

## A dilemma in the strategic move towards blended learning: Balancing bottom-up with top-down approaches

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*The University of Sydney set up an eLearning Support Initiative in 2004 to enhance student learning and provide sustainable learning technologies which would promote research-led, active, innovative approaches to learning and teaching. Whilst the University's faculties were to work within the University guidelines for the development of e-learning projects, the faculties were grouped into three clusters to work out the best mix of projects for this initiative. This paper reflects the activities of the Sciences and Technology cluster. The dilemma for this group was: 'Do we look for the overarching, all-embracing projects which are needed by the clients (even though they may not know this) and which will become diffused in time across the cluster or even the institution?' or 'Do we work at the 'coalface' level and help academics develop e-learning resources which will fulfil their various perceived needs?' The answer for us was to do both and this short paper addresses how we have balanced these two approaches to blended learning.*

### Introduction

The University of Sydney set up an eLearning Support initiative in 2004 to enhance student learning and provide sustainable learning technologies which would promote research-led, active, innovative approaches to learning and teaching (University of Sydney 2004). Whilst the initiative comes from the 'Centre', it has been operationalised both within the Centre and within devolved units. Due to the size of The University of Sydney (the University), the 17 faculties have been grouped within three clusters of faculties and it is at this level that the initiative is working. Each cluster has appointed a director of e-learning to oversee the academic administration of strategic e-learning projects. The faculties within each cluster have each appointed a representative to better understand how e-learning is being used to support learning and assessment in their faculties. In addition the central initiative has provided each cluster with an annual allocation of 4000 hours of support for strategic projects which are prioritised by the director and operationalised by educational design and project management staff from the centrally-funded group, USyd eLearning. This short paper addresses how the central initiative has been operationalised within the Sciences and Technology cluster, what types of projects are being supported and whether we can already point to significant output that is enhancing the learning experience of students.

### The team and how it functions

The Sciences and Technology 'team' consists of the Director of eLearning, representatives from each of the five faculties (appointed on a yearly basis by the Director in conjunction with the Dean of each faculty) and a Project Manager assigned to the cluster from USyd eLearning. In addition educational designers of USyd eLearning join the Project Manager each semester and are assigned to the cluster depending on its development needs.

The Project Manager meets with her USyd eLearning group regularly to discuss the development of the multiple projects on which the team is working. The Director and Project Manager meet with the faculty representatives every month to discuss issues that have come up; report progress on the projects; select projects for the USyd eLearning group to develop; and allow for a flow of communication from the initiative through the faculty reps to the faculties. Each faculty representative is a member of his or her faculty teaching committee and this gives them an avenue for communication.

### Choosing a balance for the projects

Whilst each cluster was to work within the overall University guidelines for the development of e-learning projects, it was left up to individual teams to work out the best mix of projects. Within the Sciences and Technology cluster there has

been a significant use of e-learning for a considerable time, although not all of it might be classified as having the best pedagogical design. Certainly the use of computers in 'science' teaching extends back to the 1970s but it is only in the more recent decade or two that a concerted effort has been made into understanding how students use such resources (whatever they are) and this has begun to guide our understanding of what is a pedagogically sound student resource. The dilemma for the cluster was: 'Do we look for the overarching, all-embracing projects that are needed by the clients (even though they may not know this) and that will become diffused in time across the cluster or even the institution?' or 'Do we work at the "coalface" level and help academics to develop e-learning resources that will fulfill their various perceived needs?' The answer for us was to do both.

The organisation of projects centres around the provision of 4000 hours of strategic development time each year. Projects chosen have to meet several criteria (to be seen as strategic for a faculty or the cluster; provide either a model or a set of ideas for use elsewhere in the faculty or cluster; or be collaborative across the institution with a whole-institution output), and they have to be appropriate for the time available. The projects are initially chosen by the cluster team from expressions of interest, worked up by the academic(s) and Project Manager, and finally accepted as a project by the University eLearning Administrator. This process enables the selection of a mix of strategic projects that will fit the time available and the skill base of the USyd e-learning educational designers. Projects are not chosen on a competitive approach but on a pragmatic approach, keeping the selection parameters in mind.

