Designing for disruption: Remodelling a blended course in technology in (language) teacher education

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This study employs a case study model to documenting the evolution over three semesters of a Masters course in technology and language learning for in-service teachers using a social constructivist pedagogical approach (Felix, 2002) within an ecological framework, from completely face-to-face (f2f) to predominantly online. The focus is on teachers' acceptance of change in the form of integration of technology into firstly their learning and secondly their teaching, as well as their adaptability to self-managing their learning. The design of the modified course took an experiential modelling approach in which all of the tools and processes that were taught in the course were modelled and experienced by students (teachers) during the semester. These tools include reflective and social computing tools such as chat, blogs, wikis and e-portfolios, as well as lesson and task templating software such as Swarthmore Makers®, Hot Potatoes®, and WebQuests®, and webpage creation software such as Dreamweaver®. Based on grounded research methods, techniques such as surveys, problem-based focus groups and short answer responses were used to ascertain the values of the changes. The information collected from these instruments is presented and compared to the reflective pieces produced by students in their blogs, and the projects they created.

Keywords: teacher education, social technologies, social constructivism, ecological pedagogy, chaos/complexity theory, disruptive technologies, learner-shaped course design

Introduction and background

The 1-semester course, Technology and Language Learning, is offered every semester as part of the Masters in Education (Teaching English as a Second Language [TESOL]/Languages Other Than English [LOTE]) program. It aims to provide practising teachers, at elementary and secondary schools as well as post-secondary and private language schools, with an understanding of the technology available to them for the enhancement of their teaching and incorporation into the curriculum. This understanding is firmly based in a theoretical and historical framework appropriate to current language pedagogical approaches which are predominantly social constructivist in nature and focus on learner-centred curricula, co-operative and collaborative processes, the development of higher thinking skills, and real-life tasks. Since most of the students in this course are currently teaching, classes have always been scheduled outside of work hours in the evening. Consequently, students come to class tired and, being mature-aged, often have home and family commitments which further impinge on their ability to attend or concentrate in class. In addition, increasing numbers of students in the Masters program are from overseas and do not wish to take evening classes, if at all possible, as they are not working and wish to complete their program of study in the shortest time. Others would even prefer to have the opportunity to continue at least part of their studies from their home countries or from countries where they have found work. The technology course is further constrained because of the need to be scheduled in computer laboratories, most of which are fully booked during the day for more traditionally technology-intensive courses such as IT or media studies.

Although students in the Masters program pay full fees, changes in the distribution of this money has meant that these fees no longer come back to the School teaching the program. There are, therefore, financial constraints on how courses within this program are taught, in addition to considerations of pedagogy and administration. In an effort to address the needs of this diverse body of students and provide more flexibility, teachers in the program have looked at a variety of options, one of which was to change the mode of some of the courses from face-to-face to fully or partially online, with some intensive face-to-face seminars. This change is also seen as a means of embracing some of the newer approaches to learning and teaching made possible through the use of emerging social networking computing tools. This

was certainly seen as a more pedagogically sound alternative than lapsing into the pattern seen elsewhere of transferring existing transmission or transaction teaching practices into a similar form, delivered electronically (Zemsky & Massey, 2004; Anderson & Elloumni, 2004; Anderson, 2005; Hughes, 2005). The technology course was the most obvious choice as a trial and starting point for this process. If this change in mode is well-received by the students, this course will then be used as a model for other courses in the program to follow. It has therefore been necessary to document carefully the design, resourcing, and implementation tools and process, as well as to seek students' feedback on the change in mode and to what extent they feel their goals and expectations have been met.

As literature in the area of technology in teacher education shows (Reeves, 1996; Hughes, 2005) the process of becoming a user of integrated technology in the classroom necessarily involves the experience of successful uses of different tools available. In order to then become familiar enough with the uses of different forms of technology to see the wider range of affordances available (Gibson, 1986; van Lier, 2000), teachers need experience with consistent modelling of effective uses and practice in their use (Bird & Rosaen, 2005; Brook & Oliver, 2005; Hughes, 2005).

