Transforming our work: Elearning initiatives

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Abstract

This paper focuses on the process through which a small team of tertiary-level academic learning developers transformed their practice from one centered in physical space to a mixed virtual / physical learning place. It discusses key design decisions affecting online developments including the overall structure of the eLearning environment, the use and importance of Moodle and other open source software tools, and the selection and organization of pedagogical content. Following discussion of the development and use of effective online learning places and the consequent implications for change within learning environments, the paper concludes with reflections on institutional change processes and a description of future initiatives.

Introduction

At the University of Waikato the transformation of academic literacy support from one provided predominantly through a face-to-face (physical) mode to one using a mixed virtual / physical mode has been influenced by both external and internal factors. Externally there has been a shift by the Tertiary Education Commission (TEC) from a university funding model based on student enrolments to one focused on student achievement, university programme distinctiveness, and research outputs (Russell, 2007). Issues relating to student retention and completion (Government of New Zealand, 2006; Hipkins, Roberts, Bolstad & Ferral, 2006) and student satisfaction with learning opportunities (Forrett, Eames, & Coll, 2004; Otrel-Cass, Campbell, & Cowie, 2006; Watson, 2003) have also emerged. In addition, factors internal to the university played a key role in changing how student learning development would be provided. These included an increasingly diverse student body (culturally and linguistically) (Franken, 2005) and a renewed focus on elearning.

In 2007 the introduction of Moodle, an open source learning management system (LMS) at the University of Waikato, provided the opportunity to develop online resources and interactive activities that would extend contact with students beyond office and classroom walls. An LMS can be defined as a software application used for organizing and managing digital content and for providing collaborative tools to support community development (Johnson, 2006). Importantly, an online presence,

[1] Johnson, E.M., Haines, A., & Strang, P. (2009). Transforming our work: Elearning initiatives. In M. A. F. Silvester (Ed.), *Transformations: Proceedings of the 2008 Annual International Conference of the Association of Tertiary Learning Advisors of Aotearoa New Zealand (ATLAANZ)*, (pp. 37-49). Auckland, New Zealand: ATLAANZ.

particularly in the tertiary sector, is entirely consistent with international best practice (Forrett, Eames, & Coll, 2006; Goodfellow, 2007; Kvavik & Caruso, 2005; Wesch, 2009). While it is acknowledged that elearning is not the preferred option for all students, there is ample evidence that academic literacy skills can be developed and enhanced in an online environment (Johnson, 2008) as learners work through academic content at their own pace (Buzzetto-More, 2008; Kasper, 2000; Salmon, 2002).

In spite of all these changes, the fundamental aim of Student Learning Support (SLS) at the University of Waikato (as at other universities in New Zealand and overseas) remains unchanged; it is the development of students' academic literacy skills, such as interpretation of assignment requirements, assignment writing, conducting research, or exam preparation, and the raising of students' awareness that meta-cognitive learning processes and strategies are transferable across a variety of tasks.

Until 2008, learning development at the university was normally provided in physical spaces, through face-to-face meetings (tutor-student) or group workshops (generic or tailored to specific university papers). While it can be argued that face-to-face teaching is pedagogically effective, it is nevertheless labour-intensive and, importantly, time-bound. Not all students conduct their academic study between 8:30 and 5:00 when the learning tutors are (physically) available. Widespread access to computers and the Internet means that students expect support and resources to be available on-demand (Wesch, 2009). This is particularly so if they study off-campus or are enrolled in fully online papers in which they rarely or never (physically) meet their teachers or learning peers. Given these factors it was decided to supplement present learning support by developing an on-line presence.

Initial design decisions

Conceptual framework

Initial key design decisions for a new online environment were guided and shaped by principles of general systems theory, an interdisciplinary conceptual framework in which separate objects, which interact to produce a unified result, are systematically analyzed and described (von Bertalanffy, 1968). Without an appreciation for and understanding of the total environment as observed from several points of view, designers might fail to recognize key events, people, or relationships in an overall system. We were also guided by the Ministry of Education Tertiary eLearning Framework (2004-07), in particular the principles of innovative elearning practice and the development of learner-centred pedagogies within the New Zealand context (Ministry of Education, 2004).

