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Information Literacy and IT Skills Delivery: the ICT Skills Project at the University Of Birmingham

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Abstract

This article describes Phase 2 of the ICT Skills project, which used the WebCT Virtual Learning Environment to deliver information literacy and IT Skills training materials to 2nd and 3rd year undergraduates at the University Of Birmingham. It describes the aims of the project, the development of learning objects in conjunction with partner schools, responses from the wider academic community, and feedback from the Information Literacy practitioner community. It also discusses the problems and issues surrounding embedding Information Literacy learning objects within the curriculum and the student experience. The authors conclude by identifying the beneficial outcomes of the project.

Keywords

Information Literacy; Higher Education; Undergraduate students; Online learning; Blended learning; Learning Objects; Information Technology skills

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1. Introduction

This paper summarises the work and findings of Phase 2 of the Information and Communication Technology (ICT) Skills project at the University of Birmingham. This phase of the project delivered information literacy and IT skills training materials to 2nd and 3rd year undergraduates via the institutional Virtual Learning Environment, and ran from September 2003 to August 2005.

The University Of Birmingham is a research-led university in the heart of England, consisting of 19 Schools of Academic Study. The diverse nature of the University and its students' needs provides a challenge to the central services in terms of delivering consistent and high quality learning objects in Information Literacy and Information Technology (IT) skills. The ICT Skills Project, funded by the Learning Development Unit at the University Of Birmingham, sought to address these needs and make use of WebCT to efficiently deliver the learning objects to undergraduates.

WebCT has been utilised at the University Of Birmingham since 2001. The benefits of using Virtual Learning Environments for delivering mainstream courses to undergraduates are manifold, including speed of delivery, 24/7 access, tracking facilities, off-campus access, online linking to relevant documents and resources, and online submission of assessments. Although Joint (2003) considers that Computer-Aided Learning "better suit the distance learner or part-time student", it could be argued that the benefits apply to the whole undergraduate population, especially considering the increasing array of electronic information resources which are replacing the traditional print collections, and the currently expanding student population.

Traditionally, Information Literacy at the University Of Birmingham has been delivered to undergraduates with a mixture of the following:

- Library tours – drop in and bespoke;
- Induction;
- Drop in lunch time sessions covering dissertation skills, reading lists and getting started with assignments;
- Information Skills sessions: arranged with the relevant academic school.

This skills training is developed and delivered by Academic Liaison Specialists who are linked to one or more academic school of study.

The ICT Skills project enabled a wider range of staff to construct the learning objects, as the project team consisted of staff from a range of teams in Information Services, including Academic Liaison and Collection

Development, IT Training, and eLearning. Each member of the project team developed content focusing on their area of strength, and in line with the needs of the undergraduates as articulated by colleagues within the partner schools, including Earth Sciences and Engineering.

2. Why develop the learning objects?

The learning objects complement the developments in the key skills agenda, where key skills need to be explicitly incorporated into the curriculum. Tariq and Cochrane (2003) noted that in recent years employers require graduate employees to be skilled in a range of areas including Information and Communication Technology (ICT) and employers look to the Higher Education Institutions to equip their graduates with these requisite skills.

Tariq and Cochrane also comment that the UK Government's current policy is to significantly increase participation in higher education. This necessitates efficient delivery of ICT Skills learning objects, and Virtual Learning Environment (VLE) technologies such as WebCT provide efficient opportunities for delivering them to undergraduates. With students arriving at University with a range of backgrounds and abilities in ICT Skills, and some inevitably requiring additional support, this further strengthens the case for use of a Virtual Learning Environment, as students can be given access to a full suite of ICT Skills learning objects for them to use as and when needed.

3. The Learning Objects

A range of learning objects were developed, including the items listed in Table 1.

Table 1: Learning objects

Information Literacy	
Advanced Internet Searching	45 minute course, consisting of hints and tips plus links to useful resources.
Database Worksheets	A series of worksheets, each taking approximately 45 minutes to complete, and detailing basic and advanced use of specific information databases.
European Law	2 hour course, consisting of course text with useful links, automated demonstrations of legal information databases, plus questions and activities.
Information Skills for New Searchers	1.5 hour course, consisting of course text with links to useful resources and examples, plus a worksheet enabling the student to consolidate their learning.
Literature Searching for Dissertations and Projects	2.5 hour course, consisting of course text with useful links, a range of activities plus a self-test.
Referencing	45 minute course, covering both the Harvard and Vancouver systems of referencing. The course consists of course text plus useful links.
Using eJournals	1.5 hour course consisting of course text with useful links, demonstrations and activities, plus a self-test.
Information Technology Skills	
Advanced PowerPoint	3 hour course which can be broken down into smaller individual topics. The course consists of course text plus a range of activities.
Advanced Word	3-4 hour course which can be broken down into individual self-contained topics (5-10 minutes each).