## What mix have we chosen for our first two years?

We have worked on or are working on 21 projects at the coalface level (bottom-up) and five projects at the cluster diffusion level (top-down). The bottom-up projects have

been working towards the University guideline to increase the use of the University's learning management system (*WebCT*) across the institution. *WebCT* was adopted in 2000, and since 2001 there has been a 60% increase per year in its use as a learning management system, with about 30% of learning at the undergraduate level classified as blended learning, (Applebee, Ellis and Sheely 2004). This trend has continued into 2006. The use of *WebCT* in the Sciences and Technology cluster is patchy in that some faculties have almost 100% uptake across courses whilst other faculties, at the beginning of 2004, had no uptake at all. Instead these faculties are using in-house (and thus faculty-maintained) intranets to service their students rather than the central facility. The team agreed that helping academics to set up *WebCT* sites would also help to diffuse the use of a central system throughout the faculties. Several bottom-up projects have been implemented that have: provided templates for *WebCT* units of study; developed specific resources within the *WebCT* environment (eg practice activities); and provided training in a one-to-one mode for interested academics. A recent policy decision has set a timeline that all courses will have a *WebCT* site by the end of 2006, with some learning and teaching materials. By 2008 all sites will have some interactive pedagogically sound learning and teaching resources with a plan for ongoing developments.

Work to date has resulted in faculties with staff using *WebCT* and developing a better understanding of the way in which such an environment can be used to enhance the learning process. There is a cultural shift occurring within some faculties. In one instance, Psychology appointed an online tutor to manage the discussion boards for a large cohort of students across a number of courses. Students strongly supported the role of the online tutor and the online discussions in course evaluations throughout 2005. The appointment of the online tutor is seen to be a strategic direction that is a model for others, also acknowledging the workload implications of online interactive resources in a blended learning environment.

The screenshot shows a web interface for 'CST Spotlight' with a 'Control Panel' and 'View Designer Options' tabs. The main content area is titled 'Formative Assessment' and includes the following text:

On these pages you can see how academics across the University have created online resources for formative assessment. Click on the summaries below to find out more, or if your prefer, use one of the links which follow to browse by educational strategy or faculty/school. To view some of the work you may have to download plug-ins e.g. Flash, Authorware. Downloads are available from the relevant pages.

**Browse by Educational Strategy**

- Adrian George | ChemCAL and Pre-prac Exercises**: ChemCAL – an online interactive chemical calculation tool – was initially created for weaker students as a catch-up tool. It was then discovered that the stronger students were also using it as a revision tool and for practice. The pre-prac work consists of readings and quizzes, and is presently being put into WebCT.

**Browse by Faculty / School**

- Graeme Wood | Self-testing Spreadsheets**: Students of fluid dynamics need to be able to understand and incorporate basic concepts and apply them to real-life problems. We created 10 self-marking spreadsheets for each unit that contained problems that tested their understanding of the concepts, and allowed them to try the same problem repeatedly with different parameters.
- Sandra Britton and Andrew Mathas | Maths Practice Quizzes**: Mathematics students need a lot of practice at calculations. Making them available on the web means they can do this when and wherever they choose. They can also try the same problem several times if they need to, getting feedback for their efforts.
- Gianluca Ranzi | The Dome**: The Dome provides an exciting learning environment to encourage deep learning among engineering students and bridge the gap between students' actual and assumed knowledge. It incorporates instructional and interactive practice material, illustrations and videos, and takes a learner-centred approach to promote active, reflective learning and learner independence.

Figure 1. Screen capture from the 'Formative assessment' section of *Spotlight*

Many of the bottom-up projects have focused on the development of online mastery activities that enable students to develop their skills as well as self-assess. As a result, there is now a suite of mastery activities using a variety of software programs. This has generated interest by others within the faculties in the cluster, leading us to see the need to provide stimulus in the form of an online showcase of best practice examples across a range of disciplines, known as *Spotlight on learning and teaching in Sciences and Technology*. The vision is for the site to take on the format of an e-newsletter in which new topics are added every semester as needs and interest from staff arise. This is resulting in a top-down project which provides a permanent resource for staff. The first part of this project is a segment on online formative assessment. Each example in the segment illustrates how an academic provides formative assessment resources within the context of a discipline and year group (see Figure 1.). For example, in fluid dynamics,

the academic saw the need for students to understand and incorporate basic concepts and apply them to real-life problems. He has provided self-marking spreadsheets that contain problems that test students' understanding of the concepts and allow them to try the same problem repeatedly with different parameters.

Another top-down project was *Using still images in online teaching and learning*, which has produced a professional development web site and training program for staff in two clusters. It focusses on preparing images for the Web (see Figure 2.) and the use of images for online learning and teaching, as well as issues associated with copyright and image banks. As well as providing an online resource, the team has provided face-to-face workshops for interested academics. The project has been well-received, with positive comments from staff, such as, 'I wish I'd had this years ago!' and 'Brilliant resource to have.'

