Re-use of current teaching resources at a dual-mode university

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Abstract

Charles Sturt University (CSU) teaches over 18,000 students via distance education and another 10,000 students on campus. The students study the same curricula but teaching methods on campus necessarily vary from those used for distance. The differences are ameloriated through the use of information and communication technologies (ICTs) for teaching. CSU's statistics show increases each year for both groups in the use of ICTs. Because campus students can, and do, purchase distance education study packages, it is obvious that a certain amount of convergence between the two modes has occurred. The university is currently examining the convergence to determine the ways in which a learning resource bank can support teaching in both modes so that neither group is disadvantaged. Issues around the pedagogy of learning objects (LOs) are currently being examined, as are technical issues concerned with the quality, type, size and standardization of such objects. This paper provides a short overview of the issues concerned with the development of a learning resource bank that can manage records and act as a depository for LOs.

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Introduction

Charles Sturt University (CSU) is a dual-mode teaching entity that has been active in the distance education field for more than 25 years (counting its origin among several colleges of advanced education). This university is accustomed to addressing the needs of both campus and distance students and has strong student support and learning materials production systems to enhance the teaching. The statistics of 18,000 distance students and 10,000 campus students mask the movement back and forth between distance and campus of students either through full- or part-time study, depending on their life events at the time they make these changes. Because both distance and campus students study the same curriculum, usually during the same time frame, e.g. a 12-week study period, the main difference lies in the teaching mode. Teaching approaches on campus have changed since CSU began making distance study packages available to those campus students who wish to purchase them and academics began using information and communication technologies (ICTs). Some academics still choose to teach face to face and not use ICTs but most welcome e-mail contact and the online capabilities for sharing URLs and exploring their subject area in many ways. All distance education subjects are online to the extent that they have e-mail contact, an electronic discussion forum, and an online subject outline that permits access to the forum and other facilities such as Chat or quizzes, and allows electronic submission of assignments. Since the forum allows the attachment of documents to discussion topics, a certain amount of teaching takes place on the Internet. The architecture is open and allows the inclusion of many products, either designed in-house or proprietary. The continuing provision of ICT products has encouraged academics to try various teaching strategies online, especially those allowing links to learning resources on remote Web pages, frequently-asked questions (FAQs) pertaining to the subject matter, and multimedia clips that support the content.

Development of learning resources

Because the university has developed items for distance study over a number of years, it already

owns a substantial number of teaching materials in text, audio, video and multimedia formats. In looking at ways in which these items could be categorized, stored and accessed, the university has come to realize the wider roles some of these objects might play within the teaching activities of each faculty. For example, an academic might have developed a particular teaching intervention for a single distance subject for the learning needs of a cohort of students. This intervention might also have value as revision material when learners are preparing for another subject. Similarly, a videotape of a general laboratory procedure might be useful for all students who need to prepare for laboratory sessions, regardless of their particular study stream. Because many academics who teach campus classes have taken up teaching with ICTs, it has become worthwhile for CSU to find the physical locations of all its teaching resources and develop ways to identify and classify them, such that the list (at the very least) can be made accessible to teachers throughout the system, regardless of mode.

Learning resource bank

CSU is well aware that it is not alone in wanting to classify and re-use its resources. It is also aware that some of these resources may be useful to other teaching institutions that may wish to borrow, trade or purchase them. Therefore, the classification of its learning resources has been undertaken using the definition of a learning object (LO) specified by the IEEE Learning Technology Standards Committee working group on learning objects metadata (LOM):
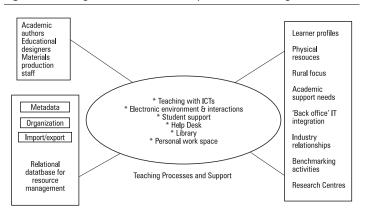
> Learning objects are defined here as any entity, digital or non-digital, which can be used, re-used or referenced during technology-supported learning (IEEE Learning Technology Standards Committee, 1999).

CSU now has a working party currently working with metadata standards that will require a minimum set of attributes to be entered into tags for each LO to identify it so that it can be managed, located and accessed as needed. It is intended that all LOs will be

tagged and deposited in a learning resource bank (see Figure 1).

Based on the work of the Instructional Management Systems group (EDUCAUSE, 1999), a set of 15 fields has been determined that range from the usual identifiers like author, production date and type of resource, to level of difficulty, semantic density and program suitability. At present, the users are considered to be staff in the faculties, library, educational design and learning materials production. In the future, students may obtain access to the LOs in the resource bank for advance or revision study, or during their work in a particular subject. Also in the future, other institutions that wish to use certain LOs will be able to access them after obtaining authorization.

