



Applied learning in online spaces: Traditional pedagogies informing educational design for today's learners.

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The challenge to provide engaging, effective learning environments for university students is perhaps greater now than ever before. While the 'anytime, anywhere' online learning environment appeals, students also need a learning environment that encourages and retains their engagement. A new teacher-education program with an explicit focus on applied learning commenced at the University of Tasmania in 2011. The fully online course aims to provide an authentic, engaging environment for the students, who are primarily mature-aged, in-service teachers in TAFE colleges. This paper describes the applied learning design principles created to guide the course development and delivery, and the initial findings of a doctoral study being undertaken to examine their effectiveness. The research aims to provide a set of tested design principles to encourage and support an applied learning approach in online teacher-education courses, and more broadly in higher education.

Keywords: e-learning, applied learning, authentic, online, teacher education.

Introduction

Like many other nations, Australia hopes to increase the percentage of the population who have succeeded at university, with the Bradley Report (2008) setting a target of 40% of 25-34 year-olds holding Bachelor level qualifications by 2020. This has important implications for providers, given that such an aspiration entails a more diverse student cohort. Compared to a generation ago, today's student is more likely to be older, first-in-family to attend university, and combining study with work and family commitments (Munro, 2011). There is a strong imperative to design effective, engaging learning environments for these non-traditional students, many of whom will by necessity or by preference, seek an online mode of learning.

An undergraduate teacher-education course first offered in 2011 at the University of Tasmania is attracting students who typify the characteristics of non-traditional students. The course is aimed at teachers employed in vocational education and training (VET) settings, including TAFEs, hospitality colleges or VET in School programs. For many of the students, it is their first experience of study at university and is a challenging undertaking. Course designers considered how to embed an applied learning approach that could also be seen as a model for the students' own vocational education settings, while being delivered in a fully online mode of study. The literature review and consultation sessions provided the foundation for the draft design principles that are now guiding the development and delivery of the course. This paper describes the design principles, their theoretical underpinnings and their initial implementation. The resulting experience for students and teaching staff is the subject of an ongoing doctoral study, with initial findings from the first iteration being described in this paper.

Research methodology

The methodological framework for the study is design-based research. This is also referred to as design research, educational design research, design experiments and development research, and although similar to action research, it goes beyond that methodology by involving an iterative process of analysis, design, development and implementation of a specially designed model (Phillips, McNaught, & Kennedy, 2012). There are four phases in design-based research (see Figure 1 below), as depicted by Reeves (2006).

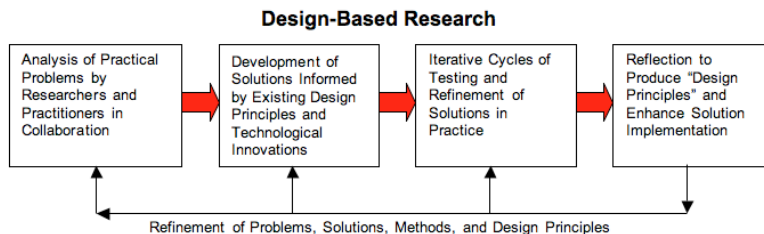


Figure 1: Iterative phases of design-based research (Reeves, 2006, p. 59)

Each phase of the study is described in more detail below.

Phase One: Analysis of a practical problem

The first phase of the study involved a multi-pronged approach to identify and articulate both the vision for the course and the practical challenges faced by prospective students. It was anticipated that the majority of incoming students would be mature-aged and balancing study with employment and family life. Typically, such students will not continue in their studies if they do not perceive adequate benefits from participation (Bartram, 2009). It was critical to imagine the student experience and consider the necessary pedagogical approaches to ensure an engaging, rewarding learning environment. Course designers also visited VET campuses in Tasmania where teachers who were prospective students in the course were invited to articulate their hopes, fears and expectations. The findings from this initial stage highlighted the need for a supportive environment, with course content and activities responsive to the everyday needs of the teachers working in applied learning settings, and flexibly delivered and assessed. This phase also included informal consultations with current students and recent graduates from existing teacher-education courses, to garner a picture of the current student experience in pre-service courses in the Faculty of Education.

