DRIVING AND IMPLEMENTING TECHNOLOGICAL CHANGE IN IRISH UNIVERSITIES — NATIONAL AND SECTOR ICT RESPONSES TO FLEXIBLE LEARNING AND DELIVERY

Mairéad Nic Giolla Mhichíl
School of Fiontar
Dublin City University
Ireland

Abstract

Reform and innovation is at the top of the agenda of many national higher education systems. This paper examines Irish ICT policy and initiatives at national and sector levels in the domain of flexible delivery. The review is placed in the context of international research on the role of ICT and E-Learning in the strategic development of higher education. The paper concludes by proposing that Irish universities implement a framework to analyse the implementation of ICT and e-learning to inform the strategic development of flexible delivery of higher education in Ireland.

Introduction

Ireland's higher education (HE) sector is formed on a binary system comprised of seven universities and thirteen regional institutes of technology. The Higher Education Authority (HEA) is the statutory planning and development body for higher education and research in Ireland. Its role includes funding authority and advisory body (Higher Education Authority, 2007). The Irish National Development Plan (NDP) 2007–2013 aligns the capacity and quality of Ireland's higher education system with the country's fundamental social, economic and cultural welfare (Government of Ireland, 2007). Challenges facing Irish and other universities are described by Coolahan as:

> Relentless globalisation, technology change, the advance of science, and the digitisation of information are breaking down barriers between countries. These forces will drive competition, productivity and new business models. Businesses are re-inventing themselves for these changes. Is higher education? (2004, p.160)

These issues are by no means exclusive to the Irish higher education context. As with many other EU and international governments, the rhetoric, policies and funding regime of the Irish government focus on reform and development of the sector. This paper identifies national and sector information communication technologies (ICT) policies and initiatives aimed at supporting flexible learning and delivery in the university sector in Ireland. Flexible learning in the context of

this paper incorporates Van der Brande's (1993) definition and is cognisant of the role of pedagogical, organisational, technological, economical processes and cultural readiness (Seufert & Euler, 2003) to support the provision of such flexibility using ICT /e-learning:

> Flexible learning is enabling learners to learn when they want (frequency, timing, duration), how they want (modes of learning), and what they want (that is learners can define what constitutes learning to them)
> (Van der Brande, 1993, p. 2)

E-learning and ICT are used interchangeably and encompass Gallagher's definition "the use of digital technologies to support and deliver some or all of the teaching and learning for a particular unit of study" (Gallagher, 2003, p. 11). An overview of the literature of ICT/e-learning and strategy provides a contextual backdrop for the role of ICT in the strategic development of the university. The paper concludes by recommending that the university sector adopt a framework to evaluate current e-learning/ICT practice within the Irish university — ensuring that flexible delivery and learning is developed in a strategic context across the sector.

National and Sector ICT Policies

Identifying an explicit or cohesive articulation of ICT policy to support flexible learning and delivery in HE by the Irish government or the HEA is problematic. It appears as if the main thrust of national ICT policy and funding was to substantially invest in the establishment and modernisation of the technology infrastructure through the Technology in Education Fund (Mac Keogh, 2001), the National Backbone Project, the Next Generation Internet Project and the Training of Trainers Initiative (Eurydice, 2001). The HEA strategic initiative (Technology in Education) provided support beyond infrastructure requirements — promoting the integration of ICT into third level activities of teaching and research.