A small collaborative team of staff with overlapping expertise in educational computing theory, learning support development, curriculum design and development, and teaching and learning processes was formed. One key point is that none of the development team was a specialist online instructional designer or computer programmer. There were several initial decisions that needed to occur before any

development work commenced, including user identification and analysis of their learning needs, review of pedagogical approaches in online environments, evaluation and selection of software tools, choice of appropriate learning content (resources), and development of a robust framework for structuring the environment. Although the initial planning features are described here separately and briefly, they all interacted and affected final, unified design and development decisions, as is consistent with a general systems theory approach.

User identification and analysis of learning needs

While the team intended the main users of the website to be tertiary-level students, we were also aware that numerous other key stakeholders would be interested in using the resource. For example, the learning development tutors in our centre planned to use the online environment during face-to-face sessions with students – either as an instructional tool (to work collaboratively with students through interactive workshop content), or as an instructional resource (showing students where text-based information could be located and downloaded). By working collaboratively in an interactive (online) workshop, tutors could better assess students' learning needs and they could also demonstrate how a student's own independent learning could continue later. Such collaboration could help raise student awareness of important features of academic literacy and provide an emotionally supportive learning environment (Chanock, 2007). In addition, we envisioned the online environment to be of interest to lecturers, language teachers, librarians, or other student support staff on campus who could direct students to our independent learning resources and workshops. Finally, if the materials were accessible through the University of Waikato website, potential users could be literally anywhere in the world.

A second key consideration of the user identification process was students' learning needs. For example, a History undergraduate might have quite different learning development needs than a postgraduate Biology student – or, conversely they might share certain learning needs, such as how to correctly reference in-text quotes, but benefit from having contextually based materials to practise with. We needed to start somewhere though and thus decided to focus on general undergraduate academic skills such as paraphrasing and paragraph writing with a view to incorporating subject-specific content over time.

Pedagogy

Effective pedagogical principles are fundamental to learning and must remain the focus in online teaching (Mayes, 2001). Technology that is overlain on existing poor practices can, and usually does, magnify and exacerbate imperfections in that pedagogy (McLaughlin, 2002). In some cases of computer implementation, the transformative potential of technology has not been realised often because carefully planned, resourced, and structured learning environments were lacking (Alexander & Boud, 2001; Johnson & Walker, 2007; Kopyc, 2006; Lomas & Oblinger, 2006). In fact, the necessity of implementing clear organizational structures in elearning contexts is well established (Clarebout & Elen, 2008; Marshall, 2006).

However, problematic within our context was the fact there would be no course structure in the traditional sense of a discernible beginning and end to instruction (a teaching term), an overall body of knowledge to master (a curriculum), assessment (leading to a qualification), or regular interaction with an instructor and peers (collaboration). Instead, our elearning environment had to attract students and support their self-study, yet be integrated, if needed, into students' private or online meetings with a tutor. In order to achieve deep learning of concepts within online environments students need multiple opportunities to cognitively engage with and think critically about learning materials, as opposed to being passive recipients of text (Stephenson, 2001). As a result, we agreed that in addition to computer-generated responses, online feedback from a tutor to students' questions was essential. Given staffing constraints, we also agreed that such support would be impossible if the interactive materials were publicly accessible. Students from anywhere in the world might expect personalized, tailored feedback to their learning problems and enquiries, yet we lacked the resources to provide it. We decided therefore that some text-based material would be viewable by anyone but that other more interactive workshop activities, requiring personal feedback, needed to be restricted to the specific university community.

Software tools

Another key planning decision was whether or not to use Moodle, to develop a series of linked pages within the main University web environment, or to use a mix of software tools. We wanted the online organizational structure to be flexible in order to support its continuing development, but in addition, and particularly salient to this discussion, no-one on the team was an expert programmer nor did the unit have access to additional financial resources. Therefore, we needed access to powerful, but user-friendly and cost-effective computing tools and for this we turned to open source software – Moodle and SCORM.

With open source software the source code for computer programmes is made freely available and software users are also free to redevelop and redistribute the code. There are several key advantages to this approach over the use of proprietary software (for example, Blackboard). First, the cost of obtaining software is significantly reduced or eliminated altogether although it cannot be assumed that open source means free-of-charge. In some cases, use of open source software does require payment of a licensing fee, but it is typically much lower than that charged for proprietary software. More importantly, people who participate in the development or refinement of open source software become part of a global community of authors and users who share not only programming code, but also programming bug 'fixes' (UNESCO, 2002). This final point is significant for small, non-specialist development teams with limited access to funding.