Contemporary literature on cognitive social constructivism and teacher change in the use of technology emphasises the importance of self reflection on one's beliefs and values as a precursor to the emergence of consciousness of questions or conflict which can then facilitate change in attitudes and beliefs (Richardson & Placier, 2001; King, 2002; Hughes, 2005). As Hughes found, change in teachers' attitudes towards technology in their teaching and subsequent effective use of it, are entwined with teacher learning, comprising: subject matter knowledge, pedagogical knowledge, and pedagogical content knowledge. In other words, teachers will only embrace change and innovation when they can see positive benefits in terms of direct relevance to their content area, usefulness from a practical task perspective, and increased effectiveness for their day to day classroom teaching.

For the field of language teacher education, upheavals in mainstream pedagogy from teacher-centred or transmission approaches to more learner-centred, negotiated modes have been paralleled in the language content area. The emergence and maturation of the Communicative Language Teaching approach over the last two decades, with its emphasis on using language for communication and negotiation of meaning rather than merely teaching about language has meant that language teachers have been able to recognise and incorporate many aspects of social constructivism into their pedagogical approaches without too much change. However, the addition of technology into the communication process does represent a major change for many language teachers who are used to more direct face-to-face modes of language learning, teaching and use.

Compounding the changes in attitudes and pedagogical approach with the incorporation of technology in the program under discussion here, is the additional feature of intercultural applicability. Since over 80% of students in this Masters program were overseas trained and practising teachers from 8–12 different countries, it was also necessary to be sensitive to the differences in background, prior pedagogical experience and technological constraints of these students. Though awareness is increasing about the possibility of the need to modify or re-think social constructivist approaches to teaching and learning when teaching interculturally, little investigation in this area has been implemented to date (McLoughlin & Oliver, 2000; McLoughlin, 2001a,b; Thorne, 2003; Hannon & D'Netto, 2005; Scholfield, 2005). Therefore an investigation of attitudes and perceived usefulness of the range of tools and the pedagogical experiences of learners from different cultural backgrounds and returning to varied teaching contexts was critical to a comprehensive evaluation of the effectiveness of this transitional redesign (Hannon & D'Netto, 2005). These results, however, will be discussed elsewhere. Also essential to the redesign was the need to provide an approach to the course experience that was flexible enough to accommodate and support these students. Much discussion is emerging in the literature about the disruptive influences of new technologies on our lives (Bower & Christensen, 1995; Christensen, 1997; Dvorak, 2004) and this is especially true of language teachers who have not traditionally been early adopters of technology. To help these in-service language teachers realize the potential affordances (Gibson, 1986; van Lier, 2000) of social networking software and tools of communications technology, and to provide the flexibility in pedagogical approach necessary to cater for the range of cultures and teaching contexts represented in the class, it was decided to take an experiential modelling approach in the design of learning experiences in this course. This included the use of blogs on an ongoing basis throughout the course, as well as the

incorporation of e-portfolios, to provide learners with the means of tracking their emerging understandings and competencies.

The study

Students in the Technology and Language Learning course are typically practising teachers, both local and overseas, who are upgrading their qualifications for promotion purposes, to update their skills and knowledge in the field, to change positions, or to seek employment overseas. They are generally highly motivated to achieve and complete, and demanding of quality teaching and learning. Because of the on-going rapid developments in technology and the lag in adoption and understanding of these in the school sector, the teaching and content selection of this course had been problematic for some time. The decision was taken, therefore, to conduct a longitudinal case study research project, while collecting information about student expectations, demands, outcomes, and perceptions about their acquisition of what they saw as necessary skills in the area of technology and language learning. The first semester therefore represented a pilot study in that student data, observations and information collected in this semester formed the basis for the formulation of the modifications and focus group questions for subsequent semesters as well as helping to identify areas of possible change in the course design. Teaching experiences during the first semester, together with the data collected during both the first and second semesters were then used to re-formulate the structure and focus of the course in the design for the third semester.