The learning resource bank could be seen as a technical project for the identification, size, format, deposit, and access of LOs. It is much more than that because it must answer many concerns of academic faculty and educational designers about useability in relation to the pedagogical models they use to address the needs of diverse learner groups. The working party engaged in setting up the bank is concerned with issues around pedagogy and design of LOs, tagging, the establishment of a relational database that would address user needs on several levels, the development of interfaces with other CSU databases, and the establishment of intelligent security protocols. Although keywords and commonly-known search mechanisms will be used in managing the bank, it will be closed to external search robots so that the CSU materials do not turn up

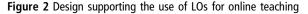**Figure 1** Learning resource bank as incorprated into teaching

in unexpected places. Because other providers in Australia are working on the production of tools such as a metadata editor and a working thesaurus for educational institutions, CSU has decided to wait for these tools to come into use. Providers such as Education Network Australia (EdNA)[1] will make their products available to educational organizations since the funding for that development and production came from the Federal Department of Education, Training and Youth Affairs (DETYA). When the tools are available, they will be used by a number of educational organizations (as well as CSU's resource bank) so there will be widespread familiarity with these applications.
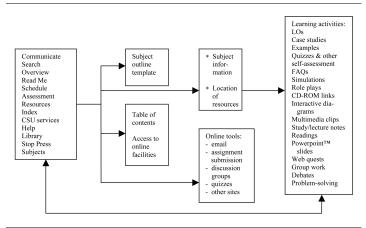
The pedagogy

CSU academics have accepted many technologies appropriate for teaching, including synchronous modes such as "chat" software and videoconferencing or the use of relational databases (e.g. the National Institute for Social Science Information (NISSI)[2] database method of teaching an "issues" subject. Rather than conforming to one institutional instructional design, academics use an eclectic set of models adapted to the needs of the students (whether distance or campus) and the exigencies of the disciplinary area. Educational designers work with the academics to ensure that the needed support for student learning is in place. Wilson (1999, p. 32) suggests that instructional design (ISD) models produce "prepackaged solutions" but, since such an outcome might be prejudicial to the wide range of learning needs evidenced by the student body, ISDs are not used. Instead, teaching strategies are chosen that give direction and meaning to the learning, supplemented with the use of appropriate LOs and ICTs. Support for the teaching is provided through the use of software for contact, discussion, student services, and remediation materials, often available on a 24 × 7 basis. As the support for CSU's academic presence online, all subjects are located in a database accessible to all enrolled students. The outline for each subject is provided, along with access to CSU online facilities such as assignment submission, e-mail contact with the subject coordinator, and the

discussion group for each cohort. (Please see Figure 2, left-hand box, for a list of online support.) The university's learning/teaching strategies might be described as being supported by a "low-end" network, in contrast to Wilson's (1999) ideas about the network supplying most teaching and learning needs.

Pedagogical issues for the learning resource bank centre on the development of teaching resources that can be used for more than one purpose. In the past, when a resource was designed it was intended expressly for a single teaching context and known student cohorts. A resource appropriate for one context may be meaningless or at least difficult to understand when applied to another. Now, before developers invest time and effort in drawing up a proposal, they are encouraged to think of ways in which the resource could be used for more than one application. If, for example, the academic wishes to approach the teaching such that it is "student-centred", s/he might decide to acquire a variety of resources that explain various concepts and provide a range of learning activities. Students would be expected to "manage their learning" by using appropriate resources from a menu as they work through the subject. This model can be extended to problem-based learning in which students work in small groups and use whatever resources (print, multimedia, diagrams, etc.) they think are relevant to their task. The learning resource bank is intended to become a depository for as many materials as possible for this mode of learning so that students can access them at will. The design model in Figure 2 is one of those used by educational designers when

Figure 2 Design supporting the use of LOs for online teaching

working with academic staff who wish to teach online. It indicates some of the ways in which the provision of LOs online can inform and energize the teaching and provides a choice of learning activities and tools so an individual teaching/learning approach can be supported.

In Figure 2, the box on the extreme left side lists the facilities always supplied with every CSU subject. The box on the extreme right side lists optional online learning activities from which an academic may choose when developing the teaching approach. Usually, only a few of these activities are used in a single subject. The tools are available for every subject and may be used by students independently of the subject coordinator.

Standardization considerations

Quinn (2000) opened the debate among CSU staff on "granularity". He suggested that the smaller the LO, the more applicable it would be to a range of uses. Ready agreement with that has not been found among CSU academics. They believe the size of the LO varies among disciplines and that a series of generic LOs may not be as useful for teaching purposes as a fewer number of items tailored for their teaching. They argue that great teaching efforts are required to make the generic LOs pertinent to the study. In addition, there has been considerable debate about the appropriate re-use of particular items already produced. The LOs that CSU owns are mainly videotapes, text documents and software items. Videotapes made a year or two prior to the development of the resource bank are being remastered as multimedia clips, which will allow their appearance in a variety of subjects. Remastering decisions rest on how, why and where the materials will be used, so that object size and format can be determined. The Centre for Enhancing Learning and Teaching at CSU will research the issues around granularity as more LOs are developed and used.