Course designers then reviewed educational literature, focussing largely on constructs related to theoretical perspectives on learning and teaching, and models of teacher education that recognised the value of an applied, authentic approach. There were five theoretical constructs examined in this phase: applied learning, authentic learning, realistic teacher education, situated learning, and reflective practice. These will now be briefly reviewed.

Applied Learning

The term ‘applied learning’ evokes images of learning trade skills with your hands. Theoretically, it is most closely aligned with experiential learning (Dewey, 1938, Kolb, 1984), and is commonly associated with vocational and post-compulsory education. Applied learning pedagogy emphasises connections between what is being learnt and the ‘real world’ of work, focussing on the knowledge and skills that will be required in the discipline. Ash and Clayton (2009) describe the pedagogical approach of applied learning as being:

..grounded in the conviction that learning is maximized when it is active, engaged and collaborative. Each applied learning pedagogy provides students with opportunities to connect theory with practice, to learn in unfamiliar contexts, to interact with others unlike themselves and to practice using knowledge and skills (p. 25).

Importantly, applied learning focuses on the student rather than the curriculum, and encourages the development of a sense of independence and responsibility for learning and performance (Ash & Clayton, 2009). While most commonly associated with vocational education, it is extending into the higher education sector through “the kind of pedagogical principles and practices associated with engaged scholarship, communities of practice, civil engagement, and critical pedagogy” (Schwartzman & Bouas Henry, 2009, p. 5). Applied learning, therefore, sits

comfortably within the broad principles of adult education (Knowles, Holton, & Swanson, 2011), situated learning (Brown, Collins & Duguid, 1989), and communities of practice (Lave & Wenger, 1991).

Authentic learning

As industry calls for more ‘work-ready’ graduates (Korthagen, Loughran, & Russel, 2006), the value of authenticity within learning and assessment strategies has become obvious to a growing number of educational providers. Although an agreed definition of authentic learning is elusive, it is commonly agreed that the term is closely associated with an instructional design and teaching approach that encourages students to gain, and use knowledge and skills in a way that is akin to how it will be used in ‘real’ contexts. Such strategies are based on a constructivist orientation to learning, and designed to foster a deep understanding and competence in the students through purposeful activity and engagement with tasks (Biggs, 2011). An authentic learning approach places the focus on the learner, rather than the subject to be taught, and suggests that learning is the function of the activity, context and culture in which it occurs, or is situated (Brown, Collins & Duguid, 1989). While the challenges of achieving this within the context of a unit of study in a university setting are acknowledged (Boud, 1998, Lombardi, 2007) authentic learning environments appear likely to encourage greater student interest and improve learning outcomes.

A framework proposed by Herrington, Reeves and Oliver (2010) builds on their earlier work (see for example, Herrington, 1997; Herrington & Herrington, 2006) and contains nine principles to guide course designers and teaching staff in the development of an authentic learning environment within an online environment in higher educational settings. These principles are:

1. Provide authentic contexts that reflect the way the knowledge will be used in real life
2. Provide authentic tasks and activities
3. Provide access to expert performances and the modelling of processes
4. Provide multiple roles and perspectives
5. Support collaborative construction of knowledge
6. Promote reflection to enable abstractions to be formed
7. Promote articulation to enable tacit knowledge to be made explicit
8. Provide coaching and scaffolding by the teacher at critical times
9. Provide for authentic assessment of learning within the tasks (Herrington et al., 2010, p. 18).

Their framework offers a response to the criticisms of traditional pedagogical approaches, particularly in higher education settings, of a teacher-led, overly theoretical environment, devoid of connection with the students’ future workplace. Rather, students become active, engaged participants in their learning, solving problems by exploring a range of options and recognising the complexity and multiplicity of issues related to the situation. Essentially, an authentic approach makes the learning of the discipline similar to the practice of the discipline (Rosenbaum, Klopfer, & Perry, 2007) and thus should prepare students well for their intended profession.