An experiential modelling approach was taken in the design and teaching of this course, to immerse students in the use of the technologies, while at the same time experiencing the practical application of the theory in their own learning. This experience included self-directed selection and construction of content, and, to some extent, the assessment tasks. The development of self-reflection skills and peer feedback and support strategies paralleled their acquisition of technical and metacognitive skills of planning, monitoring and self-organisation (Oxford, 1990). The parallel development of these skills seemed to emerge organically from a self- and mutually-supportive collection of individuals to form a cohesive inter-reliant collaborative community of learner-practitioners. Because this re-design was a local rather than university-wide initiative, little technical support was available to the teacher-students, apart from the central helpdesk and several professional development workshops (Barber & Wilkinson, 2005; Reiner, 2005). The predominant focus behind this design effort was therefore the need to devote "a minimum of time to teaching uses of software, by employing the affordances of selected technology as tools for professional learning tasks that are authentic for school teaching" (Bird & Rosaen, 2005: 213). The term "affordances" is used here to refer to the characteristics and potential uses that individual learners felt that different software tools had to offer them. In other words, different learners saw different potential applications and implications in the range of tools to which they were exposed. Through sharing their insights, experiences and skills with each other, all learners managed to produce artefacts and achieve new learning that (as previous semesters had shown) they could not aspire to achieving individually, or through the traditional mode of course offering. The work of Bird and Rosaen (2005) with pre-service teachers and that of Hughes (2005) with in-service professional development provided useful precedents for the current study with in-service teachers, as well as the insights of Blythe (2001) into the practicalities of learner-centred design.

Features of the course in the 3 semesters

While all three semesters differed to a greater lesser extent (as illustrated in Table 1 below), the stated aims of this subject included exploring the creative teaching potential of technology such as Computer Enhanced Language Learning (CELL), interactive multimedia, and tools for social computing as well as exploring access to and pedagogical uses of electronic communication such as e-mail, list servers, chat and discussion forums. Through this exploration, the subject explicitly focused on the possible roles technology can play in changing models of language teaching and learning. Content included the following theoretical and practical components:

1   Research and theory relating to the effectiveness of technology in language learning
2   The computer as tutor or tool or manager of learning
3   The integration of technology into a second language program

4 Issues of classroom uses and self-access uses of technology, including instructional design, presentation, learner interaction, and feedback

5 Techniques for evaluating the quality and usefulness of CELL software and other technology-based language learning materials

6 Developing learner autonomy through active use of technology in language learning – exploiting the media in optimal ways.

Table 1: Course format and differences over three semesters

Sem.	Physical	Pedagogical	Assessment
1	• weekly 3-hour lecture/tutorials • 23 students at beginning, 18 at end with only 6 attending classes	• fixed timetable • teacher-set modules & order of presentation • fixed deadline dates and order of assessment items	• online discussion responses by module (specified number) • software evaluation form & essay discussion • major module development project & rationale essay
2	• 3 full-day workshops • f2f or electronic student drop-in sessions • 9 students at beginning, 7 at the end (fees increased 37% between Sems 1 & 2)	• free-form • learner-shaped • responsive • learner individually-determined order and deadlines for assessment tasks	• communication & collaboration through blogs, wiki, discussion forum, chat, email, SMS & e-portfolio • WebQuest including teaching notes on Teacher page & Evaluation Rubric • module of online language learning activities based on online templating tools embedded in Dreamweaver
3	• 3 full-day workshops • f2f or electronic student drop-in sessions • 12 students at beginning	• free-form • learner-shaped • responsive • fixed deadline dates and order of assessment items	As above

The three phases

As mentioned above, this study is longitudinal in nature and comprises three phases to date. Because of the experiential nature of the study, the outline of how this was conducted and data collection is necessarily embedded in the process of the course unfolding. Aims of the study include:

• documenting and analysing teacher-student reactions and responses to changes in course design, including:
  - changes to teaching approaches from a transmission or transaction approach,
  - changes in mode of teacher-student interaction from face-to-face to a blended model incorporating electronically-mediated communication and collaborative construction of artefacts, and
  - changes in the learning experience from a receptive model to one which relies on active student participation, collaborative negotiation with the teacher, other students and the resource materials.

This study used a case study approach based on grounded research methodology (Knapp & Glenn, 1996; Reeves, 1996; Kanuka & Anderson, 1999; Willig, 2001; Passi & Mishra, 2004). Following these models, at the beginning of each semester, students responded to an on-line survey which elicited their biographical details, their previous or existing computing experience, confidence, competence and skill level (self-assessed), and information about their preferred language learning styles (based on Willing's 1989 inventory) and strategies (based on Oxford's 1990 inventory). In the first or pilot semester, this survey, without the biographical section, was also administered at the end of semester to discover any

changes in student learning styles and their perceptions of learning that had taken place. Specific data collection techniques for each phase are detailed below.

