. A new institutional strategic plan had been implemented the year before and there was increasing talk of the need to look at online learning as way of transforming teaching and dealing and as a means to provide for more flexible access. In 2011 the President released a white paper on the future of the institution in which he specifically identified the need to consider online learning and other technology-mediated forms of teaching and learning. The release of the book, *The Innovative University* that year also raised the profile and credibility of online learning. In their book, Clayton Christensen and Henry Eyring argued that, in order to survive, higher education needed to look at the disruptive strategies such as online learning and to essentially re-engineer the university to meet the new demands of the 21st century. This coincided with a financial crisis in the American public higher education system and suddenly online learning was on the minds of higher education leaders and was increasingly

being talked about as a way to not only transform teaching learning but address the growing higher education financial crisis and make the system more efficient.

The Planning Process

Against this backdrop of heightened interest and acceptance of online learning institutionally and in higher education generally, the time seemed right to restart the eLearning strategy process. An additional factor that seemed to favor the development of an institutional eLearning strategy was the recent appointment of new Deans in three of the six BCIT schools. These new Deans brought a fresh and progressive view of teaching, learning and technology and began advocating for greater use of eLearning. A final factor was the appointment of a new Chief Information Officer who also appeared to favor the development of an eLearning strategy. The stars, then, seemed to be aligning. In September 2011 I developed a second discussion paper that made a case for why an eLearning strategy was needed. The paper contained a vision and rationale for eLearning and proposed a set of guiding principles and strategic themes.

Guiding Principles

1. Strategic
2. Quality first
3. Pedagogically-driven
4. Industry-relevant
5. Sustainable
6. Student-centered
7. Need for faculty support

Strategic Themes

1. Quality teaching and learning models
2. Learner support
3. Faculty development
4. Use of technology
5. Funding models

I presented the discussion paper to the Deans' Council and following that, the Leadership Team which approved the recommendation to proceed with the development of an institutional eLearning strategy and implementation plan.

A project charter was then developed that included an organizational structure and timeline for the planning process. The eLearning plan was to be guided by an eLearning Strategy Steering Committee with the following representation:

• Dean of the Learning & Teaching Centre

• Vice-President Education

- Vice-President, Learning & Technology Services

- Dean, School of Business

- Chief Information Officer.

Reporting to this steering committee was an eLearning Strategy Working group chaired by the Dean of the Learning & Teaching Centre and with faculty representatives from three of the six schools and an instructional development consultant from the Learning & Teaching Centre.

The organizational structure was kept deliberately simple and the two committees small to allow for agility and the rapid development of the eLearning strategy. We wanted to avoid the tendency to let the consultation process paralyze decision-making. The representatives on the two committees were explicitly appointed not to represent their particular constituencies but rather to contribute their expertise and to present an institutional perspective. Having the Dean of the Learning & Teaching Centre on the Steering Committee and the Working Group was intended to provide a formal, operational link between the two committees to help facilitate communication between the two groups. A separate consultation process, described below, provided some of the data that the two committees would use to inform their deliberations and, ultimately, the eLearning strategic plan.

The Consultation Process

Consultation and buy-in are critical to the success of any strategic plan but there is a fine line between too much and too little consultation. Public higher education institutions are extremely cautious and often consultation becomes a way to delay decision-making. The eLearning Strategy Working Group was conscious of this and also of the reality that there would be resistance to the idea of making greater use of eLearning and that it would be impossible to satisfy everybody and address all needs. As a result, we decided to expedite the consultation process and ensure that it was completed within four months. We held nine community consultation sessions with faculty and staff at all five of the BCIT campuses. These sessions were designed as interactive workshops in which participants worked in small groups to brainstorm key issues related to the five strategic themes. The discussion was framed according to three perspectives:

1. **The Current "learnscape/teachingscape" (Present):** What are you doing right now in terms of teaching? How? What tools and resources are you using?

2. **Vision (Future):** What does the future look like? Describe your vision for eLearning at BCIT, draw a picture.

3. **Challenges:** What are the possible challenges that may hinder the attainment of your vision?

In order to make it possible for as many people to participate as possible, we scheduled the consultation sessions at non-teaching times and we publicized them through email notices, flyers, and the institutional website. We continued to schedule sessions until participation started to drop off.

In addition to the community consultation sessions, we hosted an online discussion on the eLearning strategy website (http://commons.bcit.ca/estrategy) which was restricted to the institutional community. The consultation process ran from January to April 2012.

In June 2012 we launched the first of a series of eLearning showcases to allow faculty to share the eLearning expertise with each other. The decision to organize these events emerged from the community consultation sessions. One of the key themes that emerged was the need for more sharing and collaboration and a sense that faculty were often working isolation without any awareness of what their colleagues were doing with eLearning.

In addition to consulting with faculty staff and students, we also conducted an environmental scan to get a sense of what other postsecondary institutions were doing, and to review other institutional eLearning strategies. In all we reviewed 15 institutional eLearning strategies from colleges and universities in Canada, the United States, Australia and the United Kingdom.

The Plan

Once the consultation process was complete, the eLearning Strategy Working Group (WG) met to review the data gathered from the consultations and the environmental scan and to identify key themes and potential strategic priorities. I was tasked with preparing first draft of the eLearning Strategy which was then shared with the WG for feedback. After numerous revisions a final draft was completed and taken to the eLearning Strategy Steering Committee (SC) for discussion. Based on feedback from this group, further revisions were made and a final draft eLearning Strategy was submitted to the SC on August 13, 2012. The next steps in the process were to take it to the Deans' Council in September 2012 and then seek formal approval from the senior Leadership Team in October 2012. Implementation of the plan was planned for the 2013/14 fiscal year beginning in April 2013.

Conclusions

Bates & Sangra (2011) examined the practices in managing ICT in postsecondary education, drawing on empirical studies of over 20 universities and an in depth study of 11 universities and colleges in Europe and North America. Based on their analysis they proposed six criteria for the successful planning and implementation of eLearning in higher education:

1. A flexible institutional strategic plan that recognizes the importance of eLearning is a necessary prerequisite to the successful implementation of eLearning.

2. A compelling vision for eLearning is essential and it should be a vision for "radical change directed at new and better learning outcomes, greater flexibility for students, and increased cost-efficiencies" (p. 99).

3. Teaching staff must be directly involved in the visioning and strategic thinking processes for eLearning.

4. The vision and institutional strategy for eLearning must be shared and supported by all members of the executive and that support needs to extend beyond the terms of the current executive as it will take many years to fully implement an eLearning strategy.

5. Developing an institutional eLearning strategy is not a one-time event. Planning for eLearning needs to be an ongoing process to keep up with the rapid pace of technological change.

6. Planning for eLearning needs to be integrated with overall educational planning, particularly budget and financial planning.

The draft BCIT institutional eLearning Strategy meets most of these criteria. The vision put forward is perhaps not a prescription for radical change but there is a clear transformational imperative underlying the strategy. It will not be clear if the vision is shared by all members of the executive team until it is brought forward for discussion and approval but certainly the executive fully supported the recommendation to develop an eLearning strategy. Similarly, we will not know if planning for eLearning becomes an ongoing process until the proposed strategy is approved and implemented. However, the notion of continuous planning is already in place for the broader institutional strategic planning at the institute. And finally, one of the recommendations of the proposed strategy is to ensure that planning for eLearning is integrated with the overall educational planning process, and particularly the budget development process.

There is a tendency to see eLearning as a technical issue but it is much more than that. It is, or should be, about educational transformation and making education more accessible, flexible, relevant and meaningful for learners. Technical solutions are needed to achieve these learning goals but we need to remind ourselves that the technology is there to support and enhance the learning experience. To achieve this flexibility, and to fully exploit eLearning technologies, we need to use approaches to teaching and learning that differ from our traditional, primarily transmission-oriented classroom approaches. Thus eLearning requires us to rethink our curriculum and our teaching and learning approaches and how we support our learners. A key component of any eLearning strategy should be the transformation of teaching and learning to reflect the needs of an information-

based society. It should be integrated with broader institutional planning and it should be an ongoing process that provides for continuous input from the teaching staff.

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OER Implementation: Institutional Challenges and Opportunities*

by Gwen van der Velden

Introduction

In recent years the uptake and development of open educational resources (OER) have grown considerably across the UK. Involvement in OER progress was seen – until the introduction of MOOC developments – as an indicator of institutional eLearning innovation and a potential means of institutional marketing. Yet at the same time, there were often conflicting interests and concerns within most institutions about the ultimate relevance, achievability and effectiveness of the open educational resources developments across the country. This paper presents an insight into the reception of OER concepts within a research intensive and highly respected institution, and illustrates some of the challenges as well as opportunities afforded by the uptake of OER within an institutional context.

International Context and Incentives

There have been a number of funding incentives by governments internationally to take forward the OER agenda. Simultaneous to the US Federal Education Fund making available $2 billion to create OER resources in community colleges (2011) (http://creativecommons.org/weblog/entry/26100), the UK also saw a strong future for similar developments. Also in 2011, the Online Learning Task Force recommended to the UK government that significant investment was needed for the development and exploitation of OERs to enhance efficiency and quality. This was recommended to be in the region of £5 million per year for 5 years (http://www.hefce.ac.uk/pubs/year/2011/201101/). Within the Higher Education sector, the Joint Information Systems Committee increased its funding for OER – to our benefit at the University of Bath – and required that all funded projects release their outputs under a creative commons license. That change of

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policy carried a welcome principle: all materials developed under funding derived from a publicly funded sector, would become available to all members of the public, including those within the sector. Though that principle is strong because of a powerful theory, it created several practical problems which we encountered small-scale at the University of Bath, and were not dissimilarly found sector-wide.

Aside from funding incentives, there are also a number of other reasons why institutions themselves would wish to engage in OER development. Such motivations fall into three broad categories: a desire to increase access to learning materials and opportunities, marketing and public relations considerations and a wish to improve effectiveness in the process of design, use, re-use and sharing of learning resources. Each of these have institutional advantages, but as these are still early days for OERs, there are also critical questions to ask about the assumed advantages and the implications of trying to achieve them.

Firstly, *the desire to improve access to learning materials and opportunities* is part of an idealistic, moral argument which questions the role of universities and wishes to see higher education institutions which benefit from government funding, giving something back to society. It fits within a culture where social media allow the breaking down of barriers and greater access to information. Easy access to free, high quality educational materials can now be accessed by anyone irrespective of their background (i.e., previous qualifications, geographical location, etc.) and financial means. Of course the advent of MOOCs more recently, illustrates even more clearly the appetite for creating access to learning for all – as long as there is access to the internet. Universities potentially benefit greatly from this but only if the OERs are not just accessible but can also be found. The myriad of available resources are still hard to search and find, with categorization of learning resources not yet having been standardized and the existence of a wide range of repositories for OERs. Once found, OERs are accessible, but is the process of finding the resources itself, accessible yet?