National and sector initiatives in HE where ICT has played a role in supporting flexible learning and delivery do exist as sub-components of broader HE policy (Irish University Association, 2003) and other policies linked with the wider national development. Examples include the upgrading of IT systems for student records (Higher Education Authority, 2004), the development of a National Digital Learning Repository (Higher Education Authority, 2004) and the launch of the Irish Research E-Library (Science Foundation Ireland, 2006). A specific role for ICT and e-learning is set out in the NDP 2007–2013, as part of the drive to reform and modernise teaching and learning and programme delivery in HE. Measures include the:

- Development of innovative models of course delivery including use of ICT, e-learning and distance learning,
- The introduction of teaching and learning reforms including enhanced teaching methods, programme restructuring, modularisation and e-learning (Government of Ireland, 2007, 204)

The principle funding mechanism established to implement the NDP objectives is the Strategic Innovation Fund (SIF). A total of €139 million was allocated to HE under two funding calls[1] in 2006 and 2007. The university sector umbrella organisation Irish University Association, received funding of approximately €5.5 million under cycle II of SIF for six programmes. A high level overview of these projects suggests their limited association with the promotion of flexible learning and delivery. This is in contrast with the joint-application of the institutes of technology. Their funding project in receipt of €8.5 million is described as:

> In keeping with current government and market need, the IOT's (Institutes of Technology) and DIT (Dublin Institutes of Technology) commit to mainstreaming supported flexible learning within and between their institutes as an innovative and complementary mode of delivery. (Higher Education Authority, 2008a, p.10)

The university sector in spite of the sector SIF application appears cognisant of the potential of ICT to facilitate flexible learning and delivery (Irish University Association, 2005). Recommendations made by the sector in their policy paper of reform and modernisation of HE include:

- Integrated sectoral, e-learning programmes, with a particular focus on blended learning (p. 15)
- Establishment of knowledge management systems to underpin the development of collaborative networks across the sector (p. 17)
- Establishment of the technical infrastructure required to implement e-learning initiatives (p. 17)

These proposals identify infrastructure and administrative requirements — the potential to develop sector initiatives do exist and should be examined in any future development. A proposal prepared for SIF cycle II under the auspices of the

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[1] Objectives of the SIF are wide ranging including: structural reform and rationalisation, the development of inter-institutional collaboration to improve teaching and research; the expansion and development of post-graduate education; innovation and quality improvements in teaching and learning inclusive of modularisation and e-learning; and finally the support of access, retention and progression across the sector (Higher Education Authority, 2006)

Dublin Region Higher Education Alliance[2] (an amalgamation of universities and institutes of technology from the greater Dublin area) sets out a progression for e-learning amongst the alliance (Dublin City University, 2007). Projects include the establishment of an e-learning network of excellence and support for online collaboration and peer learning tools within the alliance. SIF cycle II funds directed at systems development however have been held back — with unclear implications for these initiatives. The context of this decision may be in light of the recent HEA policy review and public consultation for open and distance learning (Higher Education Authority, 2008b).

Potential areas of flexibility (Fisser, 2001, p. 38) supported by ICT can include:

- Flexibility in location — where the learner can carry out learning activities
- Flexibility in programme — based on the learner's experiences, sub-elements of courses can be chosen in terms of the learner's needs and interests
- Flexibility in interactions with a course — supporting group, collaborative or individual work
- Flexibility in forms of communication — a wider variety of ways of communication
- Flexibility in study materials — wider choice of resources and modalities

Technology initiatives address some of these areas of flexibility — a thorough sector analysis to investigate the impact of these initiatives under SIF has yet to be completed. Outside of SIF, all universities invested in training and infrastructure (hardware, software), in the development and deployment of virtual learning environments (VLE), or learning management systems to support programme delivery. It is unclear if these systems are used primarily for information transmission purposes, administrative functions, or teaching and learning activities to support flexible learning and delivery. VLEs provide in themselves a variety of communication and interactive tools with universities also providing email, intranet and portal page facilities to students. Therefore, technology providing flexible communication is in place within the institutions.

An analysis of e-learning activities of Irish universities completed as part of the Leonardo da Vinci Project "Megatrends in e-learning provision" included five

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[2] Dublin City University, National University of Ireland Maynooth, Trinity College Dublin, University College Dublin, Dublin Institute of Technology, Institute of Technology Blanchardstown, Institute of Technology Tallaght, Dún Laoghaire Institute of Art, Design and Technology.