Two key features of Moodle made it particularly attractive for our purposes. One was its excellent community building tools and the other its powerful resource management tools. The former can be defined as the types of tools teachers can use to facilitate the co-construction of knowledge among students including, for example, asynchronous discussion forums, the ability to thread discussions by date or topic so

that arguments can be followed either by time or by theme, chat tools (to support synchronous text-based communication), VoIP (voice-over internet protocol) tools (to support audio/visual resources), or wikis (forums within which texts can be co-constructed by groups of users). Resource management tools within Moodle can be defined as the types of tools developers can use to facilitate file management and course design, including for example the ability to upload, incorporate, and use multiple file formats, and the use of Sharable Content Object Reference Model (SCORM) to create, import, or export learning pathway sequences (Johnson, 2006).

SCORM was an easy-to-use tool for our non-specialist (computing) development staff due to its uncomplicated editing and updating facilities. Interactive SCORM workshop material integrated easily into the majority of Moodle's elearning features. However, because SCORM is an authoring tool that is separate from the Moodle environment, whenever a change is made to a workshop lesson, the new file version must be imported again into Moodle. In practical terms this means that a developer must keep careful track of the different file versions on his/her computer. Nevertheless, SCORM has facilitated a smooth-flowing and professional-looking presentation style for workshop content in that learners can begin a lesson but leave it at any time and return to it later. Alternatively, a student can enter individual workshop pages to seek clarification on a particular learning point or reread and reflect on material already completed.

Learning content

The team's initial discussion of what learning content to include was shaped by our knowledge that a wide range of excellent material, created by other learning providers, is available on the Internet. Initially it seemed time-consuming and redundant to create our own. There were two issues with this, however. The first is that University of Waikato students must pay in order to access off-campus Internet resources and thus if we were to electronically direct students to external websites, they would be charged. Enrolled students could access resources stored on a local Waikato server for free (although printing would incur a cost). Second, Student Learning Support (SLS) had already developed its own assortment of handouts and booklets, specifically created to develop student understanding of academic literacy processes and academic conventions within our own university context. Paper copies of these materials had proven popular with students in the past and we believed that online access to locally contextualised resources could extend SLS support at a minimal cost to students.

The materials could not simply be uploaded in the same format as they appeared in print, however. Some texts were either too lengthy or the writing style was overly complex, and with increasing numbers of international students for whom English is an additional language, a straightforward presentation style was deemed essential (Johnson, 2008). By deciding to use our own material, we understood that we were also making a commitment to extensive editing and rewriting of those texts although this did provide an opportunity to adopt a simplified and standard presentation style for all SLS resources. All static material now fits within one double-sided page, is

presented in a large, easily readable font, and uses the University of Waikato colours and crest. Overall, the team is satisfied that the revised textual content has benefited from the editorial overhaul.

A model for structuring the website

As a result of these independent, but interacting issues and practical constraints, we adopted a four-tiered organizational framework. It is important to note that the tiered framework does not imply a hierarchy, but is a virtual, non-directional model for the structuring of resources. There was a particular focus on using straightforward navigation from the University's homepage to branch into undergraduate or postgraduate resources, the publicly accessible resources, or the interactive, login-protected Moodle workshops. Instructions for navigating the workshop pages were written in clear, easily visible, and brief language. Each workshop contained a link to a pre-reading to ensure that all learners had some prior knowledge of the topic. Focus questions were used to raise consciousness of the skills being taught and to check acquired knowledge; examples were given to illustrate important principles; tasks were provided to check understanding. The overall design principle was 'simplicity' in order to facilitate intuitive movement through material, interesting and relevant feedback to promote learning processes, and emotional support, when required, through opportunities to communicate (asynchronously) with learning tutors. An overview of the organizational structure can be referenced in Figure 1.