The institutional interest in using OER as a means of *marketing, brand extension and improving public relations* is another common consideration. Many institutions offer OERs as a means of showcasing their provision, offering taster sessions to individuals around the world, thereby intending to reach new 'markets' be it for future student recruitment, the development of collaborative educational provision or research collaborations. As an example, new initiatives such as 'Coursera' (https://www.coursera.org/) claim to offer 'the world's best courses, for free'. The visibility of participation in a MOOC collaboration with highly reputable partners, is of good value to institutions. In the UK, when a UK specific MOOC collaboration was recently launched (Futurelearn http://www. futurelearn.com/) the universities selected to participate or later accepted on application, show a clear preference for institutions of an established reputation, thus making participation in the collaboration even more attractive. In some

sense, participation in a MOOC or other OER collaboration can become a benchmark of reputation in itself. However, there is no consensus in the field as yet regarding the actual quality and standards of the educational resources. A few recent examples have appeared where MOOCs or other OERs have gone wrong and at that point, the reputation for quality and academic standards of an institution can be seriously damaged.

Finally, institutional desires to *improve effectiveness* may become an incentive for institutions to engage in OER usage. The use, adaptation and re-use of educational resources is assumed to avoid ineffective repetition of development efforts. This is of particular interest to institutions which are dealing with increased student numbers and wish to offer a richer, more flexible experience to students online, potentially with a relatively short lead-in time. In the UK there are a number of OERs which have been developed by institutions and shared across discipline lines. As an example, large databases of images and computer simulation activities are used across a number of medical schools to teach students according to roughly comparable curricula.

Where such re-use can be achieved, the efficiency advantages are obvious, and were this to occur across several courses and disciplines, the institutional gain could be substantial. There is, however, a persistent interest within academic communities to create discreet discipline interpretations within the university curriculum. Such discrete approaches may occur because of research interests underpinning the curriculum, but also because of individual teaching preferences. Within institutions the often experienced 'not invented here' view means that individual staff tend to prefer to develop their own material. Specifically within highly modularized systems, individual ownership of modules can be strongly felt. At such a point, institutional interests in promoting the efficient re-use of learning resources (developed elsewhere) may not be welcomed by individual academics. It may then depend on the governance and ownership arrangements for the curriculum, programmes and modules, whether OER uptake occurs.

Learning by Experience: OER at the University of Bath

The University of Bath is a medium size, research intensive institution with an outstanding national reputation for teaching in the UK. Consistently in the top ten of UK institutions, Bath is strongly focused on industry and employment relevant learning with an emphasis on student involvement in steering the development of teaching and learning. Innovation of the curriculum is driven by research developments, employer needs and proactive benchmarking against other prestigious institutions worldwide. Within that context innovation and enhancement of the curriculum allows at least in theory for a good growth potential of open educational resources.

Our very first venture into the development of open educational resources centred around a Biology and Biochemistry based project to develop existing learning resources into OER. Similar small scale disciplinary projects soon followed, each time externally funded. This led to a realization at institutional level that we needed to understand more particularly the challenges that came with the production, maintaining and use of OER. Based centrally, we then acquired more external funding to gather 100 study credits of learning in open educational resources across a range of disciplines. This was called the 'Ostrich project', the name connecting us to a number of other eLearning related projects which had similar animal named titles. During this project we worked with the Universities of Derby and Leicester, thereby having the advantages of being able to compare institutional practices and join forces on seeking solutions. These activities led us to ask a number of questions about enabling open educational resource development and use within the institution effectively.

Firstly there were many clarifications and some policy required to resolve issues of ownership right, distribution rights and sharing right. Not least, we had to explore how to balance individual academics' rights of intellectual ownership with the institution's interest in sharing content. This took some time and several iterations of legal consideration. Creative Commons solutions were soon well understood and agreeable as the ultimate arrangement for OERs once they were created. The more complex issues arose in advance of creation. Questions we had to ask were who owned materials we wished to include and what permissions were required from whom. In the UK there are national cross-educational sector arrangements in place for the limited reproduction of materials for direct classroom use, but inclusion of content online for wider or unlimited use is far more complex. A particular challenge was to ensure that all staff involved understood that 'content' also included pictures, videos, sound and similar. Furthermore we learned that in some universities the copyright of learning resources developed for and during employment were owned by the university, whereas in other cases staff had individual ownership. In the latter situation the development of OER under Creative Commons license can be much more taxing. It appears advisable before entering into the development of OER at any level of scale, to incorporate some level of costing towards the clearance of ownership rights and licensing, preferably at both the policy and operational level.

Secondly there were issues around the routes for making open educational resources available for others to use. We had to consider using external repositories, developing our own, and the parameters for making resources available. Questions arose such as the sustainability of providing our own repository in the longer term or the impact on our reputation once we stored resources elsewhere if we could not guarantee regular updating of content. For one of our externally funded projects we were tasked with developing our own repository. Whilst this was

technically relatively straightforward, the longevity of the repository was limited and few 'visitors' found the provided resources through this route. Interestingly, the source code for the repository itself created rather more interest.

The most commonly used national repository for OER in the UK is Jorum (http://www.jorum.ac.uk/) which has – in different iterations – been in use since 2002 as a 'national learning and teaching repository'. As a member of the Steering Group for this repository service, the author has become aware of the complications in relation to effective search-ability of such repositories as well as the desire by users to see some benchmarking or quality indications of the available resources. Academic staff wishing to find OER for use in their own teaching still requires some time and effort to find and evaluate the resources available and select those elements or whole resources that they can realistically use. The expression 'off the shelf' clearly does not describe realistically the required investment that needs to be made in effective re-use of resources.

We also had concerns about the actual re-usability of open resources once they were provided. We noted that there were few statistics gathered by commonly used repositories on whether resources were actually used for learning purposes (as opposed to statistics on downloads of resources). For us it was important to invest carefully only in the production of resources that would have a high re-usability factor, and in this, reputational aspects were clearly on our mind. Statistical information on searches undertaken by repository users would have been of help for this. At the same time, the academic community is still in the process of gaining familiarity and confidence in the use of OERs, limiting the availability of resources for OER production. We believe that in time, these considerations will come to play a more important role than they do now.

Finally we also had to understand better how to deal with the 'not invented here' aspect of re-usability as described above. Several colleagues experienced in supporting academic colleagues on re-using materials – electronically based or otherwise – had noted a staff preference for developing own materials over the re-use and re-development of materials provided by their colleagues. This soon brought us to the realization that there was a lack of quality benchmarking or kite marking for resources. Academic staff needed to 'trust' the resources which was often influenced by judgements regarding the source of the OER (reputation of the producing institution or standing of the individual in the discipline) or the recommendations of others. OERs tend not to be reviewed by external examiners, peer reviewers or benchmarked against national subject benchmarks in the way that institutionally based curricula traditionally are, and this is where future developments are perhaps desirable.

As a next step we now need to consider the long term sustainability of OERs. Many of the OER developments in the UK (and internationally) have been funded

by government bodies. However, when funding streams cease, institutions find it difficult to sustain development and maintain the currency of the resources, and we are no exception.

We have learnt that a number of business revenue models have emerged in relation to OERs. Some institutions engage in OER implementation explicitly for marketing purposes and adopt a *'conversion'* business model, i.e., converting those learners who engage with their resources into paying students. Revenue generated in this way helps the institution to sustain and develop OER. Particularly in the context of MOOCs this is a consideration for many institutions – be it immediately or in the longer term once the process of conversion in this context is better understood. The *'segmentation model'* is currently more common in education. An institution gives away free resources, but then charges for value-added activities (support and training, ask-an-expert advice, sale of paper copies, etc). Particularly in continuous professional development contexts this can help generate sustainability funding. Finally, the *'contributor-pay'* sees contributors paying the cost of maintaining the resources, which the provider makes available for free. This model is used to give open access to scientific journals/publications.

At the University of Bath we are still considering the different models. Evidence of any of these models is not easily available yet to inform our thinking. The model most often associated with MOOCs (conversion model) has now firmly made an appearance though, as we have now become part of the UK's first major MOOC collaboration, Futurelearn.

Summary

Although there is significant funding being made available to get institutions involved in OER development and implementation, a number of fundamental questions remain and need to be explored further. 'Free resources' are underpinned by new pedagogical, quality, ownership and economic realities and institutions need to be clear why they wish to engage in OER implementation and what they hope to achieve. The challenges are significant and institutions need to engage in an informed and realistic manner, in ways which are specific to each institution's context. Embarking on an OER programme within the context of an established need is more likely to trigger enthusiasm and engagement than simply "doing OERs" for the sake of it.

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eLearning Roadmap and Initiatives in Malaysian Higher Education*

by Ansary Ahmed and John Arul Phillips

Introduction

The emergence of web technologies and tools, and the massive amount of resources has seen a surge of eLearning in education and training. Despite these advancements, technology is not being used innovatively in education though it may sit quite comfortably within current teaching and learning. It may partly be due to the lack of conclusive evidence on the effectiveness of these tools and technologies in enhancing teaching and learning. At the very best, eLearning tends to be confined to a small circle of individuals, which is representative of the situation in Malaysia. The word has been written in many different ways: *e-Learning, eLearning, E-Learning, ELearning.* Besides that, other terms have been used interchangeably with eLearning and they include: online learning, technology-based learning/training, web-based learning/training, computer-based training and so forth.

To add to the confusion there are several definitions on what it means and the following are some examples:

- eLearning is instruction delivered on a computer by way of CD-ROM, Internet or intranet with the following features: includes content relevant to the learning objective, uses instructional methods such as examples and practice to help learning, uses media elements such as words and pictures to deliver the content and methods, builds a new knowledge and skills linked to individual learning goals or to improved organizational performance (Clark and Mayer, 2003).

- eLearning is the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is networked, delivered to the end-user via a computer using standard Internet technology and focuses on the broadest view of learning (Weller, 2002).

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* Paper presented by Prof. John Arul Phillips at the Workshop on ICT Leadership in Higher Education held at Hyderabad, India in February 2013.

- The convergence of the Internet and learning, or Internet-enabled learning. The use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere (CISCO 2001).

- eLearning is the confluence of three social and technical developments: distance learning, computer-conveyed education, and Internet technologies. eLearning does not change how humans learn, but it does change how we teach them (Horton and Horton, 2000).

