ICTELT IN ACTION: APPLYING ICT ENHANCED LEARNING PROGRAMME DESIGN

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Abstract

At Unitec NZ practitioners have been involved in adapting existing programmes, and developing new ones, which integrate and exploit Information Communication Technology Enhanced Learning and Teaching (ICTELT). Although practitioners are frequently experienced course designers, they often focus on the technology as opposed to effective pedagogy and practice, and are sometimes overwhelmed by factors such as time pressure and ICT skills requirements.

The ICTELT process model, conceptual design framework, mindmap and self-diagnostic tools were therefore developed to guide practitioners through the design, implementation, and evaluation process. The scaffolded approach is appropriate for small teams or individuals working with limited resources, as well as those working within highly-resourced environments. The structure of the ICTELT model is flexible enough for practitioners to blend approaches of their choice, while also encouraging the alignment of pedagogical perspectives and practice. Furthermore, an iterative approach is encouraged whereby a design is developed, piloted, evaluated, revisited, modified and re-evaluated over time.

This paper has three main aims. The first is to ground the subject in current literature. Secondly, the ICTELT model and suite of tools will be described. Reference will finally be made to a case study conducted at Unitec NZ, along with associated implications.

Introduction

At Unitec NZ practitioners have been involved in adapting existing programmes, and developing new ones, which integrate and exploit Information Communication Technology Enhanced Learning and Teaching (ICTELT). Although these practitioners are frequently experienced course designers, they often focus on the technology as opposed to effective pedagogy and practice. Furthermore, they are sometimes overwhelmed by the range instructional design process models and conceptual frameworks, as well as by practical barriers such as time pressure and ICT skills requirements (Owen, 2008a).

Goodyear (2005), asserts that pedagogical perspectives and approaches need to be aligned, and indicates that, as yet, the demand for accessible, customisable forms of guidance for ICT enhanced learning design is largely unmet. The ICTELT process model, conceptual design framework, mindmap and self-diagnostic tools were therefore developed to guide practitioners with an ‘interest in enhancing the quality of learning and teaching, and a curiosity about how technology can assist them’ (JISC, 2009a, p. 5) through the design, implementation, and evaluation process (Owen, 2008b). The resulting scaffolded approach is appropriate for small
teams or individuals working with limited resources, as well as those working within highly-resourced environments. Structured to be flexible, the ICTELT model enables practitioners to blend approaches of their choice, while also encouraging the alignment of pedagogical perspectives and practice (JISC, 2009a). Furthermore, an iterative approach is encouraged whereby designs are developed, piloted, evaluated, revisited, modified and re-evaluated over time.

The ICTELT model and tools is currently being piloted in the design, implementation and piloting of a NZ-wide literacy intervention, as well as with practitioners at Unitec NZ. As such, this paper has three main aims; first to ground the subject in current literature, and to describe the ICTELT model and suite of tools. Secondly, reference will be made to a case study conducted at Unitec NZ to illustrate how the ICTELT model was used with practitioners. The paper concludes by briefly discussing outcomes and implications.

**ICT enhanced learning and teaching**

While recognising the importance of key factors such as design, facilitation, assessment and evaluation in education, it is worth remembering the fundamental axiom that ‘what the students do is actually more important in determining what is learned than what the teacher does’ (Schuell, 1986, p. 429). Recent research into the effective use of social software to support student learning and engagement, (JISC, 2009b) suggests that many learners born in the 1990s have been immersed in sophisticated technologies and this has led to a ‘tech savvy’ tendency. Such learners, the report indicates, are unafraid of experimenting with these technologies, but may be naïve in their awareness of the social profile they create, and have undeveloped ICT literacy skills. They operate with a strong sense of community and group identity, which is created in virtual spaces (such as blogs and social networking and gaming sites), and involves a high level of sharing and participation. Such learners are also more likely to wish to bring their personal technologies into the study environment, to communicate and collaborate beyond the physical classroom (Smith, & Jones, 2004), and to be able to personalise their learning space (Alexander, 2004). Benkler (2006) also identifies the democratisation of knowledge production to be a central factor. Learners are now able to imaginatively and creatively repurpose existing artefacts, thereby challenging established notions of plagiarism, authorship, collaboration, ownership and provenance.