Table 2: Phases of the study

1st semester (Phase 1)	2nd semester (Phase 2)	3rd semester (Phase 3)
Pilot study Pre-existing teaching model with LMS: • worksheets • Powerpoint slides • notices from lecturer to students • calendar • discussion forum • reflective Notepad • online readings database • tutorials for online-sourced tools Data from: Observational & survey data collected	• beginning of formal study • 1st major re-design • data from: • surveys • focus group discussions • short responses to evaluative Qs • compared to reflective artefacts: • blogs & wiki pages • discussion forum postings • compared to projects produced: • WebQuests • online activity modules	[still in process] • refinement phase • minor modifications to course design from Phase 2 student comments [results not yet analysed or included here]

Semester 1: Pilot study

In the first semester of observation and data collection, as detailed in Table 1, the course was conducted as it had been over previous semesters by different teachers, with a focus on technology as content. Students were surveyed at the beginning of this semester for their competence and confidence in the use of a range of common computer-related skills and tools, their preferred learning styles and strategies and their expectations of the course. Towards the end of the course, and before submission of the final individual project, students were anonymously surveyed by the program convenor for their level of satisfaction with the course and suggestions for improvement. Three main areas of improvement were evident in these responses:

1   more practical use of the technology
    ["We were in a computer room but the hardly used the computers at all"
    "Students should have had more practical work"]
2   greater learner focus in the course design and content
    ["more attention to students' feelings and needs"]
3   less theoretical focus
    ["the large amount of theory in this subject was disappointing"]

These responses indicated a clear need for more hands-on tutorials and less theoretical work. That is, their expectation was for a better understanding of the tools available and more experience in using them, with much less focus on the pedagogical and theoretical aspects of software selection, evaluation and integration into the curriculum. However, these responses revealed a conflict between student expectations and those of the university and future employers with respect to the content and quality of a Masters program in Education.

From a faculty perspective, this feedback highlighted the need to clarify better the outcomes of the course to emphasise the essential inter-relations between theoretical and practical aspects of the uses of technology and the need to provide better-focused hands-on workshop materials. Another revelation emerging from the feedback was the importance of changing the course assessment radically, to better reflect what the learners need, and need to know, from such a course at this level, and to use the course experience to model the changes in pedagogy emerging from the increasing use and availability of social networking software. Following the example of Bird and Rosaen (2005), the decision was therefore made to change the mode of offering of this course and to use the available technology as both medium and

content simultaneously through an experiential modelling approach. The design approach has also drawn on the experiences of Brook and Oliver (2005), Brown and Voltz (2005), Steketee (2006) for advice on community creation and maintenance and the integration of technologies.

Semester 2: The major study

Experimenting with a learner-shaped approach to course design in the second semester (Hoven & Sussex, in press), no deadlines were set for assessment items, which consisted of reflective and collaboratively constructed pieces over the semester using blogs, a class wiki and an e-Portfolio as well as two creative pieces: a WebQuest and an online language learning module of activities. The creation of a WebQuest (http://webquest.sdsu.edu/) designed for learning an aspect of language included student reflection on the relative uses and usefulness of such a task for their teaching contexts and teaching notes about this. Students learnt about the purposes and construction of a WebQuest through the experience of completing a WebQuest on WebQuest creation constructed by the lecturer. The major piece of assessment was an online language teaching module using online templating tools such as Hot Potatoes (http://hotpot.uvic.ca/) and Swarthmore Makers (http://lang.swarthmore.edu/makers/), embedded in webpages created using *Dreamweaver* or *FrontPage*. To support and provide scaffolding for the experience, reflection and critique of the technologies, students used their blogs of their reading, reflection and experiences and the e-Portfolio. As part of the university's mission to tailor course experience to employment, an e-portfolio facility, including a content templating feature had already been developed and made available to students through the LMS. Unfortunately, since students made little use of this facility, information from this source is not discussed here.