Nick van Dam (2004) suggests that eLearning is no longer a new phenomenon, but has not ceased to be a hot topic. Many educational institutions, business, industry and the military are discovering what works and what doesn't work in the brave new world of eLearning. eLearning is a broad term used to describe learning done at a computer. The use of network technologies has enabled developers to create, foster, deliver, and facilitate learning, anytime and anywhere. It has made learning accessible to more people and to keep ahead of the rapidly changing global economy. eLearning allows one to learn anywhere and usually at any time, as long as you have a properly configured computer. eLearning can be CD-ROM based, network-based, intranet-based or Internet-based. It can include text, video, audio, animation and virtual environments. It can be a very rich learning experience that can take place in primary school, secondary school, colleges, universities and training organizations.

eLearning Roadmap for Malaysian Higher Education

The Ministry of Higher Education (MOHE), Malaysia identified several Critical Agenda Projects or CAPs to enhance the performance of Malaysian higher education. One of the CAPs was on eLearning established in 2010 to discuss with various stakeholders to develop an eLearning roadmap seeking to transform the process of teaching and learning from a traditional mode to a more digital-based mode. The roadmap defined eLearning as the:

The adoption of information and communication technology (ICT) to facilitate teaching and learning.

The eLearning Roadmap is divided into three phases from 2010 to 2015:

    a. 2010-2011 – Initial Phase

    b. 2012-2013 – Enabled Phase

    c. 2014-2015 – Optimized Phase

Each phase is for a period of two years focusing on the FIVE pillars of eLearning as shown in the pyramid below: infrastructure, organizational structure, curriculum & e-content, professional development and culture (see Figure 7.1).
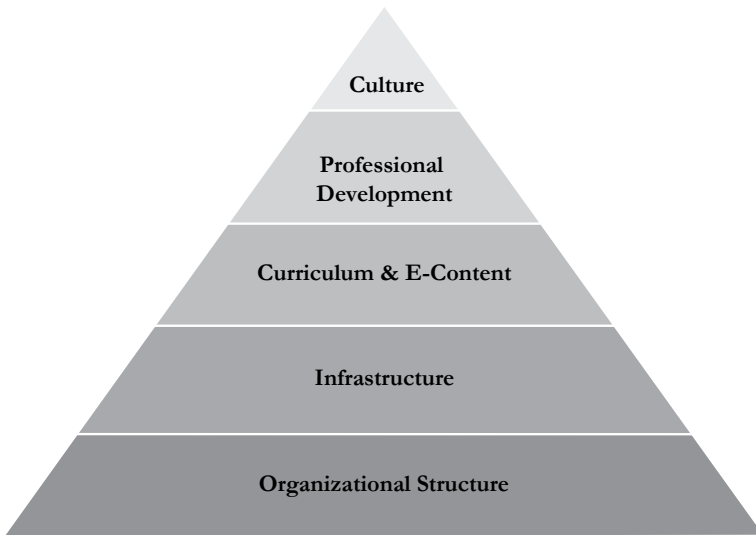
Figure 7.1: Five pillars of eLearning guiding the roadmap

Organizational structure focuses on the vision, mission, plan, leadership, policy and the establishment of an eLearning unit; infrastructure focuses on installation of broadband, helpdesk and use of various ICT tools; curriculum & e-content focuses on re-designing the curriculum, development of e-content, evaluation and standards; professional development focuses on enhancing the knowledge, skills and attitudes of staff while culture focuses on usage, incentives and motivation to engage in eLearning.

Organizational Structure (Table 7.1)

The introduction of any innovation in education will have to begin with a clear organizational structure in each institution.

Table 7.1: Organizational Structure

	Initial	Enabled	Optimized
Vision	Focused on eLearning	Fully integrated in the vision	Shared by all stakeholders
Plan	Implementation of eLearning plan	Comprehensive eLearning plan	All staff are engaged in eLearning practices
Leadership	eLearning initiatives led by 50% of staff	eLearning team led by 75% of staff	Plan fully implemented
Policy	Developed an eLearning policy	Developed & ratified eLearning policy	Accommodates innovate use of technologies
eLearning Unit	eLearning Unit initiated	eLearning Unit fully functional	Training function implemented & evaluated

a. At the **Initial Phase**, each institution should have eLearning integrated in its vision to support teaching and learning, plan a course of action, establish an eLearning team composed of both academics and support staff which will be responsible for the establishment and implementation of the eLearning policy. At this phase of the roadmap, an eLearning unit should be established responsible for all eLearning activities and work collaboratively with the institution's ICT Centre or Department.

b. At the **Enabled Phase**, the vision of the institution should have a fully integrated and comprehensive eLearning plan. About 75% of staff should be involved in some form of eLearning and an eLearning policy developed taking into consideration the views and concerns of all staff, students and stakeholders. The eLearning unit established should be operating at 50% of its capacity, providing various kinds of support for all staff, students and stakeholders.

c. At the **Optimized Phase**, all institutions should have a comprehensive vision incorporating eLearning that is shared by all stakeholders. eLearning should be practiced by all staff in their daily teaching and learning. An effort should be made to evaluate the eLearning plan based on recognized eLearning standards. The eLearning unit is fully operational and is involved in training, research and development especially with regards to the introduction of innovative teaching-learning methods and the use of new technological tools such as Web 2.0 and Web 3.0.

Infrastructure (Table 7.2)

Having a clear vision and plan, institutions will have to invest in infrastructure to enhance connectivity within the campus and from outside the campus.

a. At the **Initial Phase**, all institutions of higher learning need to have in place 8-10 MB bandwidth broadband capacity, a helpdesk, an eLearning platform, relevant software (especially open source).

b. At the **Enabled Phase**, all institutions should install a minimum of 10-34 MB capacity broadband, a fully functional helpdesk and support system and a

Table 7.2: Infrastructure

	Initial	Enabled	Optimized
Broadband	8-10 MB	10-34 MB	>34 MB
Helpdesk & Support	Unit established	Fully functional	Enhanced and optimized
ICT Equipment	Established platform, projection, hardware and software	Fully functional	Fully adopted

fully functional learning management system (LMS), projection facilities and relevant hardware and software to support staff-student interaction.

c. At the **Optimized Phase**, all institutions should have access to broadband connectivity with a bandwidth of between 10-34 MB to facilitate eLearning, an efficient and effective helpdesk and greater use of open source software.

Curriculum and E-Content (Table 7.3)

a. At the **Initial Phase**, all institutions will ensure that at least 10 percent of the curriculum of various courses has been modified to incorporate eLearning. Similarly, 10 percent of content has been developed and presented digitally. Each institution is encouraged to experiment and engage in e-assessment where appropriate and to initiate online learning activities both synchronously and asynchronously. At this phase, institutions are encouraged to formulate eLearning guidelines that will serve as standards in benchmarking eLearning practices.

b. At the **Enabled Phase**, all institutions will have redesigned 25 percent of their curriculum to accommodate eLearning in teaching and learning as well as developed e-content (pdf files, ppt, html files, audio clips, video clips and animations) that seeks to enhance learning. Each institution will have to enhance the frequency and quantity of online activities, e-assessment and have developed eLearning standards to evaluate implementation.

c. At the **Optimized Phase**, institutions will ensure that half of the curriculum has been realigned to accommodate eLearning and increased production of e-content. E-assessment is to be more widely employed in various discipline and courses. National eLearning standards should be available to enable institutions to evaluate the delivery of eLearning across their various schools and departments.

Table 7.3: Curriculum and E-Content

	Initial	Enabled	Optimized
Curriculum	10% of curriculum designed to acco-mmodate eLearning	20% of curriculum designed to acco-mmodate eLearning	50% of curriculum designed to acco-mmodate eLearning
Development	10% e-content developed	25% e-content developed	50% e-content developed
Assessment	Initial efforts at e-assessment	Increased use of e-assessment and online activities	Fully implement e-assessment and online activities
Standards	Formulation of eLearning guidelines	Development and evaluation of eLearning guidelines	National eLearning standards have been developed

Professional Development (Table 7.4)

Perhaps, professional development is the most important pillar in the roadmap because those implementing the plan will need to be equipped with the relevant knowledge, skills and attitudes to shift from a more traditional approach to teaching and learning towards the new technologies.

Table 7.4: Professional Development

	Initial	Enabled	Optimized
Knowledge	25% of staff & students know and practice eLearning pedagogy	50% of staff & students know and practice eLearning pedagogy	All staff & students know and practice eLearning pedagogy
Skills	25% of staff & students are equipped with relevant eLearning skills	50% of staff & students are equipped with relevant eLearning skills	All staff & students are equipped with relevant eLearning skills
Attitudes	25% of staff, students & stakeholders possess a positive attitude towards eLearning	50% of staff, students & stakeholders possess a positive attitude towards eLearning	All staff, students & stakeholders possess a positive attitude towards eLearning

a. At the **Initial Phase**, all institutions will have to ensure that at least 25 percent of their staff and students understand and acknowledge the role of eLearning in their respective institutions. Also, about a quarter of stakeholders will have to be trained through workshops and seminars on the knowledge and skills required to engage in eLearning which will eventually lead to a more positive attitude for change.

b. At the **Enabled Phase**, all institutions will have to intensify staff development efforts to ensure that more than half of staff and students are equipped with the knowledge and skills to widely implement eLearning across various courses and disciplines.

c. At the **Optimized Phase**, all institutions will have to ensure that all staff and students are equipped with knowledge on the practices of eLearning pedagogy and are skilled to implement them in different courses and disciplines. Also, at this phase, all staff and students possess a positive attitude towards eLearning and its practice becomes an integral part of teaching and learning in institutions.

Culture (Table 7.5)

The success of an eLearning initiative depends as much on the people and culture of the organization as it does on the technology used (MacIntosh, 2006). It is the

Table 7.5: Culture

	Initial	Enabled	Optimized
Availability	Limited availability to eLearning	eLearning readily available	Optimal availability of eLearning
Usage	Visible evidence of usage in selected areas	Visible evidence of usage in all areas	Dissemination and sharing of good practices
Incentive & Motivation	eLearning part of workload and given recognition	Normal workload and recognition for promotion	National awards and certification

ultimate aim of any innovation for it to be part of the culture of the institution. Culture appears in many places, including the organizational structure, support from the top levels, the environment for innovation and change, the human resources situation (such as incentives), administrative procedures, budget, professional development and relationship with the ICT department.

a) At the **Initial Phase**, all institutions will have to ensure that at least 25 percent of their staff and students understand and acknowledge the role of eLearning in their respective institutions. Also, about a quarter of stakeholders will have to be trained through workshops and seminars on the knowledge and skills required to engage in eLearning which will eventually lead to a more positive attitude for change.

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Malaysia Education Online (MEdO)

eLearning undergraduate and graduate programmes is a globally booming market. Asia alone has seen an average growth rate of 12 percent per year and the trend is expected to continue as countries push to raise enrolment at the post-secondary level. Malaysia Education Online (MEdO) is part of the Malaysia Government Transformation Plan (GTP) to expand international distance learning (see Figure 7.2). MEdO is an online learning platform delivering education

Figure 7.2: Malaysia Education Online Portal

programmes from Malaysian universities, colleges, polytechnics and training institutes. It is the *gateway for them to extend their global outreach* whilst each participating institution is able to maintain its identity and uniqueness.