EndNote	2.5 hour course, consisting of course text with useful links, instructions for the main EndNote tasks, plus a workbook to consolidate the students knowledge.
NVivo	4 hour course consisting of tutorials in the form of Windows Help files.
Reference Manager	2.5 hour course, consisting of course text with useful links, instructions for the main Reference Manager tasks, plus a workbook to consolidate the students knowledge.
Other	
Oral Presentation Skills	2 hour course to complement the Advanced PowerPoint course. The course consists of course text with useful links, and a worksheet to aid the student in planning and preparing the presentation.

The ICT Skills project also sought to maximise the use of other resources, purchased as packages by the University of Birmingham, including Netskills and Impetus.

The learning objects were designed to be used only within WebCT and to be selected by the course leader for inclusion in their academic courses. Delivering the learning objects in this way facilitates greater integration into the students learning experience as the course tutor has control over providing the information literacy and IT skills materials in one of three ways:

- ICT Skills materials can be dropped into an existing WebCT section, as they are, to complement the course of study

- ICT Skills materials can be incorporated into a study programme after adaptation – the adaptation of the materials can range from inserting discipline-specific examples and exercises, to building an entire subject-related skills module around the ICT Skills materials. Joint (2003) argued that "Properly managed, such organic integration of virtual learning objects offers students the ability to learn information skills in context rather than out of context". Indeed, this contextualising may assist in students taking the issue of ICT skills more seriously than if ICT Skills modules are delivered separately.

- Designing a standalone ICT Skills module where a suite of ICT Skills resources are made available, for the students to dip in and out of as and when needed. This could be provided by the academic school, or by Information Services.

With this in mind, the ICT Skills materials were designed to be self-contained in terms of content, structured in such a way as to allow for easy "granularisation" of the topics, and simple in presentation to facilitate stylistic adaptations in line with different academic schools.

Accessibility issues were taken into account when putting the course materials together, but it is also important for content developers to consider different learning styles when creating online learning materials. This is a complex area, and Elliott and Hunn (2005) considered the development of guidelines on writing styles and writing inclusively for different types of learners to be beneficial. This is important where the content developers are primarily engaged in activities other than teaching. Ideally guidelines would be developed on developing learning objects to ensure that all students receive high quality resources.

4. Evaluating the materials prior to launch

The resources were initially developed in conjunction with one or more partner schools, or in line with known gaps in our skills provision. However, before the learning objects were made available to the wider University, the project undertook a formal programme of evaluation and quality control, consisting of student and staff evaluation workshops.

4.1 Student workshop

The student evaluation workshop provided an invaluable opportunity for direct dialogue with students from a range of Schools about issues surrounding ICT Skills. This avoided the problem of dilution that can occur when communicating through contacts in the Schools. Eleven undergraduate students were organized into groups to look at learning objects which had not already been trialled with formal student groups. Each student was given a questionnaire to complete as they worked through the learning objects, containing questions about their background, their views on the quality of the learning objects, whether the level of course content was appropriate, if learning outcomes were addressed, how useful the learning objects might be in supporting their studies, and how the learning objects could be promoted. This was then followed up with group discussions. Feedback from the student workshop in terms of the structure and content of the learning objects was taken back to the original content authors, so that the resources could be usefully altered prior to the staff evaluation workshop.

4.2 Staff workshop

The staff evaluation workshop served to pilot the ICT Skills learning objects with key personnel across the range of academic Schools. The four themes were to:

- Determine how relevant and useful staff and students might find the resources within their particular school of study;
- Examine staff views of the quality of resources in terms of accessibility, content and ease of navigation;
- Explore how the resources could be improved;
- Examine how the ICT Skills learning objects could be promoted to staff and students across campus.

As well as serving the above purposes, the staff evaluation workshop was self-fulfilling for the fourth criteria, as key personnel were made aware of the resources and how they might be used within their Schools through participation in the workshop.

Staff held mixed views about utilising the resources within their School, although in general, staff could see the resources could be incorporated into WebCT in some way or used as a standalone resource. Some of the criticisms that staff made about access and navigation were specifically related to WebCT, rather than the learning objects themselves. Staff suggested that the presentation and content of the course could be made more interesting, perhaps by the inclusion of more graphics and branding. However, this may conflict with the aim of the project i.e. to provide generic learning objects that could be tailored by the Schools if necessary, and hence were kept basic in their presentation. They also commented that introducing interactivity and tasks would encourage students to use the resources.

