Implementing e-learning in Northern Ireland: prospects and challenges

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Abstract

Purpose – Aims to examine trends in the development of e-learning in Northern Ireland, report on existing policies, practices and issues affecting its implementation across the sectors.

Design/methodology/approach – The present study draws on e-learning policies and strategies that have been developed for Northern Ireland. Examples were drawn from case studies in schools and institutions and analyzed. Resulting knowledge and technology transfer across the sectors were evaluated.

Findings – E-learning and the use of ICT is playing key role in shaping teaching and learning in Northern Ireland. Its implementation is providing innovative and creative ways for knowledge and technology transfer. It is facilitating the establishment of a skilled community and workforce for a knowledge society. Associated with the positive changes and opportunities of the technological capabilities are some challenges and risks, some of which involve reaction of individuals and organizations to changes and dealing with the problem of increasing digital divide.

Practical implications – This paper critically evaluates some of the benefits of e-learning in a society experiencing significant changes and assesses its potential in addressing the growing digital divide.

Originality/value – Highlights recent advances in e-learning in the higher and further education sectors in the region and addresses some of the implications for the public, private and voluntary sectors.

Keywords E-learning, Knowledge management, Northern Ireland, Communication technologies, Education and training

Paper type Research paper

Introduction

Northern Ireland is presently going through a period of significant economic, social and political change as a society emerging from conflict. This impacts on all aspects of life including education and dictates a need to move towards the concept of a learning society and a vision to facilitate this move. In the last decade one of the goals has been to engage more of the population in learning, which is seen as a possible vehicle for promoting new citizenship agenda. In Northern Ireland, there is a move towards a knowledge-based society as the region is one of the fastest growing in the UK. There is the need to attain improved social capital and combat illiteracy through promotion of uptake of basic skills. The role of ICT in the delivery of learning to new audiences has heightened the interest in e-learning. The provision of financial support from national and European sources to the voluntary and community sectors has paved way for community-based learning creating grounds for the formal education sector to work

with the informal sector and a transition from didactic teaching methods to supporting and promoting flexible and independent learning.

Recent trends in teaching and learning

In a large-scale Canadian study (Livingstone, 2000) it has been reported that people now spend an average of 15 hours per week on informal learning; this could be related to employment, housework, community work and areas of general interest. It is important to facilitate students' ability to learn successfully on individualised basis. The structure of teaching and learning is one that seeks to promote individual learning identities. Issues surrounding the learning styles of individuals are becoming more and more important. Research goals are directed at tailoring individual learning programmes to empower citizens and widen access to non-traditional students. Ways are being devised to address different learning styles and how teachers can respond to them. Clarifications are being sought about the relationship between qualifications, skills and learning. Distinction between vocational and academic education is being made. Vocational education is difficult to accredit. Academic education is difficult to use. One may ask, is there a stand off between them both? Lack of motivation and other barriers such as low confidence on the part of learner is one area for attention. New methods of support developed through ICT are seen as part of the solution to such problems. However, it should be emphasised that it is important to understand how these methods alter or affect pedagogy. Accepting responsibility for ones own learning and the use of reflective practice in learning are some of the methods being employed. There are also differences in the approaches to learning with students engaging more with non-traditional approaches like project-based learning, work-based learning and portfolio building. E-learning is a potentially new development. It requires new teaching cultures that accounts for e-teaching and its implications for e-learning.

Policies and strategies

The national e-strategy entitled "Harnessing technology: transforming learning and children's services", issued in March 2005 provides the roadmap to promote e-learning and ICT in all areas of education and children's services in the UK. It seeks to harmonise ICT resources and knowledge across the UK by working towards making ICT a universal utility and creating more flexible learning opportunities for everyone. Presented as a five-year strategy, the plan is to tackle the potential divide existing among school children, their parents and teachers and to bring everyone to the same level of knowledge so as to be able to use the technology effectively. Six areas of priorities have been identified in order to achieve these goals. They are:

(1) integrated online information service for all citizens;

(2) integrated online personal support for children and learners;

(3) collaborative approach to transforming teaching and learning;

(4) good quality training and support package for practitioners;

(5) leadership and development package for organisational capability in ICT; and

(6) common digital infrastructure to support transformation and reform.

The Northern Ireland Strategy for Education Technology, launched in 1997 paved the way for the new e-learning strategy "emPowering schools", developed by the Education Technology Strategy Management Group of the Department of Education (Department of Education, 1977). The 1997 educational technology strategy comprised multiple strands and has been evaluated as successful. Implemented alongside this strategy were other policies such as the internet safety, digital inclusion and public-private partnership, all of which contributed to the successful implementation of the set objectives.