MEdO is led by Asia eUniversity (AeU), selected as the gateway university for international distance and online learning. Focus is on developing eLearning expertise and building partnerships with Malaysian universities in offering various programmes for the international market. One of the challenges is the conversion of content into distance learning material. Several Malaysian universities and institutes have signed up to offer programmes on MEdO. The MEdO platform is based on a fusion of Joomla and Moodle with some customization to suit its needs and requirements. As many universities are already using Moodle, it could speed up the learning curve and adoption by educators that will be required to use it.

eLearning – Case Study of Asia eUniversity

Some people think that eLearning is transplanting the classroom model to a virtual space. It is not!. It is a teaching-learning environment that requires a change in mindset among educators where teachers and learners cannot "see" one another, at least not in the physical sense or at least reduced face-to-face contact. The "body-less realm" of interaction has huge implications for traditional ways of teaching and communicating. Laurillard (2006) argues that eLearning has the potential to be "disruptive" because it calls upon educators to shift their thinking and attitudes from current practice. It has the potential to support and promote

a transformative view of learning. It is not another fad or another "swing of the pendulum", but more of a way to achieve the educational ideas of a post-industrial or knowledge society. Hence, there is an urgent need for all levels of education to take advantage of these emerging tools and technologies while keeping in mind how humans learn to propose innovative pedagogical strategies.

The eLearning pedagogical framework practiced at AeU is based on a cognitive-constructivist perspective of learning facilitated by web tools and technologies. It provides a comprehensive framework guiding the design and development of eLearning or online courses that engage learners in meaningful learning. The framework consists of the following 3 key components (see Figure 7.3):

- Technology Design
- Content Design
- Learning Design

The framework emphasizes the transformative interaction between technology design, content design and learning design.

Technology Design

Technology design specifically refers to the technological tools adopted that will facilitate meaningful learning. Examples of these tools are the Learning Management System (LMS), social media tools, online testing tools and so forth. At AeU Moodle, an open source learning management system has been adopted.
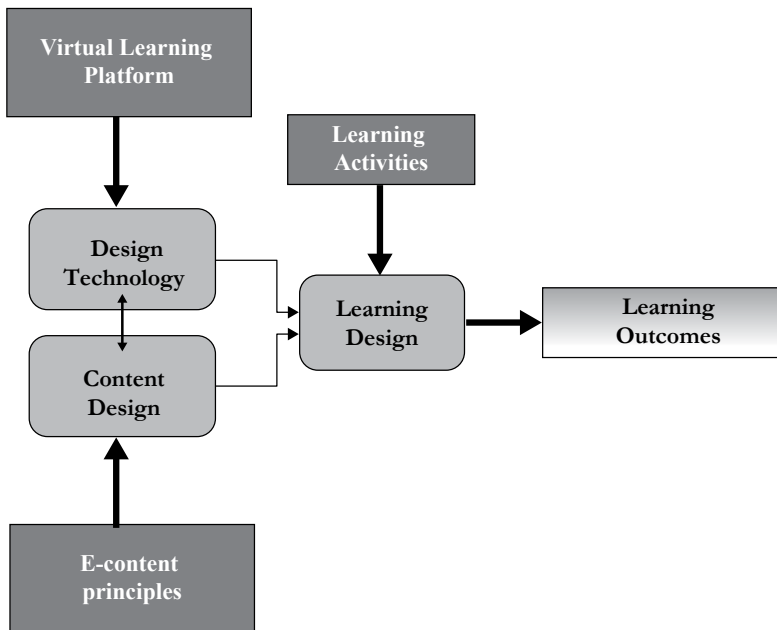

Figure 7.3: An eLearning pedagogical framework promoting meaningful learning

Together with Moodle are a wide range of tools to support meaningful learning such as tools to manage resources (documents, lessons, glossary), tools to support communication (forums, chat, blog, wiki), tools to enable group work (wiki, database, forums, glossary), tools to support assessment (quizzes, assignments, gradebook) and tools to manage administration (groups, calendar, usage reports, gradebook, questionnaires).

Content Design

While there are many state-of-the-art technological tools that have made eLearning possible, the issue of making available good and high quality content is uppermost in the minds of eLearning providers and in many instances may be an impeding factor in the expansion of eLearning. Content design is the task of selecting and organizing the concepts, principles, theories and ideas that needs to be presented, understood and applied by learners. It may be described as the heart and soul of the eLearning development process and it is not surprising that the phrase "Content is King" has become a popular adage. It lays down the blueprint on what content to be presented and the structure of eLearning standards. How a learner would like to have the content structured, is what forms the backdrop of the content design process.

At AeU, the core concepts and principles are presented to learners in the form of Self-Instructional Modules (or SIMs) which are specifically designed to enable learners to study partly or wholly by themselves and have been described as "Tutorial-In-Print" (Rowntree, 1998). Courses at AeU use available open-educational resources (Phillips, 2010). OERs are defined as, digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.

Content is curated and presented aligned with the desired learning outcomes. This includes profiling the learner, stipulation of the aims, objectives and learning outcomes of the course, principles guiding selection of content and sequencing of content, guidelines on writing style, user-friendliness and physical layout presentation.

Learning Design

Learning design is the deliberate choices about what, when, where and how to teach. It is the task of getting learners to interact with the content supported by appropriate tools and technologies. It may be summarized as the design of activities that will spur:

- Learner-Content interaction
- Learner-Learner interaction
- Learner-Teacher interaction.

Learning design is facilitated though "Learning Activities" which are the tasks and exercises that assist students in making meaning from the contents of a subject or course. Learning activities which may include small group discussion, project work, debates, role playing, simulations, games and so forth are designed to ensure that the learner grasps the knowledge easily, retains the knowledge successfully, and is capable of transferring the knowledge through application in a real world situation (Teo & Williams, 2006).

Learning Outcomes

Whatever one does in the classroom, the key question that will be asked by teachers is whether learning will be enhanced or improved. The framework predicts that the interface between technology, content and learning design will result in enhanced learning (Jonassen, Howland, Mara & Crismond, 2007; Laurillard, 2006). Teachers will not be persuaded to use technology unless they can be convinced that their students will understand better, are able to remember, are able to apply concepts, are able to solve problems, are able to create and so forth.

Issues and Challenges

In a study on the challenges and trends in eLearning in Malaysian higher education (Mohamed Amin Embi, 2011), the following issues and challenges in implementing eLearning were identified:

- The main challenges related to the eLearning governance is shortage of staff and lack of incentives provided by the institution to those responsible for implementing eLearning.

- Several institutions still lack a clear eLearning policy, lack a governance structure and guidelines as to who is responsible for implementing eLearning.

- Some face the problem of a lack of support from the top management in their respective institutions.

- Institutions continue to face the problem of academic staff lacking IT expertise, busy with research and publications, burdened with heavy teaching loads and academic staff sceptical of eLearning.

- The main reasons given by lecturers who do not use the LMS provided by their respective institutions, include lack of training, no time, prefer traditional teaching methods, lack of technical support, lack of facilities and a burden to existing teaching loads.

- Motivation among the teaching staff and the lack of attendance during training.

- In terms of e-Content development, five major challenges faced by most institutions is the lack of motivation among the academic staff, lack of specialists, lack of a dedicated team to develop e-Content, lack of commitment among academic staff and lack of funding/budget.

- Specialized training on eLearning pedagogy should be increased because the eLearning pedagogy aspect is an important training component in ensuring the success and effectiveness of eLearning in higher education institutions.

- Lack of guidelines on e-Content standards and the suggestion was to use the guidelines developed collaboratively by CEMCA (Commonwealth of Educational Media Centre for Asia) and Ministry of Higher Education to control the quality of eLearning materials available at the tertiary level.

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Developing eLearning Strategy in Universities of Bangladesh*

by Badrul H. Khan

While growing up in Bangladesh during the 1970s, I used to dream about having access to well designed learning resources that were only available to students in industrial countries. In the 70s it was unthinkable that we might have equal access to those resources. In the 90s, it has become a reality. Now, we are blessed with the emergence of the World Wide Web (WWW), common known as the Web, as one of the most important economic and democratic media of learning and teaching at a distance. As the Internet is fast emerging, the Web as one of the most important information and communication technologies (ICTs) has become increasingly powerful, global, interactive and dynamic medium for sharing information. The Internet facilitates the flow of information and knowledge and made it globally accessible to people at reasonable cost. The Internet provides an open, dynamic and flexible learning environment with implications for countless applications with respect to education and training. Internet technologies provide an opportunity to develop new learning experiences for students which have not been possible before. As a result, students from around the globe can enjoy equal access to the many learning resources available on the Web (Khan, 1997).

In information society, there is a tremendous demand for open learning environment that is *affordable, efficient, easily accessible, well-designed, learner-centered and flexible*. Like other developed and some developing countries, Bangladesh should take maximum advantage of ICT based open learning opportunities to enhance education and training in Bangladesh.

There are numerous names for open learning activities, including eLearning, Virtual Education, Massive Open Online Courses (MOOCs), Flexible Learning, Distributed Learning (DL), Advanced Distributed Learning (ADL), Distance Learning, Online Learning (OL), Web-Based Learning (WBL), Web-Based Instruction (WBI), Web-Based Training (WBT), Internet-Based Training (IBT), Mobile Learning (or m-Learning) or Nomadic Learning, Remote Learning,

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* Presented at the Regional Workshop on ICT Leadership in Higher Education held at Dhaka, Bangladesh in December 2014.

Off-site Learning, etc. In this paper, I am using the term **eLearning or virtual education** to represent open and flexible learning.

> eLearning can be viewed as an innovative approach for delivering well-designed, learner-centered, interactive, and facilitated learning environments to anyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for the open and distributed learning environment (Khan, 2015).

In addition to virtual education, information and communication technologies (ICTs) can be used to support classroom-based learning as well. ICTs can also be used for *blended learning* (combination of traditional classroom with eLearning). According to the Virtual Colombo Plan notes, "Emerging applications of ICTs will have a profound impact on the evolution of virtual education by enabling more access to educational opportunities, enhancing the quality of teaching and reducing costs. ICTs can improve the delivery of education and broaden the range of options available for distance education, noting that policy and strategy must be tailored to local circumstances, and locally appropriate technologies found, to maximize the benefits and minimize the costs."

Application of ICT in the education systems of developing countries including Bangladesh will continue to lag behind developments in other parts of the world unless there are interventions that increase the capacity to participate more actively.

To meet the needs of education and training market today, more and more educational institutions in developing countries are likely to take advantage of ICTs to offer virtual education. In addition, educational institutions from abroad may offer courses and degrees to education market in developing countries. These institutions need policies and standards to participate in virtual education in developing countries. To exploit the full potential of virtual education, a sound *eLearning Strategic Plan* benefiting all strata of population, including persons with disabilities (PWDs), should be in place for each developing country.