Staff suggested a number of ways that the course could be promoted. For example, promotion could be via Directors of Learning and Teaching and Heads of School, via email with links to the course, with posters and through the University Portal. Staff also suggested that the careers centre would be a useful place to promote the course.

5. Feedback from the Information Literacy Practitioner Community

A workshop was delivered by the ICT Skills Project leaders at the 2006 LILAC Annual Conference. Part of the workshop included an online survey discussing the issues and barriers surrounding the embedding of Information Literacy and IT Skills into the student curriculum. The survey brought to light the experiences of the ICT Skills Project team, and asked respondents to comment about their own experiences. Respondents considered that the main issues surrounding the embedding of Information Literacy and IT Skills into the student curriculum were:

- Getting all academic staff to realise the importance of Information Literacy and IT Skills and to support the initiative;
- Keeping the learning objects up to date.

Other issues, highlighted by participants, surrounding the embedding of Information Literacy and IT Skills into the curriculum, included, "engaging academic staff in the process", "being School led or Schools being led", "where in the curriculum to embed", "when to embed", "the range of skills provided", "compulsory or

optional", "follow up support" and "updating of materials". The majority of respondees agreed with these statements

Some of the main issues picked out by both the ICT Skills Project team, and attendees at the LILAC workshop, are discussed in more detail below:

5.1 Updating

One of the main issues facing the delivery of Information Literacy and IT Skills materials via WebCT is that of keeping the resources up to date. The project found that the two types of resources had distinct implications in terms of their need for updating.

For IT Skills, course materials are written in accordance with a specific version of a software package, so once written they remain useful for that piece of software. However, once a new version of the software is launched, a brand new course needs to be written in line with the latest version. The previous version remains useful for anybody still using that version of the software.

For Information Literacy, the situation is quite different as course materials need to be kept up-to-date in line with current database interfaces, so that whenever a student decides to access a section of a course, it can be relied upon as being accurate. Where course materials have been embedded into courses in the academic Schools, the question arises as to how to alert the course tutors to the existence of a more up-to-date version. There are various methods for tackling this, for instance automatic updates (only usable where the course materials have not been adapted by course tutors), and email and other alerting systems.

5.2 Embedding

Another challenge facing Information literacy practitioners is the embedding of information literacy skills materials within a students curriculum. Parker (2003) acknowledged this, and considered that "the reality in most institutions is that this approach is not always feasible given the demands of already overloaded curricula". Respondents to the LILAC survey suggested that the where and when of how to embed into the curricula was a significant problem. It is important for Schools to be able to take chunks of ICT Skills material and embed them as appropriate within their own courses. However, linked to this, there is a difficulty in providing generic summative assessments for the centrally available materials, as this will need to be in line with a schools curriculum.

5.3 Evaluation

In terms of centrally-provided ICT Skills materials disseminated across the academic Schools, particularly those which have been significantly adapted prior to publishing to students, the process of providing feedback to the original content author is inherently complex. There are philosophical questions about whether positive student feedback equates to positive student learning, and whether feedback about the experience of the content can be separated from the overall experience of using WebCT as a delivery mechanism. Also, there is the issue of whether student feedback specifically related to the ICT Skills should be encouraged, and if evidence of success should be sought in the quality of assignments submitted.

6. The Future of Skills delivery at the University of Birmingham

WebCT "champions" in the schools are already aware of the learning objects, and how to download them directly into their WebCT courses, but there is currently a piecemeal process in place in terms of take up and delivery of ICT Skills learning objects: some schools have designed and delivered their own skills materials, some use face-to-face teaching, some use traditional web pages via a School intranet, and some use WebCT.

The University of Birmingham has recently approved an Information Literacy Strategy which is currently being implemented by a working group. As the actions from the strategy are rolled out and information literacy programmes become further embedded within curricula, the learning objects developed for the ICT Skills project will become even more widely used

7. Key Project Outcomes

The key achievements of the project included:

- the development of the suite of reusable learning objects;
- the establishment of the process for making learning objects reusable via Sharable Resources area within the WebCT Vista file hierarchy;

- the raising of awareness of the learning objects with key personnel in Schools;
- take up of resources by a range of Schools;
- development of the ICT Skills tutor support site;
- and the ongoing development of working relationships between Information Services and the Schools.

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