Design Principles for Applied Learning in Higher Education:
A Pedagogical Approach for Non-traditional Students in an Online Course

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Abstract: The profile of university students is changing, as a larger percentage of the population fill our online and on-campus classrooms. A new teacher education program commenced at an Australian university in 2011, with an explicit focus on applied learning. The course highlights a pedagogy whose time may have (finally) arrived in higher education. A set of design principles, underpinned theoretically by contemporary learning philosophies have been developed to provide a guiding framework for course developers and teaching staff in the fully online program. This paper describes the applied learning design principles; how they manifest in course development and delivery, and the study being undertaken to examine their effectiveness. The research seeks to identify the extent to which the course design better enables students to integrate theory with practice, and develop the skills required in their workplace. This study is designed to create a set of tested design principles to encourage and support applied learning design in higher education settings.

Introduction

The profile of today’s university student is changing. Compared to a generation ago, today’s student is likely to be older, combining study with work, family or other commitments and may well be the first-in-family to attend university (Munro, 2011). Often labelled as ‘non-traditional’ students, they may have struggled in their preparatory schooling and will be more likely to be considered at risk of failure in a university context (Bartram, 2009; Blake, 2007; Krause, 2005). Non-traditional students prefer a learning environment that has an emphasis on underlying ideas and relevance (rather than fact-based, theoretical approaches), and an informal learning setting where there is more potential for direct engagement with the learning materials through physical sensation and movement (Nunn & Miller, 2000). Simply put, non-traditional students seek a ‘real’ environment where their study is closely connected with what will be required in the workplace, and where they are able to be active in the learning process. The time has arrived for a pedagogical approach that has an ‘applied’ approach, in order to attract, engage and retain the non-traditional student. In addition, this applied approach needs to be able to be embedded into fully online offerings, in order to meet the growing demand for this mode of study.

This paper describes the set of principles created to undergird the design and the delivery of a new teacher-education course. The principles aim to ensure the provision of an applied, authentic learning environment in a higher education setting. The paper also describes the design of a research study to evaluate the effectiveness of the
principles and their implementation, including the cognitive and affective outcomes for students. It is hoped that the results of the study will inform teacher education courses and university offerings more broadly, where an applied and authentic learning environment is sought in order to offer an engaging online experience for non-traditional students.

Overview

A new teacher education course at the University of Tasmania is aimed at students who are employed as teachers in applied learning settings. The course was developed in response to a call for an appropriate professional development option for teachers employed at an educational institution that offers a large range of vocational education and training (VET) programs for the Post-Year 10 sector. For many such teachers, an undergraduate teaching qualification is the first experience of study at university level and is a daunting prospect. With pre-course consultations indicating that many of the incoming students shared the characteristics identified by Nunn and Miller (2000) for non-traditional students, the need for an appropriate teaching and learning environment was obvious. Critically, course designers want the students to experience an applied learning approach within a fully online environment. Simply put, the course needs to ‘walk the talk’ of applied learning, not only in name but also in nature, while still incorporating a scholarly perspective and ensuring graduates will develop the generic attributes expected at university level.

A comprehensive search of the literature, however, revealed a lack of any theoretically grounded design principles to guide course developers and teaching staff as they implemented an alternative pedagogical approach in the course. Thus the need to develop such a set of principles became evident, to guide the design, development and delivery of an applied learning environment in a higher education setting. Consequently, draft design principles of applied learning in higher education have been derived from the literature, and are listed below. They are designed to be incorporated into all semester units within the course.

Principles for Applied Learning Design 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 identify 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.

There are five theoretical perspectives that inform these principles of applied learning design in higher education. These theoretical perspectives, their connection with the Course, and the accompanying study are illustrated in Figure 1 (below):
Theoretical considerations in the creation of the draft design principles

The literature reviewed largely focussed on constructs related to theoretical perspectives on learning, teaching, and models of teacher education that recognised the value of an applied, authentic approach. The review sought to identify those concepts, frameworks or theories that could best inform the development of principles for applied learning design in higher education, and were aligned philosophically with the course that is the focus of the study. The five constructs considered in the review are applied learning, authentic learning, realistic teacher education, situated learning and reflective practice.