The implementation of e-learning relies on teacher competence, computer provision and access. By present day standards, technology is more accessible, more flexible, more mobile and more pervasive than before. People are now more aware of how digital technology changes the way learning takes place and how it transforms the way in which education is conducted as a public service. This transformation serves as a force for improved equality of educational opportunity and equity of entitlement, greater diversity of education, greater effectiveness and higher standards. E-learning has implications for leaders and teachers, parents and pupils.

The Northern Ireland Technology Strategy Management Group reported in 2003 that it has achieved an 85 per cent success rate, five years after implementing the 1997 educational strategy, targeting change in school (DENI, 2003). This success has been attributed to the partnership of educational organisations and the private sector working willingly together and also to the commitment and effort of teachers in developing competence in using information technology effectively. Amongst the strands of the strategy were:

- provision of pedagogical and basic skills training for teachers;
- establishmnet a Northern Ireland Network for Education (NINE) Connect Services to provide schools with access to online services;
- integration of ICT into the curriculum; and
- procurement of C2K managed ICT service for all schools.

Some of the targets set include provision of fundamental pedagogic competence for all teachers, accreditation of ICT competencies for all pupils, achieving ratios of 1:15, 1:8 and 1:5 for networked computers to pupils in primary, post-primary and special schools. Through the use of the New Opportunities Fund (NOF) those teachers who signed up for IT training completed their programme in 2003.

Empowering schools strategy
The strategy provides broader vision and a framework for action planning until 2008 within a context of transforming education in Northern Ireland by 2020, whilst seeking progress towards a unified e-learning strategy.

The strategy's key issues touch on how digital, multimedia and communication technologies are being used to enhance, improve and ultimately to transform education. Systematic change involves embedding ICT into practice and transforming that practice. The broadening of the curriculum offers greater diversity and improved choices of courses, which are flexibly adaptable to meet students' needs. In the words of Anderson, it is envisaged that the submission of work, participating in group

sessions through videoconferencing and the taking of assessment could all be done online (Anderson, 2003).

Four key priorities have been identified to provide a framework for action over the next five years. (Balenskat, 2004). They include:

(1) enhancing practice for learners;

(2) enhancing professional practice for teachers and leaders;

(3) enhancing professional support services for schools; and

(4) innovating with infrastructure, the connectivity of the school estate.

Expected standards in ICT have been defined for teachers their integration into pedagogy. A regime of readiness assessment has been employed to help each school prepare for changes in ICT provision and its uptake in the future. The vast majority of teachers have participated in the NOF training programmes supporting their needs for continuing professional development in ICT.

There has been a notable increase in the use of flexible and distance learning and in the use of e-mail and the internet across schools and in the curriculum. This, it is hoped, is linked with the drive to establishing education technology competence applicable to the further education sector. In realisation of the potential for parallel development in e-learning between schools and the further education (FE) sector, especially in addressing the vocational educational needs of learners, there is the need for liaison to be maintained.

Parameters of success in e-learning implementation

E-Learning is another way of teaching and learning. It comprises instructions delivered through all electronic media including the internet, intranets, extranets, satellite broadcasts, audio/video tapes, interactive TV and CD-ROMs (Govindasamy, 2002). It facilitates access to knowledge that is relevant and useful. E-Learning involves encompasses the delivery of education and training to anyone, anytime and anywhere. The development and delivery of e-learning in recent times by several organizations and institutes is underpinned by a desire to solve authentic, learning, teaching and performance problems. The success of e-learning depends on how learning takes place online, that is, the underlying pedagogy and the real value of e-learning lies in our ability to deploy its attributes to train the right people to gain the right knowledge and skills at the right time.

The successful implementation of e-learning depends on the adherence to underlying pedagogical principles that are embedded in the e-learning experiences. Though these principles apply to both the e-learning and the traditional classroom delivery method, they are yet to be included in the former (Bixler and Spotts, 2000). These pedagogical principles should form the basis for inclusion of features in e-learning management systems. Bixler and Spotts has identified seven parameters affecting the successful implementation of e-learning. They are:

(1) institutional support;

(2) course development;

(3) teaching and learning;

(4) course structure;

(5) student support;

(6) faculty support; and

(7) evaluation and assessment.

