Seamless Access in ICT Learning- The Library Context

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Abstract

Back in 1994, Bill Gates in "The Road Ahead" suggested that research via the Internet would become so prevalent that researchers would become frustrated if they sought information on a topic via the web, and could not find it. Back then the World Wide Web was in its infancy. Today, electronic libraries are at a similar early stage. Will it be the case, that in ten years time, readers will become frustrated if they cannot obtain a book or magazine article via the web?

In this paper we examine the likelihood that this scenario will unfold, taking account of the current state of play. Over 20 public libraries in the US currently offer ebooks to patrons, based on the Overdrive eLibrary service. eBooks are a regular part of eLearning amongst corporates. Major publishers, such as Reed-Elsevier, Penguin and Taylor Francis have made their educational texts available as ebooks. The Oxford University Press have an extensive econtent offering for individuals, corporates and libraries.

In the paper we will examine the take up of these offerings and the user experiences. Issues discussed will also include delivery mechanisms, technology infrastructures, and how other forms of electronic content consumption, notably in the entertainment arena, are likely to influence the consumption and delivery of electronic media in the educational arena.

1   Introduction

Modern mobile communications and m-learning/e-learning devices exhibit major potential for integration in the spheres of education, campus-wide communication and the social inclusion/cohesion of society as a whole. In this paper we analyse the take-up of some of these new e-learning technologies and examine aspects of the user experience associated with these technologies. We also attempt to highlight some strategic issues as associated with the integration of these technologies and as applied, in particular, to the learning experience that is the modern library environment.

2   e-learning—A Library's Perspective

There is little argument that e-learning and the move towards more seamless access to information resources have become important trends in higher education today. The growing and dynamic environment that is the e-learning one has a presence on virtually every campus and third-level college course. While the e-learning experience may have been initiated within a distance learning framework it's quick evolution as a communicative technology has meant that it is now also included in more traditional college courses, courses that have been enhanced to various degrees with electronic elements.

This fast-changing, fluid learning environment has had a major impact on the missions of a range of service providers who act as a support framework for the learning process, the library included. One of the library's major areas of concern is the management of this new IT infrastructure that encompasses the academic and the technical and both administrative systems and library systems. The enhancement of traditional learning activities in the classroom environment with electronic elements – including CMS (Content Management systems, LMS (Learning Management Systems) and a range of new mobile technologies that can operate on both the individual and collaborative levels – e.g. SMS, PDA, BioWAP have meant an important rekindling of the debate on the nature of the learning experience.

New sights provided by pedagogical experts, librarians and technologists all indicate that this new seamless learning environment has great potential to revolutionize learning and provide discontinuous rather than incremental learning opportunities in libraries and campuses worldwide. This new environment is also changing the way that faculty and students access, create and use information at the same time as it is providing new opportunities for libraries to design and disseminate new services.

This new environment also brings with it a range of challenges with issues of cost-effectiveness and reliability of service high on the agenda. The direction that this new environment is currently taking us sees as its ultimate aim the transformation of Universities and other third-level educational environments into communities that are learning centred. This transformation can only be achieved effectively by the re-positioning of faculty and institutional goals, something which has hitherto been slow to take place.

While virtually every third-level institution has a very clear emphasis on e-learning as an aspect of their strategic plan, this agenda has yet to be backed up by the required technical and organisational infrastructure required to deliver on this strategy. The reality in many institutions is new e-learning infrastructures have simply been tacked on to traditional services and traditional infrastructures, a process which tends to put great pressure on all parts of the institution.