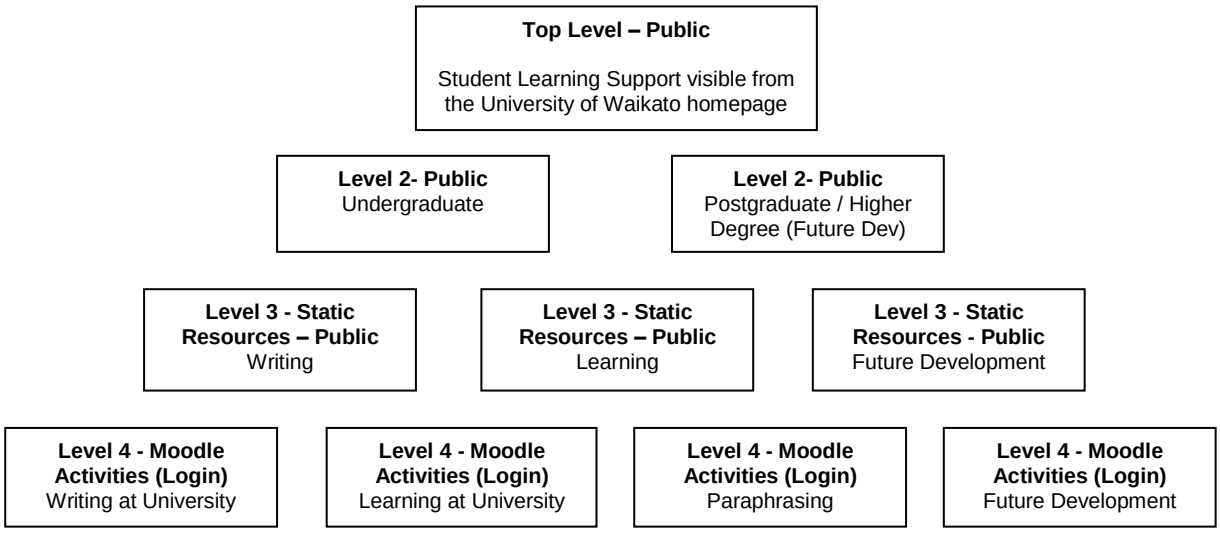

Figure 1. Student learning support website – organizational framework

The created elearning environment

Wahlstedt, Pekkola, and Niemela (2008) in their discussion of elearning communities argue that when students go online, they anticipate collaborative spaces complete with social rules, hierarchies, and virtual places to interact, not just a collection of static

materials. Other research studies report that learners prefer mixed-mode environments in which they can interact privately with text and activities, as well as reflect on their personal learning needs and achievements (Clarebout & Elen, 2008; Goldberg & Riemers, 2006; Salaway, Caruso, Nelson, & Dede, 2007). It was with these ideas in mind that our learning website activities were shaped; we wanted to populate both the SLS website (public space) and the private Moodle elearning space with appropriate resources and interactivity in order to create an overall elearning 'place' for our students.

Information and communication technology (ICT) use is increasingly implicated in what it means to be socially, economically, culturally and politically involved in 21st century society (Selwyn & Facer, 2007). An ability to bring people and places together has emerged as one of the defining characteristics of ICTs; they can be seen to underpin the development of a more networked and interconnected society (Castells, 1996). However, although the 'net' generation has arrived at tertiary level, we cannot assume that our students are experienced 'eLearners'. Familiarity with social networking sites or short message service (sms) text messaging does not guarantee that students possess the skills needed to participate in academic elearning environments. Young people, but particularly adults returning to study, often have had unequal access to opportunities, experiences, skills, and knowledge that prepare them for full and productive participation in tertiary elearning contexts (Jenkins, Purushotma, Clinton, Weigel, & Robison, 2006/7). They need structured, collaboratively supportive, elearning opportunities.

The Moodle community building tools (collaborative forums and the dialogue tool, for example) facilitate just the type of elearning places that we require. Forums have been established as public knowledge-building places where students can ask and answer each other's questions. A private one-to-one conversation area where a student can ask a tutor a specific learning question is created automatically by the Moodle dialogue tool when a student first logs in. Individual tutorial environments have been developed through interactive workshops created in SCORM, while quizzes have been created so that students can participate in self-paced, knowledge-testing activities. The initial workshops directly target key academic literacy processes such as paraphrasing and paragraph writing and are intended for bridging or undergraduate students (although any student can use them). One early design decision was to restrict the screen display to about 16 lines, thereby eliminating the need for scrolling. Finally, there are artefacts that add meaning to our Moodle elearning place, such as links to the library, to other student support services, and to the text-based information sheets accompanying the interactive workshops.