The availability of strong institutional support is crucial for e-learning deployment and success. The changing roles of staff must be recognised and acknowledged. Support strategies must be developed for management of the transformation processes. Standards must be set and applied consistently. Although the teaching and learning process encourages a flexible and independent approach to knowledge acquisition, the notion of student support is markedly different from the traditional method. Students learn as a result of interaction with programmed instructional systems that have been long thought out and automated in some instances.

Assessment reinforces the learning approach a student adopts and is an indispensable part of teaching and learning. Evaluation and assessment of learning should be based on higher order thinking skills, so that students may adopt a deep holistic approach to e-learning (Twomey, 1996).

Advantages and disadvantages of e-learning

The advantages of e-learning must outweigh its disadvantages for its implementation to be worthwhile. Amongst the many advantages of e-learning are that it is less expensive to deliver. E-learning is self-paced, provides consistent content, faster and works anywhere and at anytime for learners. The instructional materials are easily updated and permits the use of multimedia which leads to reinforced learning through the use of video, audio, quizzes and other forms of interaction. E-learning can improve retention, provide immediate feedback and allows learners to customize learning materials to meet their individual needs (Kirsh, 2002; Turk and Robertson, 2000). E-learning provides for risk-free simulation environments for acquisition of valuables skills in fields involving leadership and decision making. The disadvantages are that it may cost more to develop and requires new skills for the production of content. The associated technology might be intimidating, at times confusing, frustrating and costly. E-learning requires on the part of the learner, more responsibility and self-discipline to keep up with an unconstrained and robust learning process.

Education in Northern Ireland and e-learning developments

Networking and collaboration

The success of e-learning implementation has been underpinned by the level of collaboration and strong links that exist within and among the sectors. Although closely related to networking, collaboration is seen as a process that exploits the networked environment. This has been pivotal to the success of e-learning in the region.

Further education colleges and adult learners

Northern Ireland has a regional support centre (RSCni) funded by JISC whose role is to support colleges in exploiting the potential of e-learning to enrich learning and teaching. The RSCni provides college-based training workshops, structured and focused communication amongst FE and HE on relevant matters, a comprehensive web site and college visits and meetings. The FE sector in Northern Ireland seeks to

enrich the learners' experience through the use of e-learning. Several key initiatives, have been put in place involving college senior managers, representatives from the Department for Employment and Learning (DEL), the Education and Training Inspectorate. There have been developments such as Northern Ireland Metropolitan Area Network (NIMAN), Northern Ireland College Information System (NICIS) and JISC-funded projects, including the NI Integrated Managed Learning Environment (NIIMLE). These have helped to provide the opportunity for colleges to reflect on their current use of information and learning technologies and options for future strategies.

Feedback from an anonymous independent survey conducted in 2003 showed that 90 per cent of respondents from participating colleges including the library, technical support staff, teaching staff and college managers were either satisfied or very satisfied with performance. In its e-learning developments and delivery the Northern Ireland FE sector works with many partners both from the region and across the UK. Some of these include Technology for Disability Information Service (TechDis), Legal Information Service (JLIS), Netskills and the Technical Advisory Service for Images (TASi).

E-learning in higher education
There is no single strategy for e-learning in higher education in Northern Ireland. The region has three universities each with their own strategy for implementing e-learning. These institutions are the Open University (OU), Queen's University Belfast (QUB) and the University of Ulster (UU). In line with the over-arching government aims, each seeks to develop e-learning and use ICT to enhance learning and teaching to achieve flexibility of provision, widen participation in higher education and support the growth of the economy through a learning society and supporting the lifelong learning agenda.

The OU utilizes learning technologies in most of its programme delivery, a method they had developed over a long period of time. It currently offers online services for most of its 375 courses.

The University of Ulster is the most advanced in the region in terms of development and delivery of e-learning. It has an established award winning online campus – Campus One and has been cited as a "lighthouse" institution for its strategic approach to e-learning. The University is a WebCT Institute (one of only 24 in the world and of only two in the UK). It has a strategic institutional approach to the implementation of e-learning and is now the largest provider of online Masters programmes in the UK (Campus One, 2005). The University has established partnerships for online programmes with universities in USA, Australia and in Europe and enjoys an increasing growth in usage of its VLE for module delivery. An example is the growth in WebCT modules from 145 in 2002/2003 to 1301 in 2004/2005 – almost a ten-fold increase. New programmes for staff along with pedagogical and technical support are continuously being developed and provided. During the early part of 2005 the university's excellent practice in e-learning was recognised through the award of Excellence in Teaching and Learning Fund of £1.75 million over five years for using institutional e-learning services to enhance the learning experience. Presently, students on online postgraduate programmes now constitute approximately 25 per cent of all taught postgraduate students in the University. The University seeks to develop further the provision of both blended and fully online e-learning programmes.