Realistic teacher education

Practitioners in teacher-education are increasingly aware of the need for an applied approach in their courses. Today’s schools are calling for education graduates who can make connections with their students and foster the skills and knowledge needed in a fast moving society. Korthagen’s (2001) model of Realistic Teacher Education responds to this need. His model brings together his beliefs about students, learning, teacher behaviour and teacher education. Korthagen (2001, p. ix) recalls his personal revelation when he began his mathematics teaching career: “I realised that to these kids school was not so much a place to learn mathematics, but a meeting place to learn about life”. Henceforth, he changed his own teaching methods to reflect his belief that children could and should be presented with practical problems, be guided in formulating solutions, and from that process, develop mathematical notions that will inform future situations.

When Korthagen transitioned into teacher-education, he applied the same philosophy, recognising the value of concrete experiences and subsequent reflections to encourage the development of theoretical notions about learning and teaching. Korthagen’s model promotes extended periods of placement in schools as a way to ensure an applied approach to education, and this approach is gaining popularity in several countries in Europe and the United Kingdom (Boffey, 2011). However, ensuring the consistency of student experience in school placements is problematic, with a significant diversity in the quality of colleague-teacher input and support offered to the participants (Zeichner, 2010). Korthagen’s (2001) model of teacher education offers universities an opportunity to consider how the student experience on campus, or online, can also offer an authentic, applied approach to their academic and professional development.

Situated learning

Publications in the 1980s raised awareness and a greater understanding of how knowledge, learning, and the world of work were interconnected. The seminal work of Brown, Collins and Duguid (1989) recognised the importance of the domain, or context, to the process of learning. They proposed that “[s]ituations might be said to co-produce knowledge through activity. Learning and cognition, it is now possible to argue, are fundamentally situated” (p. 32). Their findings revealed that not only was the selection process of particular cognitive strategies influenced by the particular domain, but also the domain itself was responsible for the production of knowledge. Learning, cognition and knowledge were now all acknowledged as fundamentally bounded by the situation. Brown, et al. (1989) connects situated learning with students in school, suggesting that a traditional approach with abstract concepts and self-contained examples may not be effective (p. 34). Instead they promote that:

Authentic activity, as we have argued, is important for learners, because it is the only way they gain access to the standpoint that enables practitioners to act meaningfully and purposefully. It is activity that shapes or hones their tools (p. 36).

Educational settings, whether bricks and mortar or online, do not easily lend themselves to be authentic learning places. As a result, the option to explore work-integrated-learning (WIL) placements is often the assumed position. Yet the published research reveals an active and exciting discourse on the potential, possibilities, and challenges of creating authentic learning environments, for both on-campus and online students (see for example, Boffey, 2011; Darling-Hammond, 2000; Grossman, Hammerness, & McDonald, 2009; Phillips, McNaught, & Kennedy, 2012).

Reflective practice

In a fast-moving world, the value of developing reflective practitioners is obvious. Organisations value employees who can think of new ways of doing things, based on reflection on past action and the potential offered in changing environments. The view of teachers as ‘reflective practitioners’ has developed significantly since the mid-1970s, mirroring the broader acceptance of teachers as professionals who aim to better understand and improve their teaching practice. The literature related to reflection in education reveals several conceptualisations of the term, and these align nicely with an applied learning approach. Dewey (1938) provides an early foundation to reflective practice, with his suggestion that reflection entails a ‘chain of thoughts’, that “are linked together so that there is a sustained movement to a common end” (p. 5). He defines reflection as “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (p. 9). This draws our attention to the intellectual demands of critical reflection, and the requirement for commitment and perseverance.

Schön (1983) distinguishes between two different types of reflection; one that occurs at the time where action would still make a difference to the situation, *reflection-in-action*, and then also the reflection that can take place on past events, *reflection-on-action*. Both forms of reflection require considered attention and the belief that the outcomes will inform future actions and behaviour. Reflection challenges a practitioner to examine their own personal theories, and hence, offers potential development of those theories. This is a skill that develops over time, and similarly to Dewey, Schön (1987) suggests a correlation between the experience of the practitioner and the value of the reflection. Rogers (2002, p. 853) supports the value of continuing development of reflective skills, suggesting that: “The store of one’s wisdom is the result of the extent of one’s reflection”.