The activities used in the SCORM interactive workshops include a combination of texts for concept explanation, reading activity for setting learning tasks, and true-false, multi-choice, and completion item types for assessing understanding. All item types permit explanations to be added for both correct and incorrect answers, which means that students are presented with more complex and nuanced learning feedback than is often the case in online testing environments (Johnson & Brine, 2001). Each

workshop topic includes a non-graded practice exercise, which can be submitted as a Moodle assignment for tutor feedback and then returned to the student through the private dialogue area. Multi-choice practice quizzes are also used so that students can self-assess understanding and obtain feedback in a more immediate fashion. As a result both types of practice and self-assessment quizzes cater to students' more immediate or longer-term developmental learning needs and increase the flexibility of our environment.

Thus our approach has been to synchronize the physical and virtual environments, not to establish them as either/or alternatives in the provision of learning development support. Through the establishment of pedagogically challenging activities, which can be stand-alone or used collaboratively with a tutor, we believe that the best of both approaches can be used.

Implications and future work

There is a wide range of practical constraints to consider when designing a virtual learning development environment. One particular issue is that the activities are almost always done on a voluntary basis and there is no immediate extrinsic motivation, such as assessment, to stimulate a learner's continued online participation. Instead, students must recognize an intrinsic value in the online resources and activities and appreciate their usefulness for acquiring or improving academic skills. In Student Learning Support (SLS), although tutors are (physically) available to support learners as they work through the activities, the students are generally expected to then take responsibility for their own learning needs and work autonomously in the virtual environment. Clear, visually attractive, yet succinct explanation of the overall purpose of the website and its individual activities has thus been an essential design consideration in order to attract and maintain student interest (Salmon, 2002). This has included keeping activities short and focused, providing content focused on well established local learning needs, developing activities that can provide students with a sense of skills-mastery, and making explicit the ways in which the knowledge can be transferred across learning tasks.

Achieving our goal of transforming practice has presented challenges and has necessitated a change to the culture of SLS. While it is relatively easy to change surface-level culture within an educational institution, it is much more difficult to transform beliefs and norms about delivery of education. The transformation described in this paper has required a pedagogical shift from face-to-face support of students' learning development to one in which online, self-paced and self-directed (autonomous) activities supplement (or replace entirely) physical meetings with a tutor. Such change deeply affected the culture of the unit as beliefs, values, and established practice were challenged. Clearly, without careful consideration of change factors, resistance to new systems could have jeopardized the project's success.

Fullan, in his seminal work on the meaning of educational change has stated that:

> The answer to large-scale reform is not to try to emulate the characteristics of the minority who are getting somewhere *under present conditions* … Rather, we must change existing conditions so that it is normal and possible for a majority of people to move forward (2001, p. 268, [emphasis in original]).

In our case, reform was focused within a relatively small-scale environment, but Fullan's principles are still apt. The 'existing conditions' of the unit had to change so that all staff could 'move forward'. To this end, there was careful reflection on the overall purpose of the unit, the variety of tasks that were required to achieve our transformed approach to learning development, and the expertise of individuals in the group. We cooperatively made decisions about how tasks and personal skills could be best matched. Deliberate scheduling of work occurred so that everyone was allocated at least half a day per week to develop content, create the SCORM workshops, and agree on how structure and content would be integrated. Finally, everyone recognized and accepted that transformation of the unit's work would be a long-term, cooperative endeavor. The website was launched in late 2008 and in its initial state has focused on general materials and workshops for undergraduate students.

Future developments for 2009 include the incorporation of FLAX exercises into Moodle, and the design and implementation of robust evaluation mechanisms for all of the activities. FLAX is open source software developed at the University of Waikato and importantly is available as a Moodle plug-in. It can be used to organize authentic texts and multimedia resources as input for genre-specific language exercises. Importantly, within our virtual learning development place, exercises can be tailored to a variety of language-specific types of problems (punctuation, grammar, sentential –level word organisation) to extend the software's usefulness to a wide range of domestic or international students. Further, the evaluation of all our SLS activities and resources, whether in physical or online space, will be a top priority. Although formative student evaluation of the interactive workshop format and content occurred during development, we are not yet able to obtain a coherent overview of the website's efficacy over the longer-term. Given the external change factors mentioned at the outset of this paper, accountability, including evidence of students' retention and completion of academic programmes, necessitates robust evaluation and reporting techniques.

The use of elearning to transform our work has been a stimulating, yet time-consuming process and one that has challenged existing notions about the nature of learning development practice. The process is well underway and we anticipate additional exciting challenges during the next few years.

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