Irish universities[3] in the report (Arneberg et al., 2007). Criteria for inclusion as a megaprovider of e-learning is an institution with "more than 5000 enrolments in e-learning courses per year" or "more than 100 online courses on offer at any one time" provided that "students were distance education students, that is, students who did at least 50.1% of their course off-campus" (Arneberg et al., 2007, p. 5). The inclusion of five universities indicates on initial examination the comprehensive support amongst the universities for e-learning integration in programme delivery. Establishing the support for e-learning amongst Irish universities using data from this research should take the following factors into account; the criteria assessing Irish institutes was revised due to low population numbers and data in the study relating to the Irish institutions is ambiguously presented which could lead to misinterpretation. Therefore, questions remains regarding the actual level of e-learning within each institution and the nature and extent of its implementation to facilitate programme delivery.

All universities have institutional centres focusing on ICT and learning. These centres and their learning technologists support staff in the integration of ICT into teaching practices. They encourage innovation and support best practice throughout the institution by both staff and students (Irish University Association, 2003). These initiatives include the examination of pedagogy, assessment, course structure and learning resources. Analysing flexibility within programmes or personalisation of learning as advocated by Laurillard (2004) appears to be lower down the teaching and learning agenda within the institutions. At institutional level, the universities provide varying degrees of administrative, infrastructure, technical and pedagogical support for the incorporation of ICT/e-learning components to facilitate flexible delivery.

Flexible learning developments at sector and national levels are the by-products of other activities and policies, e.g. widening of access, development of administrative systems and improvement of the research environment. This may be the result of a wide variance between institutional strategic goals for e-learning within the sector (Lee et al., 2004) — indicating a fragmented policy approach. An examination of ICT in university strategy could be a useful exercise to provide data and insight into ICT associated policy development or assessment at the institutional, sector and national levels.

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[3] Dublin City University, Trinity College Dublin, University College Dublin, NUI Galway, NUI Cork

Analysing ICT's Role in University Strategy

Universities are described as complex organisations with many structural and decision making weaknesses (Birnbaum, 2000). De Boer et al. (2002) claim that the implementation of ICT within and between HE institutions (HEI) and countries varies due to:

> Disciplinary differences, institutional decision-making structures, (weak versus strong corporate power) and financial conditions account for the variety in the level of the implementation. (p. 24)

Fisser (2001) states that using ICT encourages a change process within universities — involving change during: pre-initiation, initiation, implementation and institutionalisation of an ICT for learning and teaching. These stages are similar to Jasinki's (2007, p. 1) categorisation of ICT or e-learning innovation as a four staged process of:

- Adoption — initial decision to engage
- Diffusion — spreading the word
- Implementation — consolidate in utilisation
- Embedding — integrate as core practice

Bates (2000), cognisant of the difficulties associated with organisational processes and technology adoption in HEIs, suggests continued monitoring of institutional strategies:

> Experimentation and constant monitoring of organizational and management strategies, and particularly sharing of experience between different institutions, will be needed for some time. There is a need for some national, or better still, international benchmarking exercises to identify and measure best practice in the organisation and management of technology for teaching purposes. (p.206)

Benchmarking processes and research studies at the national and international level exist — including an international comparative study[4] investigating models of technology and change in HE in seven countries[5] (Collis & van der Wende,

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[4] Completed by the Centre for Higher Education Policy Studies and the Faculty of Educational Science and Technology of the University of Twente.

[5] Netherlands, Germany, Sweden, Finland, United States, United Kingdom and Australia.