Contributors to the teacher-education field, such as Brookfield (1995) also promote the value of reflective practice. He offers a model for reflection that invites practitioners to view their teaching through four lenses: their own autobiographies as teachers and learners, their students’ eyes, their colleagues’ eyes and scholarly literature. Brookfield believes that by viewing our teaching practice through multiple lenses we are able to identify “distorted or incomplete aspects of our assumptions that need further investigation” (p. 29). Brookfield’s model of reflection sits comfortably with an applied learning environment, where authentic learning and assessment tasks will enable students to examine their practice through multiple lenses. Not only will such critical reflection help students to gain the knowledge and skills required for success in higher education, but it will form the foundation for habits of reflective practice long after they leave their university and develop their careers as professional practitioners.

Phase Two: Development of the solution

This phase involved the creation of a set of design principles to guide the development and delivery of the new teacher-education course. The principles were informed by the preceding phase where prospective students,

Faculty teaching staff and theoretical constructs contributed to building a shared vision for what the course would be; philosophically, pedagogically and experientially. The principles, along with accompanying notes and suggestions on possible ways to enact them, were posted on a shared online space for easy access by course developers and teaching staff.

Principles of Applied Learning in Higher Education:

1. Provide authentic contexts and applied learning activities that connect theory and practice;
2. Recognise and incorporate the lived experience of students;
3. Provide opportunities for meaningful, collaborative construction of knowledge within the learning community;
4. Encourage the development of a reflective, professional identity through collegial interactions in a variety of settings;
5. Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings; and,
6. Encourage student ownership of learning and increasing professional autonomy.

Implementation of the principles:

The design principles have guided the development, delivery and evaluation of the teacher-education course from its commencement in 2011. The course is constructed within the *Desire2Learn* Learning Management System, and all students are enrolled in a fully online mode of study. The learning environment consists of a variety of strategies and resources, such as guiding notes for students, scholarly readings, practical activities and recorded interviews with subject experts, such as industry practitioners and educational specialists. Students and teaching staff communicate and collaborate via discussion boards (asynchronous), wikis, blogs, web-conferences and Skype communications. Students who are in-service teachers integrate their everyday working experience and demands into their learning and assessment strategies, while pre-service students draw upon their professional or volunteer placements in colleges or schools. The principles can be used as a guide, a checklist, or evaluation criteria for designers or teaching staff. In Table 1, each draft principle is listed together with its enactment or instantiation within the learning environment, and the relevant theory from which each principle is drawn.