As illustrated in Table 2, the changes to assessment for the course described above, together with a number of more course-focussed tool tutorials also made possible the change from weekly face-to-face lecture blocks to a more flexible teaching mode, using social networking software to establish students' 'social presence' (Garrison et al., 2000) as part of the course system. A wiki produced as part of a language course at the university was used as illustration of its uses before students were directed to Wikipedia and their own class wiki site (http://collaborate.ci.qut.edu.au/techllwiki/index.php/Main_Page). Reflective blog accounts were then established on the Web at *Blogger*, accompanied by a discussion of the values and uses of blogs and some examples of these. The instruction on blog and wiki creation and maintenance was provided in an online synchronous session at the beginning of the first workshop using *Elluminate Live!* by an instructional designer at the Fairbanks campus of University of Alaska. The purpose of this session was to enable students to experience first-hand the process of participating in practical instruction synchronously at a distance. This *Elluminate* session was recorded and made available to students to access and replay at any time throughout the semester. In this way, the scene was set for them to participate in some drop-in sessions through the medium of chat in the LMS later in the semester. On completion of this workshop, students then posted their comments and reactions to the workshop on their newly-created blogs and began to shape the wiki to their own purposes through their contributions there. From the blog and wiki postings in the week following this workshop, this experience engendered the necessary trust and understanding of other students to trigger the formation of a collaborative class community which carried through and progressively strengthened during the rest of semester. Evidence of this is derived from the fact that, with no specification as to minimum numbers of blog, discussion or wiki postings, students spontaneously established and maintained constant and persistent online presence using these tools.

In the second last week of semester, the third and final workshop was held. In this session, students participated in problem-based focus group discussions which were videoed and transcribed. The transcriptions were searched for key words relating to their reactions to course participation, and their recommendations for future students as well as changes and refinements to the design. These focus groups were built around responses to a series of scenarios deriving from characteristics and reactions of current and previous students and features of the course design. Students were asked to analyse what problems were exhibited in each scenario and to give certain advice to these people. In addition, students volunteered their own summary notes to the lecturer for the purpose of the study.

A summary of comments elicited by the pre-course questionnaire is outlined in Table 3 below, followed by the main issues emerging from the focus group discussions in the second last week:

Table 3: Summary of Phase 2 pre-course questionnaire student responses

"How do you feel about using computers to learn language?"	"Overall how do you see the role of computers for language learning?"	Learning style data
• Quite interesting: audio & visual possibilities • No experience, excellent way for learners to control their own learning – don't know much • Quite comfortable • Excited – but how to avoid the glitches?? • Good for individual preparation prior to immersion • Good for private study but prefer f2f • Requires autonomy which doesn't suit my learning style • Don't feel comfortable using blogs, discussion forums etc – too permanent	• mainly as instructional CALL • not sure about using CMC with students – never know who they might be talking to • uncertain about being "out there" on the web • uncertain about student privacy & safety	• 50% claimed to: – be not good autonomous learners – be not good in isolated environments – need f2f contact for learning

Table 4: Phase 2 Focus group questions and summary of student responses

Discussion Qs accompanying each scenario	Summary points emerging from student responses
• What suggestions can you give this student? • What do you see as being this student's problems in this unit? • What can they do now to complete this unit? • How would suggest they tackled things differently if they could start again? • If you could have given this student some advice before they enrolled in this unit, what would you say?	1 The importance of hands-on practical application and preparation "you gain confidence through doing" "you need prior preparation with computing skills" 2 The importance of scaffolding in becoming independent learners "we need more structure & assessment deadlines" 3 The importance of building and maintaining active participation in the community of learners (collaborative inter-dependence) "Take advantage of peer mentoring opportunities" (communities of practice) "Take advantage of multiple opportunities for mutual support" (affordances) 4 Awareness of the importance of meta-cognitive strategies: "You need constant practice to improve: • computing skills • study skills • time management skills • prioritising tasks"

Data from postings in student blogs and on the wiki reinforce the students' expressed need for assignment deadlines in order to help them stay on track. Postings on the Community Portal page of the wiki, where they decided to put Hints and Tips for other students also abound with suggestions for prioritising time and complaints about their own lack of self-discipline in this area. The number and frequency of mutually-supportive comments, general pleas for help on specific issues and advice gained from their

own experience in student blogs is further evidence of the emergence of a cohesive and self-sustaining collaborative community. Full archives of student blogs and comments from Phases 2 and 3 can be accessed from the coordinator's teaching blog found at: http://lifentheuniverse.blogspot.com/ . The Phase 2 wiki site can be accessed at: http://collaborate.ci.qut.edu.au/techllwiki/index.php/Main_Page .