In Bangladesh, we need *eLearning Strategic Plan for Higher Education* in order for each academic institution to develop appropriate strategies to initiate and implement eLearning.

eLearning Strategic Plan for Higher Education in Bangladesh

What does it take to create a successful eLearning system that meets the needs of all stakeholder groups? I believe a broad understanding of all important issues of open eLearning is critical to the development of strategic plan for eLearning initiatives in higher education institutions. In this paper, I would *first* describe various important

issues encompassing various dimensions of eLearning environment (Figure 8.1) and *then* provide an outline for the development of eLearning Strategic Plan for Higher Education in Bangladesh (or Virtual Education Plan).

With the advent of the Internet and online learning methodologies and technologies, providers of education and training are creating eLearning materials to fulfill the demand. Online learning is becoming more and more accepted in workplace. Institutions are investing heavily in the development and deployment of online programmes. Academic institutions, corporations, and government agencies worldwide are increasingly using the Internet and digital technologies to deliver instruction and training.

What does it take to create a successful eLearning environment for diverse learners? Well, a successful eLearning system involves a systematic process of planning, design, development, evaluation, and implementation to create an online environment where learning is actively fostered and supported. In order for an eLearning system to be successful, it must be meaningful to all stakeholder groups including learners, instructors, support services staff, and the institution.

Let's see what these stakeholders groups expect from an open learning environment. Since 1996, I have been communicating with learners, instructors, administrators, and technical and other support services staff involved in eLearning (in both academic and corporate settings) all over the world. Each stakeholder group has its own set of issues and concerns about eLearning. And they are critical! We must pay attentions to these issues if we want to be successful in eLearning. If you cluster these issues, they fall into eight categories or dimensions: *institutional, pedagogical, technological, interface design, evaluation, management, resource support* and *ethical* considerations in eLearning. With these eight categories or dimensions, I developed **A Framework for eLearning** (http://BadrulKhan.com/framework).

Figure 8.1: A framework for eLearning

Each dimension has sub-dimensions or factors, and each factor can generate one or more issues or checklist questions.

> **D**imensions (e.g., 1. INSTITUTIONAL) (Table 8.1)
>   **F**actors (e.g., 1.3.2. Orientation) (Table 8.2)
>   **I**ssues (e.g., a checklist item such as *Are instructor/tutor/technical staff available during online orientation?*)

Each dimension of the framework is composed of a number of factors. Table 8.2 lists several factors under each dimension. It is important to note that the factors identified here are by no means exhaustive. As we learn more about eLearning environments, the more and more factors may be added to the list.

Table 8.1: Eight Dimensions of eLearning Environment

Dimensions	Descriptions
Institutional	The institutional category is concerned with issues of administrative affairs, academic affairs and student services related to eLearning.
Management	The management of eLearning refers to the maintenance of the learning environment and distribution of information.
Technological	The technological category examines issues of technology infrastructure in eLearning environments. This includes infrastructure planning, hardware and software.
Pedagogical	The pedagogical category refers to teaching and learning. This category addresses issues concerning content analysis, audience analysis, goal analysis, medium analysis, design approach, organization, and learning strategies.
Ethical	The ethical considerations of eLearning relate to social and political influences, cultural diversity, bias, geographical diversity, learner diversity, the digital divide, etiquette, and legal issues.
Interface design	Interface design refers to the overall look and feel of eLearning programs. Interface design categories encompass page and site design, content design, navigation, accessibility and usability testing.
Resource support	The resource support category examines the online support and resources required to foster meaningful learning.
Evaluation	The evaluation of eLearning includes both assessment of learners and evaluation of the instruction and learning environment.

Table 8.2: Factors of eLearning Environments

1. INSTITUTIONAL
   1.1 Administrative Affairs
      1.1.1. Needs Assessment
      1.1.2. Readiness Assessment (Financial, Infrastructure, Cultural and Content readiness)
      1.1.3. Organization and Change (Diffusion, Adoption and Implementation of Innovation)
      1.1.4. Implementation
      1.1.5. Budgeting and Return on Investment
      1.1.6. Partnerships with Other Institutions and Stakeholders
      1.1.7. Program and Course information Catalog (Academic Calendar, Course Schedule, Tuition, Fees and Graduation)
      1.1.8. Marketing and Recruitment
      1.1.9. Admissions
      1.1.10. Financial Aid
      1.1.11. Registration and Payment
      1.1.12. Information Technology Services
      1.1.13. Instructional Design and Media Services
      1.1.14. Graduation Transcripts and Grades
   1.2 Academic Affairs
      1.2.1   Accreditation
      1.2.2   Policy
      1.2.3   Instructional Quality
      1.2.4   Faculty and Staff Support
      1.2.5   Class Size, Workload and Compensation and Intellectual Property Rights
   1.3 Student Services
      1.3.1   Pre-enrollment Services
      1.3.2   Orientation
      1.3.3   Faculty and Staff directories
      1.3.4   Advising
      1.3.5   Counseling
      1.3.6   Learning Skills Development
      1.3.7   Services for Students with Disabilities
      1.3.8   Library Support
      1.3.9   Bookstore
      1.3.10 Tutorial Services
      1.3.11 Mediation and Conflict Resolution
      1.3.12 Social Support Network
      1.3.13 Students Newsletter
      1.3.14 Internship and Employment Services
      1.3.15 Alumni Affairs
      1.3.16 Other Services

2. PEDAGOGICAL
   2.1 Content Analysis
   2.2 Audience Analysis
   2.3 Goal Analysis
   2.4 Medium Analysis
   2.5 Design Approach
   2.6 Organization
   2.7 Learning Strategies
      2.7.01 Presentation
      2.7.02 Exhibits
      2.7.03 Demonstration
      2.7.04 Drill and Practice
      2.7.05 Tutorials
      2.7.06 Games
      2.7.07 Story Telling
      2.7.08 Simulations
      2.7.09 Role-playing
      2.7.10 Discussion
      2.7.11 Interaction
      2.7.12 Modeling
      2.7.13 Facilitation
      2.7.14 Collaboration
      2.7.15 Debate
      2.7.16 Field Trips
      2.7.17 Apprenticeship
      2.7.18 Case Studies
      2.7.19 Generative Development
      2.7.20 Motivation

3. TECHNOLOGICAL
   3.1 Infrastructure Planning (Technology Plan, Standards, Metadata, Learning Objects)
   3.2 Hardware
   3.3 Software (LMS, LCMS, Enterprise Application)

4. INTERFACE DESIGN
   4.1 Page and Site Design
   4.2 Content Design
   4.3 Navigation
   4.4 Accessibility
   4.5 Usability Testing

5. EVALUATION
   5.1 Assessment of Learners
   5.2 Evaluation of Instruction and Learning Environment
   5.3 Evaluation of the Program

6. MANAGEMENT
    6.1 Maintenance of Learning Environment
    6.2 Distribution of Information

7. RESOURCE SUPPORT
    7.1 Online Support
        7.1.1   Instructional/Counseling Support
        7.1.2   Technical Support
        7.1.3   Career Counseling Services
        7.1.4   Other Online Support Services
    7.2 Resources
        7.1.1   Online Resources
        7.1.2   Offline Resources

8. ETHICAL CONSIDERATIONS
    8.1 Social and Political Influence
    8.2 Cultural Diversity
    8.3 Bias
    8.4 Geographical Diversity
    8.5 Learner Diversity
    8.6 Digital Divide
    8.7 Etiquette
    8.8 Legal Issues
        8.8.1   Privacy
        8.8.2   Plagiarism
        8.8.3   Copyright

Issues of eLearning Environments

Each factor in Table 8.2 focuses on a specific aspect of an eLearning environment. One could ask, *"What are the critical issues associated with many of these factors that can help in the design of meaningful eLearning environments?"*

There may be numerous issues within each factor of each eLearning environment. These issues can be explored as **questions** when planning an eLearning environment. Each eLearning project is unique. It is important to identify as many issues (in the form of questions) as possible for your own project by using the octagon framework. One way to identify critical issues is by putting each stakeholder group (such as learner, instructor, support staff, etc.) at the center of the framework and raising issues along the eight dimensions of eLearning. This way you can identify many critical issues and answer questions that can help create a meaningful eLearning experience for your particular group. By repeating the same process for other stakeholder groups, you can generate a comprehensive list of issues for your project.

As indicated previously, the purpose of this Framework is to help us think through every aspect of what we are doing during the steps of the eLearning *content planning* and *content implementation* phases (see Figure 8.2). Therefore, it is important to review each of the eight dimensions of this Framework, and explore what questions we should ask about each dimension as we design an eLearning environment segment, which can be *a lesson*, *a course* or an *entire program.*

Within the scope of this paper, I would like to discuss several important issues related to each dimension of the eLearning environment. Please note that
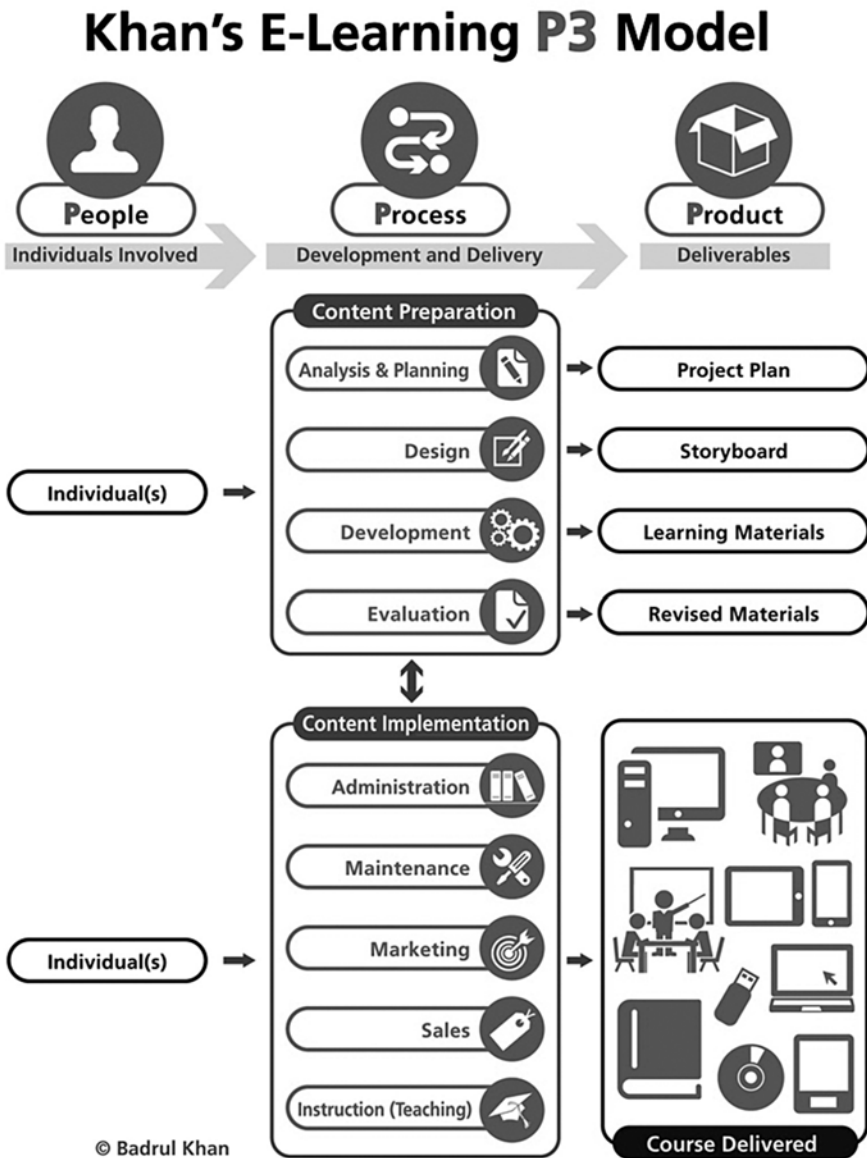

Figure 8.2: eLearning people-process-product continuum

there are myriad of important issues encompassing the various dimensions of eLearning environment that need to be explored. As you know each eLearning project is unique, I encourage you to identify as many issues as possible for your own eLearning project by using the framework. One way to identify critical issues is by putting each stakeholder group (such as learner, instructor, support staff, institution, etc.) at the centre of the framework, and raising questions along the eight dimensions of the eLearning environment. This way you can identify many critical issues that can help create meaningful eLearning environment for that particular group. By repeating the same process for other stakeholder groups, you can generate a comprehensive list of issues for your eLearning project.