Table 1: Enactment of design principles and associated theory

Principle	Students will:	Associated theory
1. Provide authentic contexts and applied learning activities that connect theory and practice	<ul style="list-style-type: none"> • Draw upon their own, authentic, contexts as they are exposed to and consider theoretical concepts within education. • Engage in critical reflection on past events, engagement with current situations (through practicum placements as well as their everyday experiences for those already teaching) and imagining future events within their own contexts. • Be involved in tasks that will mirror or draw upon the actual working environment, ensuring that the cognitive demands are similar to what will be/is expected in the workplace. The tasks will be, therefore, often ill-defined and multi-faceted, and require completion over a sustained period of time. 	Experiential Learning Theory (Dewey, 1938) Authentic Learning (Herrington et al., 2010) Reflective practice (Brookfield, 1995; Schön, 1983) Situated learning (Brown, Collins, & Duguid, 1989) Realistic Teacher Education (Korthagen, 2001)
2. Recognise and incorporate the lived experience of students	<ul style="list-style-type: none"> • Be encouraged to draw upon their experiences, perspectives and roles and invited to identify differing point of views that may exist on particular situations and (re)consider the complexity of educational settings. • Participate in practicums and reflect on those experiences with peers and teaching staff in online blogs, discussions and wikis. 	Adult learning theory (Knowles et al., 2011) Authentic Learning (Herrington et al., 2010) Realistic Teacher Education (Korthagen, 2001) Professional and teacher education (Rogers, 1969; Shulman, 1998)
3. Provide opportunities for meaningful, collaborative construction of knowledge within the learning community	<ul style="list-style-type: none"> • Work together collaboratively in each unit within the course. Activities such as collaboratively created Wikis, Blogs, group journals and the online discussion board activities will be included to ensure that all students have regular opportunities to engage and learn with and from each other. • Be encouraged to take on leadership roles within the student community in areas where they feel comfortable and competent, drawing upon their previous experiences in teaching or learning environments. 	Authentic Learning (Herrington et al., 2010) Situated learning (Brown et al., 1989) Realistic Teacher Education (Korthagen, 2001) Communities of Practice (Lave & Wenger, 1991)
4. Encourage the development of a reflective, professional identity through collegial interactions in a variety of settings	<ul style="list-style-type: none"> • Be involved in authentic tasks that enable them to reflect meaningfully, incorporating both their present activities within the course, and also drawing upon their previous experiences as teachers and as students. Collaborative reflection will be possible through the use of shared e-journals, blogs and discussion groups. • Be encouraged to identify and reflect on their existing beliefs that may have formed over many years, and be encouraged to consider how and to what extent their beliefs are evolving (or even transforming) through continued professional practice and their studies at university. • Be actively involved in both identifying and articulating their tacit knowledge. Robust discussion and debates centred on everyday teaching practices will draw out students' beliefs and require them to 	Adult learning theory (andragogy) (Knowles et al., 2011) Authentic Learning (Herrington et al., 2010) Realistic Teacher Education (Korthagen, 2001) Professional and teacher education (Rogers, 1969; Shulman, 1998) Reflective practice (Brookfield, 1995; Schön, 1983)

Principle	Students will:	Associated theory
	<p>clearly communicate and justify their attitudes, beliefs and values.</p> <ul style="list-style-type: none"> • Have a growing appreciation of the complexity of the workplace and recognise that clearly articulating one's position is an essential trait of an effective educator. 	
5. Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings	<ul style="list-style-type: none"> • Experience assessment tasks that draw upon the required skills and knowledge in their future workplaces, and which acknowledge the complexity and subjectiveness of such places. • Create practical products that will be meaningful in their daily teaching practices. • Collaborate with others as part of the assessment preparation process, recognising the context of the real working world. • Often complete a variety of tasks within the one assessment item, and draw upon work completed in the learning activities as part of the assessment process (i.e., integrated authentic assessment). 	<p>Authentic Learning (Herrington et al., 2010) Situated learning (Brown et al., 1989) Realistic Teacher Education (Korthagen, 2001) Communities of Practice (Lave & Wenger, 1991)</p>
6. Encourage student ownership of learning and increasing professional autonomy	<ul style="list-style-type: none"> • Be encouraged to see the point of what they are learning and be free to adopt their own conceptions rather than simply adopting the views of others, and perhaps particularly, their teachers. • Be encouraged to be authentic themselves; to consider and reflect on how they will engage with the material and activities, take ownership of what they learn, and decide how to enact their philosophical beliefs about teaching • Be encouraged to be increasingly responsible for their learning while knowing that teaching staff will continue to provide support as required. Students will draw upon a range of resources and activities that will help them achieve the learning outcomes rather than feeling like they must complete a set of disparate tasks in order to succeed. • Be invited to take on a supportive role themselves, particularly with their less experienced peers. 	<p>Professional and teacher education (Rogers, 1969; Shulman, 1998) Realistic Teacher Education (Korthagen, 2001) Communities of Practice (Lave & Wenger, 1991) Reflective practice (Brookfield, 1995; Schön, 1983) Authentic learning (Herrington et al., 2010)</p>

Phase Three: Implementation and evaluation in cycles

In Phase 3, the design principles are enacted into the course and the cycles of implementation are conducted. To date, the first of three planned iterations has been completed. Aligned with the research design, the applied learning design principles will be reviewed and modified at the conclusion of each iteration, in light of feedback and reflection. Each iteration consists of one semester (13 weeks), meaning that Phase 3 will be completed in mid-2014. The fourth phase will then commence, incorporating reflection and production of the final, enhanced design principles.