Current secondary and tertiary education is constructed on foundations (Wesch, 2008) that are broadly ‘hierarchical, substantially introvert, guarded, careful, precise and measured’ (JISC, 2009b, p. 94). As such there is often an uneasy dichotomy experienced where the identity of an institution sits uneasily alongside diverse cohorts of students who attend sessions during the day while concurrently using a range of technologies that have taken on an almost universal accessibility and use (Kennedy, et al, 2008). However, caution should be applied to avoid creating generalised assumptions around the experience, attitudes and expectations of how students wish to learn (Kennedy, 2007) and a consequent random incorporation of ICT into learning and teaching.

Nevertheless, when used creatively and flexibly, ICT has the potential to enhance learning and teaching through an ‘increasingly fluent use of media and communications methods and novel distributions of collaborative activity and relationships’ (Goodyear, 2005, p. 83), with learning enabled at any time and in any place. Rather, the suggestion is to build on learners’ tendencies toward experimentation and collaboration, by redesigning curricula to include authentic activities which encourage formal and informal collaboration in discovery-orientated tasks (Rossett,
Douglas, & Frazee, 2003), while also providing scaffolding in areas such as critical thinking and information literacy skills. As such ICTELT designed programmes would include:

- Choice around modes of study (i.e. blended, distance, block, and/or with work-placement)
- Opportunities to learn and experience ways of working collaboratively, and co-creating meaning
- Dynamics that aid building rapport and trust which can result in robust communities of inquiry/learning
- Flexibility of choice that empowers students to select interactions and assignment/assessment types that suit their learning and cultural preferences, and which recognises literacy and language challenges
- Personalisable spaces for planning and reflection
- Timely, relevant feedback
- Active learning through engagement with authentic tasks
- Opportunities for immersion in scenarios
- Design that enables students who have specific learning needs and disabilities (for example, dyslexia)

(Adapted from JISC, 2009b, p. 8)

The shift to ICTELT is not a simple process and requires wider understandings around ‘how to design and support learning involving technology’ (JISC, 2009b, p. 6), as well as discussions as to how education institutions are going to support practitioners who wish to embrace ICTELT.

The question might justifiably be asked as to whether ICTELT can improve student achievement of learning outcomes. Several meta-analyses of research projects have been conducted to consider the efficacy of ICTELT; for example, Means et al (2009) who analysed forty-six studies for variations in online, individual and group design, and for synchronous and asynchronous activities accessed via a variety of technologies. Their findings demonstrated that ‘in recent applications, online learning has been modestly more effective, on average, than the traditional face-to-face instruction with which it has been compared’ (p. 71). They also found the incorporation of ‘mechanisms that promote student reflection on their level of understanding…[offer] advantages over online learning that did not provide the trigger for reflection’ (p. 68) and the ‘individualizing [of] online learning by dynamically generating learning content based on the student’s responses was found to be effective’ (p. 68).

In spite of the learning gains found through the combination of ICTELT and effective practice, however, ‘there is often a gap between teachers' hopes and educational outcomes…[resulting in] teacher disappointment and/or student frustration’ (Goodyear, 2005, p. 83). Often this is due to 1) a variation in the quality of practitioners’ designs (Goodyear, 2002; Romiszowski & Mason, 2004) because design skills and experience with ICTELT are not yet widespread (Armitage & O’Leary, 2003), and 2) because there is still a tendency for technology to be the driving focus as opposed to pedagogy (Salmon, 2002).

**A flexible framework for design**

The next section explores the process model, framework and associated suite of tools developed by Owen (2008) to guide design for ICTELT.

**ICTELT Process Model**

The ICTELT process model (http://docs.google.com/View?id=dcqj5jv4_280ckmh8f8gn) provides a visually presented approach for adapting curricula, activities and/or resources. It has an iterative
structure that encourages the alignment of pedagogical perspectives and practice. Practitioners are guided to select a session, set of resources, or programme for adaptation, which has the best chance of success (whether this is measured in completion, retention, learners' attitudes, improved achievement of learning outcomes, or 'lessons learned'). The resulting design is developed, piloted, evaluated, revisited, modified and re-evaluated over time. It is assumed there will be access to either experienced peers and/or an ICTELT advisor, as well as to the necessary ICT tools.