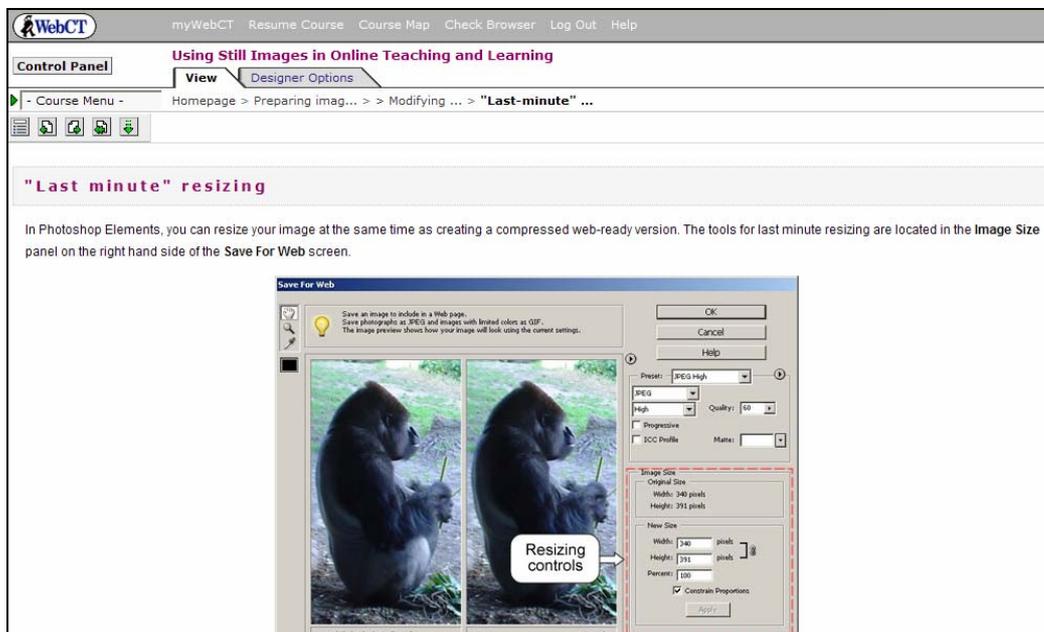


Figure 2. Screen capture from the 'Preparing images for the Web' section of *Using still images*

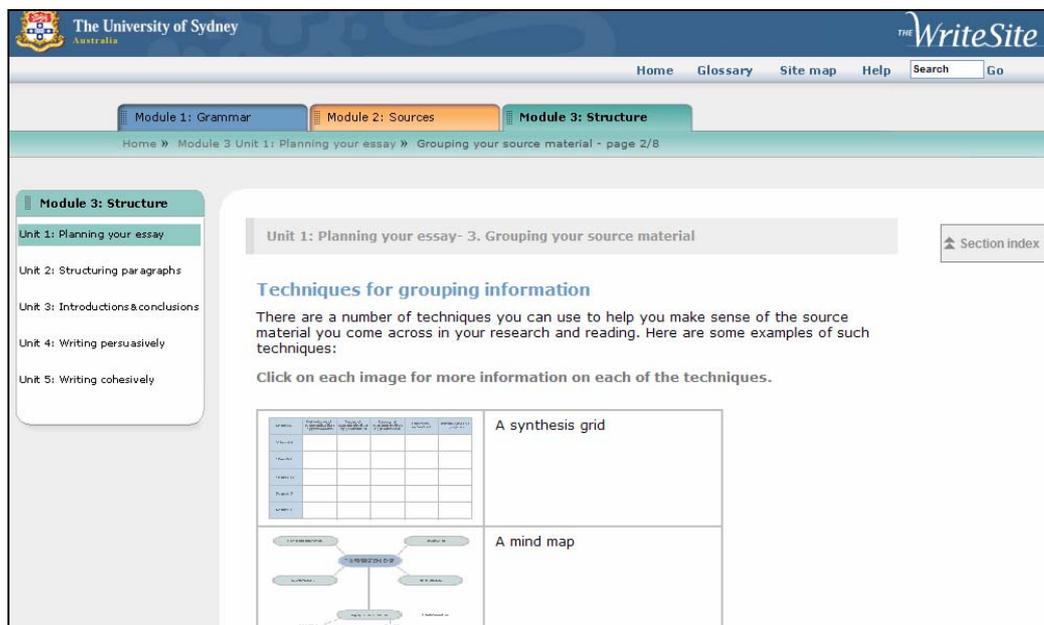


Figure 3. Screen capture from the 'Structure' module of *The WriteSite*

A further top-down project was *WriteSite*, which is two-pronged. For students: it gives explanations of common writing problems (see Figure 3.); provides interactive exercises for practice; and offers strategies to improve writing and achieve better grades. For staff: it provides quality feedback in less time; fosters research and communications skills in students; and uses handy marking keys to direct students to the resource.