Semester 3: Refinements

As a result of the information collected in Phase 1 and especially Phase 2 of the study, a few modifications have been made to the Phase 3 implementation. These modifications fall into three main categories:

1 the re-instatement of deadlines and specified order for submission of assessment tasks
2 greater focus on theoretical underpinnings of pedagogical decisions relating to the use of technological tools for language learning
3 an international collaborative connection with a similar class at University of Calgary.

However, as this semester is currently still in progress, these results will be reported elsewhere.

Discussion

In Phases 1 and 2, students were surveyed using a questionnaire designed to elicit their perceptions of their competence and confidence in using various computer and internet applications and operations, their preferred learning styles and commonly used learning strategies as well as some general profile and background information. Two weeks before the end of semester in Phase 1, the program coordinator administered an anonymous questionnaire aimed at discovering students' levels of satisfaction with the course and their suggestions for improvement, while at the end of semester the standard university course evaluation instruments were used. These instruments included questions about course improvements, materials and assessment used, and scheduling and general usefulness of the course. Responses to these instruments were collated analysed electronically using tools associated with the LMS. In Phase 2, the anonymous questionnaire was replaced by problem-based student focus group discussions about their experiences and responses to the new mode of teaching, and assessment items in the course. These focus groups were based on problem scenarios derived from reported student experiences in the previous semester. The interviews were videoed, transcribed and analysed for key words relating to change, effectiveness of specific technological tools and inter-culturality as well as attitudinal responses.

In terms of expectations of the course, in the pilot and second phase, students came in expecting more to be given to them and done for them, to be given pre-organised packages of learning. The teacher expected students to think for themselves, learn by themselves, read teacher notes and notifications, read the set and suggested readings, and experiment with the tools. There were a number of areas of mismatch here. Though it was not a major focus in this study, as illustrated in Table 4 above, students reported and demonstrated the benefits of having developed skills in working collaboratively with their peers. Also illustrated in the Table 4 focus-group comments, students perceived the experience as collaborating as individuals – not just participating in teamwork, but rather coming in to the course with individual skills and expectations and emerging with differing individual outcomes, while having experienced collaborative inter-reliance.

Side-by-side with the achievements were also the disappointments. Students felt that they needed more time to achieve what they wanted than was available to them in a single semester. Most reported experiencing stress in all three phases, at the high learning curve necessary to acquire mastery of some tools. Some felt disappointed that they couldn't create a project to their own high expectations in the time available. These comments are evident in their blog postings, together with the positive mutually-supportive comments made to each other along the way. These sentiments are also very obvious in the final Discussion Forum responses to the Question on the value of WebQuests, which unfortunately, for privacy reasons, cannot be cited. In Phase 2, there were considerably fewer students than previously who felt they needed more hands-on practice or hand-holding. Conversely, in Phase 2, demand increased for theoretical discussions and students requested the re-instatement of assignment deadlines and a teacher-specified order of assessment tasks.

Conclusion

While the technology continues to develop, change and expand its uses so unpredictably fast, teachers at all levels employing technology to mediate teaching and their learners' learning, need to work on developing a flexible and adaptive pedagogy that suits their teaching philosophies and fits with the teaching and learning environments within which they work. As part of this flexibility and adaptability, we need to examine and reflect on the new personal and learning strategies that both learners and teachers themselves need to develop. This experiential modeling approach to familiarizing practicing teachers with technology seems to be a positive step towards engendering in teachers the competence and confidence to use new technologies with their learners to help them, in turn, to maximize their language learning. It has also been an exciting and tumultuous learning experience for the designer and teacher.

As we move towards offering an increasing range and variety of on-line, technology-mediated, and self-access language learning materials for learners at all levels of educational provision, it is important to remember and consider the needs of learners in actually utilizing these materials. In this study, this consideration has led to some new opportunities being embraced – new technologies, tools and scheduling. Choices and compromises have had to be made due to the shortness of the course, students' preferences and institutional constraints. Finally, a number of adaptations have been successfully implemented to allow us to find and utilize the affordances of what is available, both technological and human, and to identify areas where more can still be done.

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