The hype that has accompanied the potential that is e-learning has meant a huge increase in demand from faculty members for services to boost e-learning and e-learning infrastructures. In many cases this demands has not been matched by similar efforts towards institutional investment or sustainability with the consequence that departments like libraries and IT services often find themselves competing vigorously for resources when the new "learning space" dictates the existence of an environment completely opposed to this i.e. one where collaboration, resource-sharing, technical interoperability and planning requisite for the long-term sustainability of products and services is required. Libraries, in particular, often find themselves caught between a rock and a hard place in this ever-changing environment. They are frequently under pressure to provide the adequate balance between both print and online resource and to undertake this task in an environment where the learning space needs to be increasingly seamless and relevant. While libraries have an opportunity to design and disseminate these new services, they also need to emphasise their own expertise and abilities in order to take a prominent role in the management of this new learning environment.

One area of particular concern to libraries at the moment is the technical development of those new ways that can both integrate and expose their existing library systems and resources. Since the technical capability that supports the evolving "learning space" is changing very quickly, the way in which the traditional library interacts with new systems frameworks needs to be constantly monitored. There are many indicators, for instance, that the ongoing process of adding mobility to interactive learning will transform the role of the web and pave the way for yet another wave of innovations and services which combining voice, text and live pictures e.g. SMS, MMS, PDA, BioWAP.

Nevertheless and despite the rapid and continuing adoption of mobile devices for learning, most of the literature to date continues to be concerned primarily with the subject of static computing and there has, to date, been relatively little activity in integrating these technologies into the realm of e-learning, m-learning and the learning and library/information environments.

For most institutions achieving a good overview of these developments is not easy. One only has to witness the confusing array of responses that have taken place in many institutions during the past few years in regard to the control and management of website development to realise how increased technical interoperability raises new issues and new concerns. For example the past few years have seen the growth of content management systems (CMS) in an effort to manage the explosive growth of the web. Despite huge efforts on the part of many institutions, developments such as CMS have not led to much uniformity of effort in how to harness the web "swamp" of information or provide good web sites, which can function as effective "windows" to particular sets of information. The primary challenges faced by libraries in the new e-learning environment can best be summarized under a range of headings including the following: *technical interoperability, training, inter-institutional collaboration, the balance between traditional and hybrid or "blended" learning, service convergence, ownership/copyright, standardization, etc.*

In the proceeding sections we will look at these challenges and the libraries role in the overcoming these towards seamless integration

3   The Need for the Integration of Library Services and e-Learning Technologies

Traditionally students attended college without undertaking part time work. However a change in this trend coupled with the increasing number of mature students attending college on a part time basis and an increased focus on lifelong learning has led to the demand for more flexible educational resources, enabling students to access these asynchronously without time or location limits.

Students are now expecting courses and educational resources to be available in a number of media including online format. In the future this may be one of the basis for students deciding which educational institutions to enrol with.

Partnered with this requirement for a more 'convenient' educational environment there is a large focus on personalised educational resources due to increased technological advancements. These changes have affected the way faculty and students access, create and use information.

To date many educational institutions have adopted e-learning for faculty and staff however libraries have not been included as stakeholders in this area as the potential of e-learning has not been realised in this area. However to keep up with the shift of educational resources to online format and student demands library resources will also need to be adopted into this e-learning framework

4   The Current State of e-Learning in Educational Institutions

Currently much of the research conducted in the area of online education has been done by faculty. Most educational institutions have undertaken the implementation of a Learning Content Management System (LCMS) as a first step.

The European Schoolnet report on Virtual Learning Environments for European schools describes LCMS as those that "provide the ability to store, assemble and deliver personalised learning content in the form of Learning Objects". Learning Objects are reusable segments of learning, which we will look at later. In addition the IDC's white paper on The Learning Content Management System identifies LCMS as having the following functionality (IDC 2001):

> *A Learning Object Repository:* LO repositories are databases, which store and manage learning objects.

> *An Authoring Application:* allowing users to create learning objects using templates and storyboarding techniques.

> *A Delivery Interface:* which presents content to learners in a user-friendly manner.

> *Administrative tools:* which allows the training officer or administrator to track student performance and manage student records.