ICTELT Framework

The complementary framework (http://docs.google.com/View?id=dcqj5jv4_92fp7ppghp) is designed to work alongside the model, and assists practitioners through the initial steps of the design process with a series of questions (not all of which need to be answered). Questions have been devised to help practitioners formulate a 'clear understanding of the approach or approaches to be taken and the underpinning perspective on learning' (JISC, 2009b, p. 10) that also forms the basis for collaborative discussion around design choices, concerns, anxieties, educational philosophies, identification of their own and of student needs, ICT tool selection, and the complexity of incorporating a range of pedagogical approaches with a variety of tools (Conole, 2008). A worked exemplar (http://docs.google.com/View?id=dcqj5jv4_917vsj938d) accompanies the framework to help unpack abstract concepts (Goodyear, 2005).

ICTELT Mindmap

Experiences around piloting the model and framework revealed that practitioners were often at a loss as to what a design might 'look' like, and discussions tended to be esoteric and scattered. It was suggested therefore that teams draw up a mindmap to identify the main functionality and design of the programme or session they had chosen. However, some teams found this a challenge, so a mindmap 'model' (http://docs.google.com/View?id=dcqj5jv4_131d2686rhf) was developed in Mindomo (http://www.mindomo.com). The online mindmap is adaptable, and users are encouraged to change it to suit their purposes.

The range of spaces, activities, tasks and interactions illustrated in the mindmap is extensive. However, rather than expecting that all will be used simultaneously, users are guided to select the items and tools carefully, and to 'mix and match' to suit circumstances while also changing or omitting any elements that are irrelevant or unsuitable. Although the central starting point of the mindmap is labelled ‘course’ it could just as easily be a Community of Practice, a department, or a support unit.

The mindmap has been piloted with designing virtual community spaces (see, for example, Te Hononga Maori Architecture Studio - http://moodle.unitec.ac.nz/course/view.php?id=136), as well as with academic programmes and activities. Anecdotal feedback to date suggests that teams thought it was a great help to 'see' their design, and visualise all of the disparate but interconnected elements. It was also a great springboard for discussions about the pedagogical reasons for including elements such as, for example, informal, social spaces.

ICTELT Diagnostic Matrix

Developed in July 2009, the ICTELT diagnostic matrix (http://docs.google.com/View?id=dcqj5jv4_127gp4tzrgh) was seen as a 'behind the scenes' analysis of a continuum of possible ICTELT skills. It was intended to inform the design of a user-friendly, self-diagnostic survey with automatic feedback, links to tools, and suggestions for
resources and professional development, that practitioners could use to identify realistic, incremental progression in the design and facilitation of ICTELT.

**Case Study**

The following case study is intended to provide insights into how the ICTELT model, framework and suite of tools might be applied to address a specific situation. Although the case study was situated within a tertiary context, the majority of factors discussed here are also relevant to other education sectors. The case study comprises part of a larger pilot research study, the results of which are not reported here.

**Context and challenges**

Unitec NZ pioneered a programme to meet the specific needs of managers in the Not-For-Profit (NFP) sector. However, many NFP managers and front line employees were finding it difficult to attend classroom-based professional development courses and had limited opportunities for building professional networks. Requests for other flexible study options were made, and it was suggested that, given the growing body of research findings around the efficacy of ICTELT, the four short courses (Governance in Not-for-profit Organisations, Community Funding, Understanding your Organisation’s Finances, and Developing and Managing Staff Performance) be offered in online distance mode. Challenges included varying levels of access to and experience with ICT, as well as unfamiliarity with interacting and collaborating online.

**Approach**

The NFP programme leader sought support through the Unitec NZ’s Centre of Teaching and Learning Innovation: Te Puna Ako. Initially, an ICTELT advisor introduced the process concept model (http://docs.google.com/View?id=dcqj5jv4_280ckmh8fgn), and facilitated a discussion around selection, process, resources, timeframes, context, relationships, roles, and team interactions, as well as encouraging her to complete the self-diagnostic ICTELT survey. Working together closely and using the ICTELT framework and mindmap, they then unpacked the Governance in Not-for-profit Organisations course considering various options of how to effectively adapt the course. Focus was placed on the learners, intended learning outcomes, learning environment, other stakeholders, and interactions and activities.