Let me present some important eLearning issues (as questions) that might be raised by different stakeholders groups:

Would I be awarded the same credit for the development of an eLearning course as I would receive for the publication of an article in a professional journal or magazine?
Developing a well-designed online course requires a great deal of time and effort. Non-tenured faculty would probably be more interested in publishing than developing an online course if the course development does not provide any impetus toward tenure and promotion. This is a type of question a faculty member would ask when focusing on issues relevant to academic affairs section of institutional category.

Does the course make an effort to reduce or avoid the use of jargon, idioms, ambiguous or cute humor, and acronyms?
To improve cross-cultural verbal communication and avoid misunderstanding, we should refrain from icons, symbols, jokes, or comments that might be misinterpreted by others. In Bangladesh, thumbs-up sign means to disregard someone, but in other cultures it means "excellent or job well done." A pointing hand icon to indicate direction would violate a cultural taboo in certain African cultures because it represents a dismembered body part (this is also true for a pointing finger that indicates a hyperlink). A right arrow for the next page may instruct Arabic and Hebrew language speakers, as they read from left to right, to return to the previous page. This is a concern for learners with different cultural backgrounds. This is an issue relevant to the page and site design section of the interface design category.

How often is dynamic course content updated?
In designing eLearning, we need to consider the stability of course content. Content that does not need to be updated can be categorized as static (e.g., historical events, grammar rules, and the like). Content that has the potential to change over time can be considered dynamic (e.g., laws, policies, and so forth). Because dynamic content needs to be revised from time to time, it is necessary to identify such content in a course and establish an ongoing method for timely

updating as needed. It would be very frustrating for learners if they would find outdated or obsolete information. This is a concern that a student might have. This is an example of an issue relevant to the content analysis section of the pedagogical category.

Are all learning objects created for the course reusable and shareable?

If your institution creates learning objects by following the international interoperability standards (such as IEEE, or SCORM), they can be reused and shared by various courses within your institution and beyond. Reusable and shareable learning objects not only save money but also promote collaborations among eLearning partner institutions. This is a type of issue that an administrator would be interested in seeing included in the *infrastructure planning* section of the technological category.

Are students actually doing the work? How do we know we are assessing fairly and accurately?

These are the types of questions that will always be in the minds of online *instructors* and *administrators*. Assessment of learners at a distance can be a challenge. Issues related cheating are of major concern and an institution offering eLearning should have a mechanism in which a learner can be truly measured and not cheat. This is an issue relevant to the assessment of learners section in the evaluation category.

Does the course have encryption (i.e., a secure coding system) available for students to send confidential information over the Internet?

No institution is immune from hackers. Academic networks can be targets of hackers if they lack security. This is a concern for *network* managers, which falls under the security measures section of the *management* category.

Do technical and other support staff receive training on how to communicate with remote learners in difficult situations?

When students encounter repeated technical difficulties, they become very frustrated. It is not easy for technical support staff to deal with learners in such situations. Technical staff needs training to improve their communication skills. This is a concern for *technical* or *help line staff*. This is an issue relevant to the *online support* section of the *resource support* category.

Is the course sensitive to students from different time zones (e.g., are synchronous communications such as chat discussions scheduled at reasonable times for all time zones represented)?

This is an example of a question that a learner can ask in the geographical diversity section of the ethical dimension. As we know, scheduled chat discussions may not work for learners coming from different time zones. In the U.S., there are the six time zones. Therefore, you should be sensitive to diversity in geographical time zones (i.e., all courses where students can reasonably be expected to live in different time zones).

Are eLearning materials accessible to everyone?

In designing eLearning activities, digital divide issues should be considered to include the learners who are affected by this division. eLearning providers should make equal access to eLearning resources and materials to wider population. Since the loading speed on the Internet may vary with users' Internet connection speeds, eLearning designers should use multimedia elements that are essential to content. eLearning designers need to respect differences in bandwidth. Individuals with slow and unreliable Internet connections have to wait longer time to download large files which is very frustrating. Since images and videos without text alternatives are inaccessible to learners who are visually impaired for any reason, the use of alternate text for all non-text elements is essential in this regard. This is an ethical concern for *administrators* and *institution* when it comes to issues relevant to *digital divide* section of *ethical* dimension.

As you can see there are numerous issues that might be of concern to your stakeholder groups, most specifically—the learners—your eLearning customers. You may be thinking–*how many issues do I have to address? How many issues are necessary?* It depends on the goals and scope of your project. The more eLearning issues you explore and address, the more meaningful and supportive a learning environment you help to create for your target population, if you want your eLearning programmes to be marketable beyond your campus to the world. As you venture into global market, your scope of operation is extended. With this extended market, you have more issues to address for geographically diverse customers (i.e., learners).

Designing eLearning systems for diverse learners is challenging; however, as more and more institutions offer eLearning to learners worldwide, we will become more knowledgeable about what works and what does not work. We should try our best to accommodate the needs of stakeholder groups by asking as many critical questions as possible along the eight dimensions of eLearning environment. The number and types of questions may vary based on each unique eLearning system. Given our specific eLearning contexts, we may not be able to address all the critical issues within the eight dimensions of eLearning. We should find ways to address them with the best possible means that we can afford. It is important to ask many questions as possible during the planning period of eLearning design.

I hope that several examples of issues encompassing the eight dimensions of the eLearning Framework discussed above provide a snapshot of what an eLearning environment looks like. I believe that countries around the globe including Bangladesh can benefit from the eLearning Framework when developing their National eLearning or Virtual Education Plans for academic institutions. The framework can provide guidance for countries to create their virtual education plans with specific focus on *local circumstances and locally available technologies*. Based on the eLearning Framework (Figure 8.1), the following are graphical representations of *Bangladesh eLearning Strategic Plan* or *Virtual Education Plan* (Figure 8.3).

Figure 8.3: Bangladesh eLearning strategic plan or virtual education plan

Finally, I tentatively outline major elements of an **eLearning Strategic Plan for Higher Education in Bangladesh** which can be used by individual universities for their unique plans. Important issues within the eight dimensions of the eLearning Framework should be considered in developing for each element of the plan.

1. **Vision**
2. **Needs Assessment**
3. **Virtual Education Policy**
   3.1. Technology
   3.2. Disability
   3.3. Copyright and Legal Issues
4. **Virtual Education Guidelines**
   4.1. Faculty
   4.2. Students
   4.3. Partnership with Others
   4.4. Credit Transfers
   4.5. Compliance with Virtual Education Policy
5. **Resources and Finance**
   5.1. Budget
   5.2. Human Resources
   5.3. Content Available
   5.4. Equipment
   5.5. Existing Infrastructure
   5.6. Time
   5.7. Potential Participants
   5.8. Administration
   5.9. Funding Sources

6. Content Development

    6.1.   Instructional Design and Methodology

    6.2.   Technology for Development of Content

7. Content Delivery

    7.1.   Technology for Delivery

    7.2.   Human Support Systems

    7.3.   Technology Support Systems

8. Evaluation

    8.1.   Dashboard of Success Indicators (what will success look like?)

    8.2.   Formative Evaluation

        8.2.1. Evaluation of Content Development

        8.2.2. Pilot Testing

    8.3.   Summative Evaluation

        8.3.1. External Measurement

        8.3.2. Accreditation

    8.4.   Assessment of Learners

    8.5.   Instructor Evaluation

    8.6.   Technology and Support Services Evaluation

    8.7.   Administrative Support Services Evaluation

    8.8.   Summative Evaluation.

In conclusion, reflecting on their needs, capabilities and resources, I hope that universities in Bangladesh will consider creating their own eLearning plans by carefully addressing the issues outlined above, and enhance their education by appropriately utilizing learning methodologies and technologies that best suit their institutional mission aligned with the national educational goals. As more and more institutions across the globe are increasingly adopting eLearning as a viable delivery medium for quality education, Bangladesh should not lag behind.

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Developing E-Learning for Kazak National University. By Aigul Imadildayeva. The university's current system is not reliable; also it is outdated in terms of its structure; and need to be replaced with e-learning system. Khan's Octagonal theoretical model for e-learning has been used in order to lead this project.
http://esonarbangladesh.com/wp-content/uploads/2012/05/DEVELOPING-E-LEARNING-FOR-KAZAKH-NATIONAL-UNIVERSITY. 1-238.pdf

About the Author: Dr. Badrul H. Khan, is an author, educator, and consultant in the field of eLearning. Previously he served as Professor and Founding Director of the Educational Technology Leadership graduate cohort program at the George Washington University, and the Educational Technology graduate program at the University of Texas at Brownsville. Currently, he is serving as an Honorary Distinguished Professor of eLearning at the Egyptian eLearning University.

Creating Environment for Sharing Educational and Research Resources*

by V. Venkaiah and Sanjaya Mishra

Introduction

Traditionally universities have three specific roles – to teach, to create new knowledge, and to serve the society. We normally call these as Teaching, Research and Extension. Essentially universities are centres of scholarship and excellence that comes from the research base of the faculty and students. Boyer (1990) refers to four components of scholarliness:

- **Discovery** – as creation of new knowledge in a specific discipline, often used synonymously with research and closely related to scholarly communication.

- **Integration** – as making connections across the disciplines by bringing in new insights, giving meaning to isolated facts and interpreting data together in an integrated manner to extend the boundaries of human knowledge. In the context of scholarly communication, it will also be a form of research using new methodologies and statistical tools such as meta-analysis.