Because CSU does not wish to inflict bandwidth problems on its distance students, current practice groups LOs on CD-ROMs (accompanied by appropriate advice on use) for mailing to learners. This solution is temporary; other methods that address download problems

effectively will be devised when better quality telephone lines become available. By that time, CSU will have a comprehensive background of experience with LO delivery and standardization will be more fully understood from both pedagogical and technical viewpoints.

Shelf life

An issue arises with regard to the resources that are held in the bank: maintenance of resources and the criteria for "shelf life". Because the working party has accepted such a wide definition for learning objects, almost any teaching aid has the potential to be deposited in it. The requirements for formatting a range of "downloadable" objects provide a technical problem, but the need for updated objects that are relevant to current knowledge and practice in each subject area is the source of some pedagogical difficulty. Some LOs are "classic" and can be kept for a long time in the bank because they supply the basis for student understanding of the principles upon which the knowledge area depends. Many other LOs do not fit this category, yet they may have required much time, expertise and expense to produce. Academic staff can be reluctant to discard them, yet they may never use them past a certain "use by" limit – a date that the knowledge area may reach quite soon after the production of the LO (unfortunately). The definition of a "classic" LO has to be determined by each discipline area so that a certain kind of object can be developed in-house or acquired (and deposited) for the teaching of certain principles. Academics in each discipline must also examine the other LOs that it owns and decide what to do with them (e.g. determine the length of shelf life). One outcome of that scrutiny must be the development of criteria for the production of future LOs so that the time, expertise and funds will be expended on items that have a range of teaching applications within the knowledge area. As academics become more aware of the ways in which fields overlap, and the need to help students gain widely-applicable skills and knowledge, they will choose increasingly to develop LOs that can be used several ways.

The "quality" required in any LO will be determined through future work with academic groups, in the hope that guidelines acceptable to the university community will be established for developers to follow. There are many issues around the term "quality". With regard to the resource bank, it is easy for staff to get so caught up with technical problems that teaching quality issues are forgotten. Realistically, the main concerns should centre around the degree to which the LO is effective as a teaching resource, the ways in which students perceive it (as explanatory, as an indicator of learning "depth", as remedial, etc.), its relevance, currency and relation both to the content of a subject and to a range of related subjects.

Summary

CSU is in the process of developing a learning resource bank containing LOs that can be accessed and re-used by academics in their teaching. University groups, such as learning materials production staff, educational designers, information technology staff, librarians and academics, are gaining understanding of the development, tagging and deposition of LOs in a relational database. While the current intention is that the items in the database will be available to academic and production staff within the university, eventually the LOs will be available to authorized agents external to production, such as students and other institutions. Issues such as the quality of an LO, its size, downloadable format and metadata tag vocabulary are in the process of resolution.

The working party has the following recommendations:
- Issues around LOs must be carefully explored, before the exercise of locating resources and debating whether they are LOs or not is begun.
- Technical problems may be seen to be foremost, as the information technology aspect cannot be denied. Actually the pedagogical uses to which LOs would be put should be foremost considerations.

There is no point in developing a "generic LO" that loads easily and can be tagged readily if it is not a useful teaching aid with a reasonable shelf life.
- Working examples of the use of LOs in teaching should be examined so academics and technicians can discover how "their side" of the development might be implemented. A good example of the development and application of LOs has been provided by the Queensland University of Technology (1999). The Science Faculty in that university found that certain "modules" of work could be created and placed at appropriate points in the first-year science curriculum so that all students would hold specified knowledge and skills in common as preparation for the more specialized second year of study. To date, this approach is not common in many universities but its time has come.

Notes

1 Education Network Australia (EdNA) http://www.EdNA.edu.au
2 National Institute for Social Science Information http://www.NISSI.org/

References

EDUCAUSE (1999), "IMS meta-data Best Practice and Implementation Guide", available at: http://www.imsproject.org/metadata/index.html

IEEE Learning Technology Standards Committee, available at: IEEE P1484.12 Learning Objects Metadata Working Group http://ltsc.ieee.org/wg12/index.html (downloaded 25/4/00)

Queensland University of Technology (1999), "A flexible approach to developing generic skills through problem-based learning in introductory science programs", available at: http://cea.curtin.edu:80/ATN/QUT1.html

Quinn, C. (2000), "Learning objects and instruction components", available at: http://ifets.ieee.org/discussions/discuss_feb2000.html

Wilson, B. (1999), "Evolution of learning technologies: from instructional design to performance support to network systems", *Educational Technology*, Vol. 39 No. 2, pp. 32-5.