Queen's University Belfast has adopted a blended approach to e-learning, which involves the integration of e-learning with traditional media and methods in line with course content, level and students (Queen's University Belfast, 2003). It utilizes its own VLE, Queen's Online, for teaching and learning. It is reported that over 9,000 students accessed the system regularly during 2004 (Universities Ireland, 2004). The university anticipates using e-learning to deliver and promote engagement with lifelong learning, continuing professional development and offering select courses throughout the world via this means.

The role of the sectors

Northern Ireland's knowledge-based economy is recorded as the fastest growing regional economy in the UK (FDI, 2003). Due to available labour, affordable cost and world-class research in its universities, Northern Ireland has become home to multinational companies like Nortel, Analog Devices and Seagate. Investment by multinationals has increased by 45 per cent over the past half decade. This continues to act as catalyst in regional development and growth of its indigenous hi-tech industry. There are 200 such hi-tech companies in Northern Ireland producing almost £2 billion in revenue, 80 per cent of which is generated from sales outside of the region. ICT, software electronics and e-business account for most of the foreign direct investment, measured at 88 per cent in 2001/2002. Invest Northern Ireland (Invest NI) is the main driving organisation for the region's economic development. It ensures development of cluster strength and application of knowledge and research for revitalising the local economy. It does this by continuous pooling of resources between industry, academia and government.

Government departments and statutory agencies

Several government departments are engaging in e-learning through the e-Government initiative. Examples include the Northern Ireland online web site and the several local councils who are actively encouraging and supporting staff to participate in work-based learning or CPD programmes that are offered either fully or partly online. The use of e-learning tools is now commonplace for the processing and exchange of information in most government departments and statutory agencies. The implications are far-reaching especially in terms of bridging the digital divide that separates the information rich from the information poor.

Hospitals and health services

A blended approach to e-learning is being adopted by some of the hospitals and health services units in the region to train their staff. The training information is either developed by consultants and made available online or developed by the establishment for skills update.

Security services (Police)

In a report to be presented at the 11th International Conference on Technology Supported Learning and Training being held between 30 November and 2 December, 2005, in Berlin, a blended learning solution has been implemented by the Police Service of Northern Ireland (PSNI), the world's newest police force born out of one of the oldest.

The blended learning solution is offered to student officers training for a part-time policing role.

Using a KUSAB (Knowledge, Understanding, Skills, Attitude and Behaviour) model, KU is shown to be explored well in a virtual classroom and the SAB elements covered more effectively using the tutor-led approach. The first module taught was "getting to know the system". The mode of delivery comprised an initial traditional classroom session which then continued online during the first week. Observation shows that as soon as students are familiar with the technology, primary learning takes over. Collaborative learning allows students to work to their strengths. Computer supported collaborative learning (CSCL) has been demonstrated to be the best means most suited to the needs of PSNI. The training is conducted in groups of six, which facilitates the students to learn from each other. The fact that the online course uses the same material as used in the traditional classroom, allowed student participation and results to be compared.

Business
The business sector is playing a major role in the implementation of e-learning in Northern Ireland. Some of the major players include BT, Hewlett Packard (HP), NTL, to name but a few. In 2003 HP was awarded a $100 million contract to provide and manage the technology infrastructure for the Classroom 2000 (C2K) education project in Northern Ireland. This is considered as a ten-year government initiative, designed to connect the largest number of pupils, teachers and administrators in the world. It is designed to enable every child from primary school through university throughout Northern Ireland to have an internet address and to access virtual classrooms.

E-learning implementation case studies
In Northern Ireland, the use of e-learning for enhancing quality and improving accessibility to education, training and employment is generally seen as one of the keystones for building the regional knowledge-based society. At all levels, most sectors have their own action plan for encouraging the use of ICT in education and training, often involving direct support for local e-learning pilot projects.

The successful implementation of e-learning in Northern Ireland is best reflected in the series of available case studies comprising several awards received and projects that have either been completed or are ongoing. Details of such awards that mark achievements in the use of ICT and e-learning in the region are available at: www. c2kni.org.uk

Over recent years four Northern Ireland teachers have been winners of the UK ICT good Practice Awards organised by BECTA (BECTA, 2003).