Applied learning

Historically, applied learning is most commonly referred to as ‘learning with your hands’ and is a pedagogy closely aligned with experiential learning (Dewey, 1938; Kolb, 1984). It is most usually associated with alternative educative practices in compulsory schooling. With the growing interest in raising levels of student engagement (Krause, 2005; Munro, 2011) and the success of applied learning strategies in lower sectors of schooling in this regard (Bartram, 2009; Blake, 2007), it appears the stage is set for this form of pedagogy to become integrated more widely in university contexts. Presently, the published literature on applied learning reveals a limited, but growing association with higher education 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). Ash and Clayton (2009) are one of only a handful of writers who discuss applied learning pedagogy, suggesting that such an approach is:

...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).

Applied learning is, therefore, aligned with the broad principles of adult education (Knowles, Holton, & Swanson, 2011; Mezirow, 1991), situated learning concepts (Brown, Collins & Duguid, 1989), communities of practice (Lave & Wenger, 1991) and reflective practice (Brookfield, 1995; Schön, 1983). There is growing interest in this form of pedagogy in higher education settings and the literature suggests that it has been well received in those contexts where it has been implemented.

Authentic learning

The term ‘authentic learning’ is most commonly associated with curriculum design principles and practices that respond to contemporary research and theories concerning the nature of learning and the processes by which it is best facilitated. A framework for authentic learning offered by Herrington, Reeves and Oliver (2010) is a major influence on the applied learning design principles that form the focus of this study. Authentic learning and assessment strategies are based on a constructivist orientation to learning, designed to develop a deep understanding
and competence in the students by encompassing the way in which they learn. Building on earlier work (see for example, Herrington, 1997; Herrington & Herrington, 2006) their framework contains nine elements to guide the development and delivery of an authentic learning environment within an online environment in higher educational settings. These 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).

Herrington et al.’s (2010) authentic learning framework proposes an alternative approach to curriculum design that responds to the criticisms of traditional teaching methods; in particular the aspects of being teacher-centred, devoid of context, and utilising transmission style methods that challenge the students’ ability to remain engaged in their learning (Biggs, 2003; Bruner, 1960; Korthagen, 2010; Loughran, 2009). Their authentic learning framework places a 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. Students become active, engaged participants in their learning, solving problems by exploring or navigating through various options and recognising the complexity and multiplicity of issues associated with the problem or situation. This approach essentially 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

Korthagen’s (2001) model of Realistic Teacher Education brings together his beliefs about learning, teacher behaviour and teacher education. His model has been influenced by his personal revelations as 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” (Korthagen, 2001, p. ix). Thus, his own teaching methods changed to reflect his belief that children could and should be presented with practical problems and develop mathematical notions from their experiences as they formulate solutions.

Korthagen’s model of teacher education extends the same philosophy, recognising the value of concrete experiences and building on subsequent reflections to encourage the development of theoretical notions about learning and teaching. Korthagen supports his model of teacher education by noting that student (and beginning) teachers commonly model their own behaviour both consciously and unconsciously on their experiences with previous teachers when they were students themselves. In other words, the feelings, values, role models and preconceptions that students have formed prior to their university studies are highly influential and should, therefore, be the starting point for further education.

Situated Learning

The 1980s saw the publication of seminal work that reflected a re-conceptualisation of how knowledge and learning were understood. Brown, Collins and Duguid (1989) 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). So not only was the selection process of particular cognitive strategies influenced by the particular domain, but also the domain itself was also responsible for the production of knowledge. Learning, cognition and knowledge were now all fundamentally bounded by the situation. Brown, et al. (1989) connects situated learning with students in school, recognising that:

Students need much more than abstract concepts and self-contained examples. They need to be exposed to the use of a domain's conceptual tools in authentic activity - to teachers acting as practitioners and using these tools in wrestling with problems of the world (p.34).