The course was originally designed as an intensive, engaging, highly participative one-day face-to-face experience, which included, for instance, sharing experiences and stories. It was key, therefore, to attempt to excite learners’ interest, creativity and engagement to a similar degree, while also developing a community of inquiry and learning that would help enable successful completion of the course. As such, the final design incorporated a student-centred environment that integrated self-directed learning with opportunities to interact with peers, as well as to brainstorm, negotiate, explain, question, disagree, persuade, and solve problems (Sharan, 1980). The one-day format was broken down into six, weekly hour-long synchronous sessions, with tasks that were to be completed asynchronously by students (some individual, and some collaborative). Synchronous sessions were designed to have minimal input from the facilitator, and a high level of involvement and sharing from students. For example, before the second synchronous session students were asked to collate in Google Docs (http://docs.google.com/) experiences of governance they have witnessed - thoughts, stories, questions, cartoons, and articles – ready for real-time discussion during the synchronous session.
The next step involved the adaptation of existing activities and content, as well as the creation of new where it was identified that the current version or facilitation approach would not be effective in an online mode. Finally, a variety of ICT tools were researched that would best achieve the outcomes of the activities, could help foster a collaborative community of interest, and would also be suitable for dial up. A space was created in the Learning Management System, Moodle, based on components identified in the ICTELT design process, which also recognised factors such as students’ access to technology, Internet connectivity, navigability, appearance, support that could be provided by Unitec NZ, and interaction with more experienced peers. Multimodal scaffolding resources were devised to assist participants, not only with governance concepts, but also to help with using Elluminate (http://elluminate.com/ - a Webinar tool selected for weekly synchronous sessions), Google Docs (that were to be used for individual and collaborative tasks), and tools in Moodle, such as discussion forums and chat. Most of the scaffolding resources were copied on to a memory stick and sent to students in the post prior to the beginning of the pilot, along with a headset and microphone, which would be required for synchronous sessions.

Outcomes

Evaluation of the effectiveness of the designs and implementation has just been conducted, with data gathered from all concerned stakeholders through a range of methods and research tools to create rich feedback, including observations, surveys, interviews, LMS access statistics, associated documentation, reflective blog postings, and discussion forum postings. Findings will be used to modify the design and facilitation of the Governance course, as well as the three other NFP management courses that are to be adapted for online learning.

Feedback from the programme leader around the process has been very positive, indicating that she thrived in a process that was broken down into steps, was easy to visualise, focussed on the needs of her students and the outcomes of the course, and had sufficient flexibility to empower facilitators to remain ‘true to themselves and their identity as educators’.

Conclusion

This paper has provided an overview of relevant current literature, and described the ICTELT model and suite of tools. Reference was also made to a case study from Unitec NZ.

Experiences to date with using the ICTELT model and tools illustrate many of the benefits of this approach. Within supportive teams who are actively involved from the inception of a project, the collaborative, dynamic design process is more likely to result in mutual goals, shared development, and an increased sense of openness and ownership. ICTELT advisors can play an important role initially in guiding teams through the process, in particular (where appropriate) in shifting focus from content to the holistic development of diverse student skills. Drawbacks tend to be in the form of barriers such as time, motivation, and resourcing.

As yet there is no formal data around quantitative improvements where the ICTELT model and tools have been used, although a formal research study is planned for 2010. There are nevertheless apparent effects on integration into curricula, uptake, and implementation compared with past approaches (such as generic workshops which 'taught' how to use tools). Practitioners certainly appear to be supported and empowered to create opportunities for ‘meaningful and transformative learning experiences...[by combining] technology-enhanced options with the best of established practice’ (JISC, 2009b, p. 16). Anecdotal evidence also suggests improvements around attitude and 'buy in', which has resulted in, for instance, formation of Communities of
Practice, and 'viral' peer influence and support. So, although there is an intensive initial investment by an institution using the ICTELT approach, the results are long term and observably more effective.
References