Context and data collection methods

Both qualitative and quantitative data collection methods are being used to collect data from students and teaching staff, in order to build a robust picture of the effectiveness of the principles being researched. Qualitative data is collected via focus groups, semi-structured interviews and electronic artefacts produced by students as part of their studies. Quantitative data is collected through an electronic survey distributed to all student participants. Such mixed method research is useful in educational research (Johnson & Onwuegbuzie, 2004), recognising the value of both types of data, and legitimatising multiple approaches to answering the research questions.

All students in the course with an active enrolment in Semester 1, 2013, were invited to become participants in the research study. Additionally, two academics teaching into the course (one of whom is the researcher) are participants. All student participants are in their first or second year of the course. Students were invited to become participants via email invitations, accompanied by an Information Sheet describing the research project. The email also invited the students to participate in the first research instrument, an electronic survey. Completion of the survey was taken as implied consent to be a participant in that aspect of the study. The survey was completed anonymously, and then those willing to participate in other aspects of the study were redirected to another site to leave contact details. These participants were then sent Consent Forms to complete and return to the researcher. At the conclusion of the semester, and after the finalisation of academic results, two focus groups were conducted, one for first semester students, and one for those students who had studied for three or more semesters. Six participants were invited, and agreed, to attend the appropriate focus group. Selection of those invited was based on a desire to have a range of age, geographical location and gender represented. Following the focus groups, two first semester participants and two third semester participants were randomly selected for interviews. All interviews and focus group discussions were recorded and transcribed. The analysis of the first iteration of data collection is presented in the following section.

Initial findings and discussion

In June 2013, the first electronic survey was completed by participants. Forty of the possible 89 students agreed to become participants in the study and completed the first research instrument. This represents a pleasing response rate of 46%, with most (33) of the participants also agreeing to be available for interviews and focus groups. Participants are largely female (76%), and most are between 30 and 50 years old (73% fall into this age category). Participants are principally from Tasmania (61%), but most other states and territories are represented in the sample. All students study externally, regardless of physical location. Close to half the participants (49%) are in their first semester of study, with the balance of students in their third or later semester of study. Nearly half the participants (49%) listed their highest educational qualification as a vocational certificates or diplomas, with the balance of the students having either incomplete or completed higher education qualifications. The survey sought to explore the expectations of students, and identify if and how these expectations might change as the students progressed in the course. Following the e-survey, emerging themes were explored through two focus groups using Collaborate web-conferences, as well as four interviews with participants. All qualitative data was transcribed, and then coded using NVivo software. Quantitative data was exported into Microsoft Excel and analysed. Selected results are reflected in Table 2 below.

Table 2: Importance of factors of the university experience, as ranked by first and third semester students.

First Semester Students (n=20)	Not at all important	Not very important	Unsure	Very important	Extremely important	Agreement that this had been experienced in the current semester
Regular interaction with teaching staff	0.0%	5.0%	5.0%	70.0%	20.0%	75%
Regular interaction with my student peers	0.0%	15.0%	20.0%	45.0%	20.0%	70%
Learning new skills I can use immediately	0.0%	5.0%	10.0%	50.0%	35.0%	85%
Having an online environment that allows anytime/where access	0.0%	0.0%	0.0%	45.0%	55.0%	95%
Sharing my own experiences with peers and teaching staff	0.0%	25.0%	10.0%	60.0%	5.0%	80%
Working collaboratively with peers	0.0%	20.0%	40.0%	20.0%	20.0%	45%
Assessment tasks that reflect the way knowledge will be used in real world settings	0.0%	0.0%	5.0%	50.0%	45.0%	85%
Developing academic skills	0.0%	0.0%	5.0%	60.0%	35.0%	95%
Developing professional skills	0.0%	0.0%	0.0%	70.0%	30.0%	100%