2002). This research identified four scenarios relating to the future change in educational delivery of programmes based on current ICT practice and policy in institutes of higher education. Conclusions include:

- Change is slow and not radical. HEIs do not envisage revolutionary change resulting from or related to the use of ICT. Change is gradual within HEIs with external pressures of little concern. Change is internally driven and when adopted is categorised as "Stretching the Mould" (p. 7), i.e. providing for increased flexibility, with limited alteration to the current pedagogical model or strategic approach within the HEI.
- HEIs with clearer focus on their mission to deliver programmes to a wider range of student body, life long learners, international students etc. are identified as demonstrating higher levels of ICT use.
- Use of ICT has become mainstream in the delivery of courses on campus; traditional methods of delivery remain dominant with ICT complimenting this model. (Collis & van der Wende, 2002)

Boezerooij (2006) attempts to explain why different HEIs adopt different e-learning integration strategies using the data collected from the Collis and van der Wende study (2002). Using a theoretical framework based on contingency theory and strategy (drawn from the environmental school of strategy formation), Boezerooij (2006) concludes that most institutions are characterised as having a back-to-basics strategy. This is when an institution emphasises traditional campus-based delivery — institutional experts know which course students should take and when; technology supports traditional activities and facilitates communication whilst also providing greater access to course resources (Collis & Gommer, 2001).

Schönwald (2003) views the sustainable implementation of e-learning as a four phase change process; establishing strategic targets, performing a needs analysis, planning and designing and finally implementing and improving. Five dimensions influence these phases: organisation, technology, strategy and management, culture, learning and teaching. These dimensions, identified through the survey research of twenty five e-learning experts in German speaking countries by Seufert and Euler (2003) appear to be in line with the view of Duderstadt et al. (2003) of incorporating e-learning in American HEIs:

. . . "e-learning transformation" is in reality a very fundamental transformation process, driven by technology but involving people, organisations and cultures. It must be addressed systemically and ecologically. (p. 50)

Seufert and Euler (2003) assert that for any integration of e-learning to be successful the university must ensure that learning is core to its business processes. This should manifest with a comprehensive ICT strategy with learning identified as a core competence of the institution. Nichols (2007) asserts that those institutions that have yet to reach sustainable implementation of e-learning should identify impeding factors. These factors are the result of the negative relationship of sustainability with: strategic ownership, representation at a strategic level, senior management assistance, adoption of VLE by faculty, reducing ignorance, compatible policies and systems, and professional development (p. 9).

Development of an e-learning/ICT strategy within an institution is recognised as an integral element in developing ICT supported learning (Schneckenberg, 2006; SETTT, 2003; Seufert & Euler, 2003). Many components make up an institutional wide ICT strategy. One such component is the role of staff development. A European Union project the eCompetence initiative is attempting to develop a model for the enhancement of the competence of academic staff to use ICT for teaching and learning. The aim of the model is to ". . .improve how current and emerging ICT can mutually enhance individual and organisational learning processes in higher education" (Schneckenberg, 2006, p. 207).

The development of an e-learning or ICT strategy should include an assessment of current e-learning initiatives within an institution. The Australian vocational and educational training sector underwent an e-learning implementation analysis (Jasinki, 2007) using the RIPPLES model (Surry et al., 2005). This analysis constituted one element of the flexible learning in vocational education and training strategy. The model incorporates seven elements: resources, infrastructure, people, policies, learning, evaluation and support (Jasinki, 2007). The examination of these elements informed the strategic development process — by identifying human and organisational requirements and issues affecting implementation of ICT/e-learning initiatives (Jasinki, 2007).

By using a model such as the RIPPLES on the deployment of VLEs or other ICT initiatives — Irish universities may identify strategic synergies across the sector; leading to a comprehensive evaluation of the role ICT/e-learning initiatives can play in the development and reform of the sector. A strategic evaluation of ICT/e-learning within an institution should help to identify the competencies and barriers within that institution in developing flexible learning and delivery. If learning is central to the activities of the universities the development of learning as with research should be developed and assessed within a strategic context. Irish universities are engaging in strategic planning processes and therefore the addition of an analysis of ICT/e-learning within the institutional context should benefit the universities in the comprehensive development of their wider institutional strategies.

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