More often than not these systems are separate to the libraries online system providing search facilities for books and journals online. However the convenient lifestyle we live in today students and faculty are expecting these resources to be available 'all under one roof'. Rather than having to login to separate systems, there is a requirement for a complete educational solution containing all the resources students need to learn.

In cases where libraries have been included in the e-learning phenomenon their role has been limited in this field to the hosting of e-books, journals and conference papers on Learning content management systems. These provide educational resources accessible independently of time and location however it is possible that their role could go far beyond this.

We have already mentioned the concept of learning objects. Let us expand on this concept further to highlight future areas where librarians may provide expertise. Traditionally e-learning courses were developed as large blocks of content, which were rigid and unreusable. However in 1994 Wayne Hodgkins introduced the idea of developing content in the form of Lego like bricks known as learning objects and piecing these together to form different courses. This has shifted e-learning development towards a more flexible cost effective framework.

To enable easy accessibility these learning objects are tagged with metadata and placed in databases known as learning object repositories where they can be searched and reused. It is here the common ground lies. To date there have been many metadata standards developed, however the availabilities of ontologies to describe these are limited which have led to ad hoc searching of learning objects. Traditionally librarians have the most skills in metadata and can bring a wealth of expertise to this field in terms of creating metadata ontologies.

In addition there has been confusion regarding good quality learning objects, there are lack of standards associated with evaluating these in terms of their ability to teach. Librarians could also bring their extensive knowledge of publication standards to this area ensuring the storage of high quality learning objects.

Thus the implementation of e-learning may extend the role of Librarians to address the metadata and publishing issues associated with Learning Objects.

The concept of learning objects could also be applied to the area of e-books. Rarely do most students read an entire text book, usually students access pieces of several books and piece together a picture of what they are learning from a number of resources. As a result there is huge potential for the application of learning objects to e-books allowing students to search for pieces of books they may require rather than having to traunch through large amounts of material to get to the text they require.

5   The Potential of Integrating e-Learning Technology in the Library Context

So far we have looked at several possible standard e-learning technologies currently available and how they can be applied to the e-learning context. How can these be integrated into a seamless ICT tool that will allow students to access all their educational resources online?

Ideally students should be able to log onto a LCMS which contains their profile and take relevant courses/modules/tutorials, access a list of recommended books (or sections of books directly), bookmark pages in these, manipulate these books such as highlighting text and putting notes into them as they can with current paper based books. They should also be capable of searching for pieces of books and copying this and piecing them together into their own work area. Students should be able to keep records of books they have searched for and accessed to form a bibliographies to enable them to keep track of and access these again immediately with minimum effort.

Within e-learning courses there should be links to pieces of textbooks to enable students to access additional educational resources if required without the need for searching. Thus providing complete educational solutions with books, journals, courses, notes all in the same software.

Currently this could be implemented using existing e-learning technologies, however we are a long way from reaching it. To take a first step towards this it is key that Librarians partake in the implementation of e-learning technologies in their educational institutions and offer their large wealth of knowledge in the metadata and publishing fields to offer the most complete educational solutions to the changing student profile.

This may mean a re-definition of library services so as to effectively engage with the e-learning environment. For the library to become a viable player in this new environment, particular attention will need to be paid to the library's place in the e-learning strategy of the institution as a whole, something which can be addressed through a prioritisation of those traditional and new library services which best fit the e-learning model.

(*A good example of how the library can do this is the issue of learning objects or institutional repositories—e.g. How should learning objects and their repositories be defined and what role can libraries play in envisioning this model?*).

Libraries and librarians need to be able reposition themselves, a repositioning which will see them function more as managers or overseers of the "learning space", a process which itself carries a number of new and very definite functional requirements including:

- o *The provision of fast, seamless access to systems and information.*
- o *The development of better interfaces amongst a range of systems.*
- o *The utilisation of an increasingly flexible, open-source tools for their performance of specific functions.*
- o *The existence of effective middleware that will support authentication and authorisation across a range of systems and services.*
- o *The development of stable and comprehensive portal technologies.*

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