Third Semester Students (n=21)	Not at all important	Not very important	Unsure	Very important	Extremely important	Agreement that this had been experienced in the current semester
Regular interaction with teaching staff	0.0%	4.8%	9.5%	33.3%	52.4%	86%
Regular interaction with my student peers	0.0%	0.0%	0.0%	71.4%	28.6%	86%
Learning new skills I can use immediately	0.0%	4.8%	14.3%	33.4%	47.6%	76%
Having an online environment that allows anytime/where access	0.0%	0.0%	0.0%	28.6%	71.4%	95%
Sharing my own experiences with peers and teaching staff	0.0%	4.8%	9.5%	71.4%	14.3%	95%
Working collaboratively with peers	0.0%	4.8%	19.1%	57.1%	19.0%	76%
Assessment tasks that reflect the way knowledge will be used in real world settings	0.0%	0.0%	4.8%	28.6%	66.6%	81%
Developing academic skills	4.8%	4.8%	9.5%	66.7%	14.3%	90%
Developing professional skills	0.0%	0.0%	0.0%	23.8%	76.1%	95%

Table 2 reflects that, generally, students believed their expectations had been met during the semester. There were, however, some interesting similarities and differences between the expectations of the first and third semester students. Similar values are held by both cohorts on the importance of regular interaction with teaching staff, learning new skills that can be used immediately, and having an online environment that allows anytime/anywhere access. Additionally, both cohorts reflect a valuing of assessment tasks that reflect the way knowledge will be used in the real work settings and the development of professional skills. In contrast, third semester students place a much higher value than the first semester students on several aspects of the course. In particular, these students indicate a greater belief in the importance of *regular interaction with their peers*, as

well as *sharing their own experiences with peers and teaching staff*, and *working collaboratively with peers*. Many first semester students were not convinced that working collaboratively with peers was important (60% indicated that they were either unsure or did not consider this a very important factor), and only 45% believed that they had collaborated with peers during the semester. In contrast, only 24% of third semester students indicated that they were either unsure or did not consider this a very important factor, and a much higher percentage (76%) believed that they had collaborated with peers during the semester. This is explored further in Table 3, below.

Table 3: Collaborative learning

First Semester Students (n=19)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Working collaborative helped my learning	0.0%	0.0%	36.9%	42.1%	21.0%
I like doing collaborative learning activities	0.0%	15.8%	31.6%	42.1%	10.5%
The online environment is conducive to collaborating with peers	0.0%	10.5%	26.3%	57.7%	5.3%

Third Semester Students (n=21)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Working collaborative helped my learning	0.0%	0.0%	4.8%	57. %	38.1%
I like doing collaborative learning activities	0.0%	4.8%	23.8%	38.1%	33.3%
The online environment is conducive to collaborating with peers	0.0%	0.0%	23.8%	47.6%	28.6%

Overall (n=40)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Working collaborative helped my learning	0.0%	0.0%	20.0%	50.0%	30.0%
I like doing collaborative learning activities	0.0%	10.0%	27.5%	40.0%	22.5%
The online environment is conducive to collaborating with peers	0.0%	5.0%	25.0%	52.5%	17.5%

The questions relating to collaborative learning yield some mixed results. Most students agreed that working collaboratively helped with their learning, with more third semester students either *strongly agreeing or agreeing* with the statement (95% compared with 63% of first semester students). Slightly fewer students, however, seem to indicate a liking for collaborative tasks, with approximately one-third of students in the first semester and around a quarter in the third semester *neither agreeing nor disagreeing* with the statement. Approximately, 60% overall *agreed or strongly agreed* to liking collaborative tasks, compared to 80% who *agreed (or strongly agreed)* that it had helped their learning. Just over one-half of all students agreed that the online environment was conducive to collaborating with peers.