- **Application** – as service activities that are tied directly to one's special field of knowledge and flow from the expertise of the scholar. Weller (2011) says this "can also include the time spent peer-reviewing journal articles and grant applications and sitting on various committees".

- **Teaching** – as a scholarly enterprise beyond the mundane transmission of facts. Teaching is at the highest level of scholarly activity because teachers must be well informed and have expertise in their field to teach. Twelve hours of classroom teaching every week can be heavy workload, if we consider the rigour needed for careful pedagogical planning and preparations needed to deliver each hour of lecture or engagements with the students. Certainly teaching is about 'inquiry into learning' than simple transmission of knowledge.

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* Revised and updated version of the paper presented at the Workshop on ICT Leadership in Higher Education held at Hyderabad, India in February 2014.

Research edge enables university to provide better teaching quality as well as service to the society. However, in recent times there has been a distinction amongst research and teaching university, with less emphasis on their extension role. While the university's engagement with the community it serves is essential to contribute to the growth and development of the local economy, university's research and teaching roles take the university beyond local, regional and national boundaries. In view of this, the presentation will focus on creating an enabling environment for quality research and training. While there is a variety of actions required to build world class research and teaching university, this presentation will focus on the policies that may assist in fostering of quality in the universities.

Why Policies are Important?

Policies are predetermined course of action established to guide the organizational actions towards achievement of its short-term and long-term objectives. It normally has a direct link to the vision and mission of the organization. Policies are important as they serve as guide, and assist the senior management to adopt fair and logical procedures to administer and distribute funds. Normally policies would include: general perspective, as to why it is being put in place, from which sections of the university act the policy derives its power, when the policy is applicable, who are covered by the policy, what actions are encouraged within the policy, how the policy is administered, and what are the consequences of adherence or otherwise to the policy. Thus, it clarifies the position of the university and provides clear message to the staff members to follow the policy.

This paper focuses on policies for *Open Educational Resources* and *Open Access to scientific information*. OER and OA are two sides of the same higher education ecosystem, and are essential to improve the quality of teaching and research.

Open Educational Resources (OERs)

While MIT's OpenCourseWare started in 2001, UNESCO convened the Forum on the Impact of OpenCourseWare for Higher Education in developing countries in 2002 that deliberated upon the use of open learning materials, and coined the term Open Educational Resources. Prof. V.S. Prasad in the event then observed, "The OpenCourseWare concept is based on the philosophical view of knowledge as a collective social product and so it is also desirable to make it a social property". In the last ten years, several initiatives have been successful to showcase that OERs are strong and powerful way of making education resources accessible and promote the quality of teaching and learning engagement. Some such successful OER initiatives are Connexion, OpenLearn, WikiEducator, etc.

In the June 2012, the UNESCO and Commonwealth of Learning with the support of William and Flora Hewlett, Hewlett Foundation organized the World OER Congress that resulted in the OER Paris Declaration 2012. The OER Paris declaration defines OER as "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. Open licensing is built within the existing framework of intellectual property rights as defined by relevant international conventions and respects the authorship of the work".

It calls upon the Governments, institutions and individual teachers to take steps to promote and develop OER. Some of the recommendations are summarized in table below:

Governments	Institutions	Teachers
1. Promote awareness and use of OER	9. Promote awareness and use of OER	17. Promote awareness and use of OER
2. Bridge digital divide by developing infrastructure (broadband, mobile, electricity)	10. Improve media and information literacy	18. Develop and use OER
	11. Develop institutional policies for OER	19. Engage in peer review of OER
3. Develop national policy for OER	12. Educate stakeholders on open licenses and copyright	20. Promote quality of OER
4. Promote use of Open licensing frameworks	13. Promote quality assurance and peer review of OER	21. Develop OER in local languages
5. Support capacity building initiatives on OER		22. Contextualize OER
	14. Develop strategic partnerships to avoid duplication of work as well as technologies	23. Conduct research on OER
6. Encourage and support research on OER		24. Share learning materials prepared
7. Adopt open standards and technologies for interoperability	15. Encourage and support research on OER	
8. Encourage open license for materials produced using public funds	16. Develop tools to facilitate access to OER	

Considering this, the Commonwealth of Learning has developed a national policy template to help Governments adopt enabling policies for promotion and use of OER. It is also essential to develop a template for institutional policy.

The OER Africa recommends the following for consideration while developing institutional policy for OER:

- Does institutional policy provide clarity on IPR and copyright on works created during the course of employment (or study) and how these may be shared with others, e.g., partner institutions?

- Does HR policy provide guidance regarding whether or not the creation of certain kinds of work – e.g., learning resources – constitutes part of the job description of staff, and are the implications of this for development, performance management, remuneration and promotion purposes clearly stipulated?

- Does the institution have ICT policy regarding access to and use of appropriate software, hardware, the internet and technical support? Is provision made for version control and back-up of the repository of institutional works?

- Does the institution have materials development and Quality Assurance (QA) policy guidelines to ensure appropriate selection, development, QA and copyright clearance of works that may be shared?

CEMCA has developed an institutional OER Policy template[1] (see Appendix) that universities should review and adopt.

Open Access to Scientific Information

The journal as the major source of scholarly communication had its origin in the 17th century, when Henry Oldenburg created the *Philosophical Transactions of the Royal Society of London* in 1665. Over the years, the journal has emerged not only as a means to communicate new finding to peers, but also has become a vehicle for establishing 'ownership'. Guedon (2001) says the journal is a social registry of scientific innovations, through which researchers seek recognition. The journal as the primary communication system does the following (Cronin, 1984):

i.   Records and 'rubber stamps' individual and collective achievements;

ii. Disseminate knowledge;

iii. Ensure preservation of standards; and

iv. Distribute credits and recognition to those whose earlier work has contributed to the development of idea.

In 1961 Derek J. de Solla Price analysed the growth of science journals during 1650 and 1950 and indicated a growth rate of 5.6 percent per year, with a doubling time of 13 years. The number recorded for 1950 was 60,000 journals

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[1] http://www.cemca.org.in/ckfinder/userfiles/files/DRAFT%20OER%20POLICY%20template_revised.odt

with a forecast of one million in 2000 (Price, 1961). This of course covered all journals in existence, not the active ones alone. The International Standards Serial Number (ISSN) registered a total of 15,55,307 titles till 2010, and the corresponding number for 2002 is 10,72,023 which is near the predication by Price (1961)! In another study Price (1963) estimated the growth rate as 4.7 percent with a doubling time of 15 years. Larsen and von Ins (2010) after analysing the growth of scientific publications from 1907 to 2007 concluded that the growth rate of science is lower than 4.7 percent in established disciplines, but overall the growth rate is still 4.7 percent and there are about 24,000 peer-reviewed journals. There are 114,866 journals recorded in Ulrich's International Periodical Directory (2012), of which 27,432 are peer-reviewed, scholarly, active and primary journals. The Directory of Open Access Journals (DOAJ) reports over 7459 open access journals in January 2012. The total number of journals is an useful indicator, if we are interested in subscribing the journals in a library. It is not very useful in the conceptual age, when scholars are interested in specific piece of information available immediately after production (from the lab; and not the publisher). Björk et al (2008) estimated that about 1,350,000 articles were published in peer-reviewed journals in 2006. Jinha (2010) estimated that nearly 50 million articles were published by the end of 2008. This is quite impressive, and raises questions about equitable and perpetual access as well as preservation and sharing of global knowledge as heritage resource. It is in this context Open Access (OA) to scientific information plays a significant role.

OA is the provision of "literature online, free of charge and free of most copyright and licensing restrictions" (Suber, 2004). The Open Access Directory (OAD) lists Educational Resources Information Centre (ERIC) as the first initiative towards OA in 1966 in the modern sense to provide free access to public. However, OA as a movement started at a meeting in 2001 organized by the Open Society Institute in Budapest, which later came to be known as Budapest Open Access Initiative (BOAI) that states OA means "free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited" (BOAI, 2002). Later the Berlin Declaration on Open Access to Knowledge in the Science and Humanities (2003) specified that OA literature must meet the following two conditions:

1. The author(s) and right holder(s) grant(s) free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as

well as the right to make small numbers of printed copies for their personal use; and

2. The complete version of the work and all supplemental materials, including a copy of the permission as stated above, and deposited in at least one online repository in such a way to allow unrestricted distribution, interoperability, and long-term archiving.

While a complete OA world as defined in Berlin Declaration is a long way to go, OA has gained momentum due to the rising cost of journals, and the initiative of scholars and scientific establishments to respond to the situation through different ways to promote OA to scholarly information – (i) Green route, (ii) Gold route, and recently (iii) Platinum route.

The green route refers to OA archives/repositories through which authors provide access to their work as pre-print or post-print and with or without publisher's embargo. The earliest OA archive is arXiv developed by Paul Ginsparg in 1991 at the Los Alamos National Laboratory, USA, and currently hosted at the Cornell University providing access to over 733,199 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics. Today there are about 3950 repositories that are OAI complaint, and the Cybermetrics Labs ranks about 1200 of these. Institutions are also adopting relevant policies to adopt green route to OA. By December 2012, the ROARMAP listed 365 policy mandates in support of OA, of which 197 were institutional policies, 66 funder policies, and 98 thesis mandates. Research funding bodies like the National Institute of Health (NIH) and Wellcome Trust have also adopted OA policies to increase access to scholarly literature that are results of support received from them. Bjork et al (2010) estimated that 11.9 percent of all scholarly articles published in 2008 were available through green OA. The green route can take the form of institutional repositories or subject repositories, and most OA advocates see this as least problematic and achievable road to OA.

The gold route is about journals that are available online for free access. The Directory of Open Access Journals (DOAJ) listed 9772 journals in early 2014. Björk et al (2010) estimated that 8.5 percent of all scholarly articles in 2008 are available through gold OA. Another study by Laakso et al (2011) analysed the growth of gold OA and concluded that the average annual growth rate of gold OA since 2000 has been 18 percent for number of journals and 30 percent for number of articles, which is in contrast to just 3.5 percent yearly volume increase in journal publishing in general. Gunasekaran and Arunachalam (2011) reported that of the 4603 papers contributed by Indian researchers reported in Web of Science – Science Citation Index Expanded in 2009, 15.88 percent were published in OA. The gold OA has shown many innovative access routes such as the mega journals like PLOS ONE that published about 14,000 articles in 2011. Many journal publishers have also started hybrid OA journals that accept Article

Processing Charges (APC) to provide OA to specific article as a choice by the author. OA journal publishers also offer 'big deals' to institutions as subscription model for institutional publications thereby reducing the cost of publication in OA journals.