The success of the NOF training reported in the educational technology Strategy Review is down to dedication and commitment by teachers and school librarians, effective senior management support for the training, the integration of ICT training and development into the school development and staff training plans and the creation of a supportive network of teachers across the schools. Further details on conditions of success can be found for primary, special and post-primary schools at: www.nof.org. uk/index.cfm?loc = ict&inc = studies and at: http://webforia.nine.org.uk/nofstudies. htm

"Good practice with ICT" is a School Support Programme and the Dissemination of Good Practice Initiative which supports the Northern Ireland School Improvement Programme and provides the opportunity for schools to bid for additional resources to develop and improve their existing good practice and innovation. The sharing of good practice as identified by schools is a powerful tool in the ongoing work of improving educational standards and effectiveness. Examples of good practice with ICT at Mersey Street Primary School and Ballyclare High School can be found at: http://webforia.nine.org.uk/ict.htm

Some projects that have been developed include Author On Line, Cultural Ireland and Cross Connect. Author on-Line (AOL) is a concept developed between NINE / C2K and the Western Education and Library Board (WELB). The aim of the project was to develop a use for ICT that will create a new learning environment which is stimulating but not intrusive and an environment which will encourage learners to become independent through changes in attitudes to reading and promote the concept of learning through enjoyment. The project, "Cultural Ireland", was set up in 2000 as a collaborative music technology initiative to promote and develop creativity in education using ICT tools and involves four WELB primary schools with schools in the Republic of Ireland and schools in Washington DC, USA. Cross Connect was set up in the WELB. Primarily, it uses videoconferencing to enrich teaching and learning in a variety of areas. Further details on these and other relevant projects are available at: http://www.c2kni.org.uk/etstrat/cases/

GridClub is the official C2K education web site available to every primary school in Northern Ireland. It offers a wide range of activities, puzzles and games designed to make learning fun. It is made up of public and protected areas and can be used at home as well as at school to help with homework and school projects GridClub has three mediators based in Northern Ireland whose roles are to provide help and support to teachers, parents and children throughout the province. Further details are available at: www.gridclub.com/. The C2k Consultants comprise a small team of full and part-time consultants, mainly practising teachers and lecturers, who work collaboratively with organizations across the education service to pump-prime new developments in virtual and managed learning environments and in the effective use of software titles provided to schools on the C2k managed service. Further details of their work are available at: www.cdar.org/

E-learning and the future
The role of e-learning in Northern Ireland is broad. Besides providing innovative and creative ways of teaching, it seeks to establish a skilled community and workforce for a knowledge society. A total of seven areas of focus has been identified for action (BECTA, 2003) with a vision for e-learning in the twenty-first century:

(1) helping education leaders to tackle the funding models that restrict innovation;

(2) supporting innovation in teaching and learning;

(3) giving teachers and lecturers career incentives and training for e-learning;

(4) providing better e-learning support to allow learners to meet their personal learning goals;

(5) making assessment a driver of innovation rather than a barrier;

(6) building a better marketplace for quality-assured e-learning resources; and

(7) assuring technical and quality standards for e-learning.

To achieve these, one has to give thoughts to some issues, which must be addressed by the public and private sectors and by business and society. A plan for creating, storing, researching, assessing, managing and using teaching materials would have to be developed and standardised. An industrial-academic-government co-operative system would have to be established to create and provide contents for teaching in each area of specialization. Easy-to-use distance education systems and interfaces would have to be developed and provided. Re-education of members of society would have to be promoted and the results of such learning respected. Financial support for individuals and institutions tackling and implementing research and development on virtual teaching and learning would have to be provided. Priority would have to be given to establishing large-capacity information-communications networks for institutions participating in e-learning.

Conclusion

E-learning and the use of ICT is playing a key role in Northern Ireland in shaping teaching and learning, the curriculum and entitlement framework, assessment, students profiles, leadership and collaborative working involving teachers and students. Pilots of online learning courses for GCSE pupils have begun testing the feasibility of providing specialist expertise in online teaching and assessment and exploring the potential of e-learning to extend and enhance access to programmes for pupils in schools. It is envisaged that the first year seven pupils will make their choices under the new arrangements in the year 2009/2010.

The education system in Northern Ireland has entered a period of significant change. For the most part this has been revolutionary as the region sets itself up to compete in the global market. Students at all levels are beginning to be more active and aware of technological capabilities and are entering varying phases of using e-learning via interaction online. Public, private and voluntary organisation are engaging the digital generation and providing information for learning online. Some of these have been made possible with help from Ufi, DEL and DENI. Sweeping changes have ushered in a phase of transformation that presents many opportunities with some challenges and risks too. What remains is the fact that everyone must react to these changes to meet the needs of the modern day technologically driven society and promote information flow to bridge the emerging digital divide.

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