In a subsequent question, students were asked whether or not that would like collaborative assessment tasks to be included in units with the course. The students seemed split across this question with 37% responding that they *would not like* collaborative assessment to be included and 37% claiming to be *unsure*. Interestingly, more third semester students were open to the idea of collaborative assessment tasks than first semester students (33% opposed to 20% of students) suggesting that the idea of collaborative learning through assessment is more accepted later in the course. This outcome is similar to the second table presented where there was an increase in the perceived importance of collaborative work with peers from the first semester to the third semester. Typical reasons for students not wanting to include collaborative assessment items included not having time to coordinate schedules with other busy students, different working habits and styles, and often protracted hours in their place of employment.

Focus Groups and Interviews

Following an initial analysis of the e-survey data, two focus groups and four interviews were conducted, to further explore the enactment of the principles. Particular attention was given to exploring beliefs relating to collaboration with peers, for both learning and assessment strategies. This relates most closely to the third principle: *Provide opportunities for meaningful, collaborative construction of knowledge within the learning community*. At the time of writing, a complete analysis of the focus groups and interviews has not yet been completed, but the transcriptions reflect some interesting contributions. Participants shared their concerns over

collaboration; a lack of confidence to contribute was a repeated concern, with following comment typical: “*I enjoyed reading the discussion boards to read what other people thought but I found it difficult to write to a standard that wouldn't make me look less educated*” (focus group comment). Time was also a common concern: “*So it did stress me a little that I was somewhat at the mercy of other people's busy schedules. One could not complete their assignment without the input of another*” (interview). Another concern related to a peer-review activity: “*People... want to be nice, so they're not critical. I've had assignments I've given to people where they've corrected my spelling and grammar, but nothing about the content*” (interview). Contrasting these concerns, participants were also aware of the potential benefits: “*As online students of the Applied Learning course it is impossible for us to work together in a physical sense, but like quick lunch-time chats in the staff room, I find a platform such as the discussion board useful as a collaborative tool that in some ways mirrors the workplace*” (interview). The benefit of learning from peers was also highlighted: “*I think in all units we have been encouraged to share our tasks I at first was a bit held back from doing this as I was a novice teacher and communicating with more experienced teachers. I now see we all see things differently and I have learnt so much that I can exercise within my own classes*” (interview). Perhaps the most telling comment came from a first semester student in a focus group: “*What part do you play in collaboration if you're in a group, whether it's in a wiki or it's in a discussion group or if it's in a joint assessment or whatever? I think a lot of people don't really understand what it actually is*”. This comment appears to indicate a need to ensure that the roles, responsibilities and processes of collaboration are clearly understood, through appropriate strategies early in the course.

Summary

The initial analysis of the first iteration of the research project has yielded some interesting results. There appears to be general agreement that the applied learning principles are being enacted successfully within the program, and that the students are satisfied with their experience to date. There are indications that the collaborative activities need further consideration, both in terms of communicating the value for commencing students and also in the choice and design of strategies most likely to facilitate effective and efficient collaboration. Perhaps most significant in this early stage is the emerging evidence that indicates development of the students' expectations and capabilities over time in this regard. For example, it appears that by the third semester of study and more prolonged interactions with each other, the perceived value of collaboration with peers has increased and students look to shared activities to explore different perspectives and improve learning outcomes. This aligns well with the intention of the course to be applied and authentic in the sense that it prepares students effectively for their current or future workplace, where collaborative skills are essential and sharing of knowledge is seen as part of an effective community (Wenger, 1991).

Findings from the first iteration have resulted in some minor changes to the principles guiding course design, responding to the developing nature of the student particularly in relation to collaboration with peers. For example, in the current iteration there is more responsibility given to students in second year units to choose how and with whom they would like to collaborate, and for first semester students there has been more scaffolding provided for contributions to the discussion board. This process of modification will continue throughout the three iterations with progressive dissemination of results, in order to seek feedback from both the participants and the wider educational community. It is hoped to complete this study in late 2014, in order to be able to then offer a tested set of principles to designers seeking an applied learning approach within teacher-education courses, or more broadly in higher education.

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