A third model of OA is emerging in the recent past due to the influence of the Web 2.0 technologies. It is called the platinum route – the social networking approach to sharing research work. While it is a self-archiving approach, it is neither institutional nor subject-based. Some of the popular research works sharing platforms are Mendeley, Academic.edu, and Research Gate. Mendeley alone claims to have over 157 million papers, which is questionable but shows promising role for providing OA to scholarly information. UNESCO in November 2011 launched the Global Open Access Portal (GOAP) that provides knowledge snapshots of OA developments in different countries of the world, linking to different initiatives, projects, repositories and journals.

Through Open Access, researchers and students from around the world gain increased access to knowledge, publications have greater visibility and readership, and the potential impact of research is heightened. Increased access to and sharing of knowledge leads to opportunities for equitable economic and social development, intercultural dialogue, and has the potential to spark innovation. Open Access allows researchers to gain access to previously restricted knowledge and new knowledge as it is being produced, wherever it is being produced. It is at the heart of UNESCO's goal to provide universal access to information and knowledge.

Open Access enables:

- Increased access to current scientific research for researchers and scientists;

- Global dissemination of research and scholarship of individual researchers and Institutions;

- Improvement in the impact of research;

- Institutions and scholars to be cited more; and

- Higher Return on Investment (ROI) of research grants as research results are publicly and freely accessible.

UNESCO in 2012 released a set of sample policies for consideration by institutions to adopt for increasing OA to scientific information. Swan (2012) has suggested that while formulating policies for OA, the following may be considered:

- Policies should mandate deposit of research papers by scholars in institutional repositories; this will also help institutions while promoting teachers;

- All types of research content should be considered such as published paper, conference proceedings, project reports, theses and dissertations;

- While free access is necessary, institutions may also promote open license (as in OER);

- While the policy may recommend publication in OA journals, immediate deposit in institutional and/or subject repository of online access be mandated;

- Institutions may consider Article Processing Charged (APC) in OA journals as legitimate research cost, and may also create central fund as part of the policy;

- The policy should also cover compliance issue as deposit is the responsibility of the researchers, while a central staff may also be assigned the role to assist the scholars.

UNESCO adopted Open Access policy for all its publications in July 2013.

Conclusions

Information and Communication Technologies have transformed the teaching-learning environment in several ways resulting in increasing demand for quality higher educational resources. Sharing of educational resources has emerged as a means to enhance the quality and access to education. The Governments, the policy makers, university administration and teachers have a greater responsibility in creating an enabling environment to develop and share quality Open Educational Resources for the benefit of the various stakeholders of higher education. The UNESCO has made specific recommendations to the Government, institutions and teachers regarding the proactive role they could play in the direction of promoting the OERs as a national policy and philosophy as well as the need to inculcate the culture of sharing the resources by academics and researchers. Considering the need and utility of OERs, universities in the Asian Commonwealth countries may initiate steps to adopt a Consortium Model, say, "Open Education Resources Consortium of Sri Lanka" on "Open Education Resources Consortium of Bangladesh" and contribute their share to the OER movement for everyone's benefit. All of us, as administrators, teachers and users, have our own responsibility of bringing about awareness and building the knowledge resource base by contributing our materials for free access and use to realize the objectives of democratizing higher education.

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Institutional OER Policy Template*

1. Preamble

The [*name of the University*] established under the act of [*detailed description*] is dedicated to *increasing access to quality higher education through appropriate use of open and distance learning methods* [or] to *providing access to quality higher education* {for face-to-face universities}, including through provisions of open distance and lifelong learning opportunities. Provision of quality learning materials forms an important strategy in providing access to quality education, and the affordances of information and communication technologies including the Internet and World Wide Web has enabled providing anytime, anywhere access to educational resources online. Number of platforms and resources are now available online for the learners, and due to the read-write abilities of the Web 2.0, teachers are sharing their works online more often than before. While educational materials are being shared online for personal use of the online users, most of the learning resources are available under default copyright requiring permission from the authors/creators to re-use, revise, re-mix, and re-distribute. To facilitate adoption and adaptation of existing learning resources, they must be available under open licenses, which is a legitimate provision under copyright law. Considering importance of the sharing of educational materials in the developing countries, the 2002 UNESCO Forum on the Impact of OpenCourseWare for Higher Education in developing countries coined the term Open Educational Resources (OER) and expected to create a network of resources available freely for the use of the humanity as knowledge commons. While the movement of OER has grown over the years with several platforms and projects, UNESCO and the Commonwealth of Learning (COL) in 2012 organized the World OER Congress that urged governments and educational institutions to adopt OER policies to promote the use of OER. Adoption of OER policy in the [*name of the university*] will create the enabling environment for all the stakeholders of [name of the university] to create and use OER in production of educational resources and enable them to share these under appropriate open licenses.

2. Definitions

2.1. *Open Educational Resources* are defined as teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain

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* Prepared by CEMCA in the ICT Leadership in Higher Education Workshop in 2013 at Hyderabad.

or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

2.2. *Content Developers:* Any person engaged in the development of teaching and learning materials used by the *University*.

2.3. *Copyrights:* Refer to laws that regulate the use of the work of a creator, such as an artist or author. This includes copying, distributing, altering and displaying creative, literary and other types of work. Unless otherwise stated in a contract, the author or creator of a work retains the copyright. The author/s retains the moral rights to assign the rights to any other person or share the materials with others in any other conditions he/she may desire.

2.4. *Open License:* A license that specifies what can and cannot be done with a work (whether sound, text, image or multimedia). It grants permissions and states restrictions. Broadly speaking, an open license is one which grants permission to access, re-use and redistribute a work with few or no restrictions. Creative Commons has open licenses in six different types.

2.5. Any other definition: [to be added or deleted]

3. Purpose of the Policy

3.1. The purpose of this OER Policy is to:

- Make materials available under Creative Commons licenses
- Support voluntary participation of Faculty and others in developing OER content
- Clarify publication rights and licensing issues
- Provide guidance in development and review of OER materials prior to sharing them on a worldwide scale
- Define collaborations within and without the university with the intent to allow access to the open content.

4. Applicability

4.1. The OER policy is applicable to the following:

4.1.1. All content developers within the university and those engaged by the university for writing materials on short-term basis as subject matter experts for payment of certain fees or for free.

4.1.2. All types of learning materials released in any physical or electronic format.

4.1.3. In cases where the material is developed in collaboration/partnership with other institutions, the guidelines governing that collaboration

as indicated in the MOU/MOC will prevail. However, any such agreement should duly consider the OER Policy before any deviation is agreed upon with justification approved by the competent authority of the University.

5. Types of Licences

5.1. While the *University* supports free and open access to all educational resources and will make them freely available on OER Repository through Creative Commons Attribution all contents it owns or co-owns with the following exceptions:

5.1.1. The University may make exceptions to the sharing of intellectual property it owns on a case by case basis with detailed reasons for limiting the free access to material. Such restrictions should be time dependent.

5.1.2. Intellectual property owned by the University that it considers is commercially sensitive may also be restricted.

5.2. Open licensing allows IP owners to modify the copyright on the intellectual property to facilitate openness. The most popular and well-known open license is the Creative Commons license (CC). Creative Commons licensing does not change the copyright ownership; it rather allows for affordances and sets stipulations for end-users based on the following license conditions:

5.2.1. Attribution (By) – The standard condition for CC license in which usage requires citing, referencing of the creator/source.

5.2.2. No Derivatives (ND) – This condition mandates that no derivative works or adaptations may be made by users.

5.2.3. Non-Commercial (NC) – This condition mandates that users do not sell or make commercial usage of the licensed materials.

5.2.4. Share-Alike (SA) – Usage requires that any derivatives, remixes, or adaptations of the work be licensed under the same Creative Commons license.

5.3. Six specific types of CC licenses are available at http://creativecommons. org/licenses/ .

5.4. The choice of license will be decided by the faculty concerned who has developed the material and shall be vetted by the internal OER Quality Review Board. Or All materials developed by it and having exclusive rights shall be released on the university OER Repository site under [*Specify the specific CC license*].

5.5. For derivatives and reproductions of other CC licensed materials, the University will follow respect the CC provisions and the licenses therein.

5.6. While sharing the materials of the University in appropriate licenses, it does not permit derivatives to use University logo for differentiation from the original.

6. Quality Assurance and Review System

6.1. The *University* OER Repository strives to provide resources of the highest quality. The reviewing process will be carried out at different levels.

6.2. *University* curriculum based learning resources developed through peer reviewing and strict quality assurance mechanism inbuilt in the course development process will not require further reviewing for uploading on the repository. All other contributions will be peer reviewed within the department before uploading on the OER Repository.

6.3. The OER Board will adopt a set of quality assurance guidelines and indicators to help teachers focus on quality of OER.

6.4. At the university level, an OER Board will be created to review policy as well as the production, delivery and access processes of OER.

6.4.1. Such a Board will constitute the following members: [Chair of the Internal Quality Assurance Cell, Registrar, Academic Dean/s, Head of the departments, and selected 2/3 OER experts from the staff on rotation basis].

6.4.2. The OER Board shall have a [3] years term, and will report annually to the Academic Council through the Vice Chancellor.

7. Liability

7.1. All OER materials shared at the *University* OER Repository to the world at large will carry a disclaimer indicating that the material is for educational purposes only and that the university absolves itself of any practical misuse of the OER materials or their content. OER materials authored and published by faculty and staff of the university and others does not necessarily reflect the opinion of the university.

7.2. All learning materials published under CC license should include the following information in the credit page:

© Year, *Name of the University*. This learning resource is available under [*Specify the license with link to the legal code*]. Derivatives of this work are not authorized to use University Logo.

8. Role of the Faculty/Teachers/Content Developers

8.1. The faculty member responsible for development of a course shall be the person responsible for management and adoption of OER in the specific course. However, the discipline concerned shall take appropriate decision, on why a course will not be put on CC license, in a meeting and put the same on record.

8.2. In general, the concerned faculty should search for appropriate OER to adopt/adapt in a course, thereby reducing the cost of the course production, as well as reduce the time to produce such material, and improve student learning.

8.3. [If no OER is available in a topic, then that part of the content should be developed either by internal faculty or by engaging an appropriate expert from outside as per the normal procedure of the University.] *This is for open universities and distance teaching institutions.*

8.4. When an external writer is engaged, the material should be reviewed, and appropriate copyright assigned to the University with indemnity to the *University* for plagiarism, if any, so that the material can be released by the *University* under CC licence.

9. Institutional Arrangements

9.1. The teaching-learning materials produced by the university shall be shared in a suitable online platform.

9.2. The central IT department shall be responsible for providing access to all the stakeholders, and maintenance of the platform.

9.3. Faculty and staff members engaged in OER development shall be regularly provided with capacity building opportunity by the IT department to familiarize the stakeholders of the opportunities and technical feasible options of the platform.

9.4. Regular update on Copyrights, OER and Open License shall be organized by the IT department/staff training unit to promote the use of OER.

9.5. In order to assist the teachers to adopt OER, a workflow mechanism suitable to the course development practice in the university is at Appendix-A (to be developed locally).

Six Types of Creative Commons Licenses

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