### What have been the benefits?

From the perspective of the sciences and technology faculties, outputs from the projects to date have been: research project dissemination outside the University; templates for models of educational design; professional development resources and training; resource delivery models; and pedagogically sound, interactive online learning materials for students. The outcomes for the same period have been: better understanding by staff of the pedagogical use of e-learning; student acknowledgement of a superior online learning and teaching environment; technologically literate graduates; and research.

From a faculty perspective, we have already described the cultural shift occurring in Psychology. A similar change is underway in the Faculty of Agriculture, Food & Natural Resources (FAFNR). Prior to 2005, e-learning strategies in FAFNR were largely restricted to sporadic use of intranet sites for lecture material and occasional assessment tasks. In January 2005, a joint teaching grant/e-learning project was initiated to establish *WebCT* sites for a new Animal and Veterinary Biosciences Degree. Through demonstrations of these sites to staff, and positive responses from staff and students who have used the sites, a cultural shift towards the incorporation of e-learning into all courses has commenced. In particular, there appears to be a growing appreciation of the flexibility of an e-learning platform like *WebCT* to enhance course delivery and management (which will be further enhanced in our move to *WebCT* CE6 this year), and an appreciation that students now expect an online presence for most courses. Cultural shifts are similarly underway in the Faculty of Engineering and School of Information Technology.

### What issues have we encountered?

One initial issue was how to encourage academics involved in projects to provide the content to USyd eLearning according to the agreed schedule. A solution was to align the expressions of interest for e-learning projects with the rounds of teaching development funding and to provide support in writing competitive applications to ensure funding success. In the first round of projects, some academic staff involved in the initiative who did not have funding had workload issues. This has been less severe in subsequent rounds as teaching development funding has helped to prevent such problems on most projects.

The workload issue also relates to the degree of staff readiness – or willingness – to participate in e-learning projects. Academics on a given course may be keen to develop online materials, but may find that academics on other courses in the same degree may not wish to

participate. Not only does this have implications for consistency across all the courses in a degree, it also challenges the independence which academics have traditionally had for the development and teaching of courses (Bates 2000; Coaldrake and Stedman 1998). Either way, it is difficult when staff who are less committed to a project (for valid reasons) need to find time from within heavy workloads to develop content.

The need for collaboration also impacts on projects which involve staff working within faculties, who work in conjunction with USyd eLearning educational designers. In initial projects, we encountered a lack of clarity of roles and responsibilities between USyd eLearning and faculty-based project team members. However, by focusing on the big issues and agreed goals, as advocated by Martin (1999), we were able to overcome our difficulties. In planning more recent projects, increased clarification has prevented many of these issues from occurring.

Another issue stems from the innovative nature of some of the e-learning projects, such as *Using still images*, which are transforming the way in which staff work. In developing this project, we found our plans required constant alteration in order to meet staff needs. Kenny (2004) found that projects which introduce change to university staff also introduce high levels of uncertainty. He found that when working with this type of project, ‘the outcomes ... are usually unclear or ill-defined at the outset, often becoming clearer through iterative development’ (2002, p. 374). Instead of a traditional form of project management with strict adherence to timelines, he recommends taking an investigative approach, where action learning and action research are essential. With innovative projects, Kenny (2002, 2004) and Bates (2000) advocate the use of flexible timelines, which also accommodate workload pressures on academic staff involved in projects. We have trialed this in more recent projects and found it to work extremely well.

A continuing issue with top-down e-learning projects centres around the dissemination of their outputs to all staff. For example, the ‘Using still images’ workshops have been popular and the web site has been well visited, however, anecdotally we know that some students are still unable to access some online course materials because they contain non-web-ready images. Perhaps, as Rogers (2003) explained: ‘Getting a new idea adopted, even when it has obvious advantages, is difficult. Many innovations required a lengthy period of many years from the time when they become available to the time when they are widely adopted (p.1).’

### Conclusion

The beginning was hectic with a feeling that we must achieve something very quickly. In fact this happened and we can look back on the apparent chaos with pride and look forward to the implementation of a series of projects that will have huge ramifications across the sciences and technology faculties. We have a better understanding of issues to do with e-learning. We are developing a more collaborative and collegial culture which has helped us shift

the culture in some faculties and we are actively involved in developing University policies with respect to learning support issues. Our mix has been appropriate and allowing bottom-up projects to help define the top-down ones is giving our staff a sense of real ownership of the process.

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