The work by Brown, et al. (1989) challenged educators to consider if and how educational settings could be a place for authentic activities, explicitly designed to engage students in order to prepare them for their intended
workplace. Over the following decade, other writers contributed to the field and the literature reveals an active discourse on the affordances and challenges of creating authentic learning environments (see for example, Boffey, 2011; Darling-Hammond, 2000; Grossman, Hammerness, & McDonald, 2009; Phillips, McNaught, & Kennedy, 2012).

**Reflective practice**

The view of teachers as ‘reflective practitioners’ has developed significantly since the mid-1970s, reflecting a broader acceptance of teachers as professionals who aim to understand and develop their teaching practice. The literature related to reflection in education reveals several conceptualisations of the term that align with the applied learning design principles. Dewey (1938) provides the foundation with his belief 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), reminding us that reflection is a complex, intellectual process that will take time and commitment.

Schön (1983) distinguishes between reflection that occurs at the time where action would still make a difference to the situation, *reflection-in-action*, and reflection on past events that implies inquiry into the personal theories, *reflection-on-action*, which will inform future actions and behaviour. Schön (1987) suggests that “the most important things cannot be taught, but must be discovered and appropriated for oneself” (p. 92), and notes that this will occur in both the novice and the expert, with the difference being the extent of the wisdom that is garnered through that reflection. Rogers (2002) states this in another way: “The store of one’s wisdom is the result of the extent of one’s reflection” (p. 853).

Writers in the educational field, such as Brookfield (1995) suggest that reflection is a process where we view our teaching through four lenses: our own autobiographies as teachers and learners, our students’ eyes, our colleagues’ eyes and the theoretical 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). Through applied learning strategies and authentic assessment tasks it should be possible to establish the foundational skills of reflective practice as described by Brookfield, which will place the students in good stead for their future careers.

**Implementation of the design principles**

Each design principle is guiding the development of course materials and the teaching and learning strategies adopted by the course staff. The course will be constructed within the *Desire2Learn* Learning Management System. The online environment will consist of complex overall tasks, together with resources such as guiding notes for students, scholarly readings, recorded interviews with subject experts such as VET practitioners and instructional designers. Students and teaching staff will communicate and collaborate via asynchronous discussion boards, wikis, blogs, web-conferences and Skype communications. Students who are in-service teachers will draw upon their real-life contexts in their learning and assessment strategies, while pre-service students will use scenarios and role-plays as well as drawing upon their placements in schools during the course. This is illustrated below (Table 1).

<table>
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<th>Principle</th>
<th>Students will:</th>
<th>Associated theory</th>
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| 1. Provide authentic contexts and applied learning activities that connect theory and practice | • 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 | 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) |
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| 2. Recognise and incorporate the lived experience of students             | • 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 | • 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 | • 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 clearly communicate and justify their attitudes, beliefs and values.  
• 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. | 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) |
| 5. Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings | • 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 for students 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). | Authentic Learning (Herrington et al., 2010)  
Situated learning (Brown et al., 1989)  
Realistic Teacher Education (Korthagen, 2001)  
Communities of Practice (Lave & Wenger, 1991) |
| 6. Encourage student ownership of learning and increasing professional autonomy | • 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 | Professional and teacher education (Rogers, 1969; Shulman, 1998)  
Realistic Teacher Education (Korthagen, 2001)  
Communities of Practice (Lave & Wenger, 1991) |
Principle | Students will: activities, take ownership of what they learn, and decide how to enact their philosophical beliefs about teaching • Be encouraged to be increasingly responsibility 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. | Associated theory
Reflective practice (Brookfield, 1995; Schön, 1983)
Authentic learning (Herrington et al., 2010)

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Table 1: The principles of applied learning, implementation and associated theory

In this way, the units in the course have been designed to instantiate principles of design derived from seminal and recent theory and pedagogical models.

Conclusion

Applied learning is a pedagogy that is commonly associated with secondary, alternative and vocational education, yet it offers much to the higher education sector. With increasing numbers of non-traditional students entering university and studying either online or on-campus, there is a critical need to provide highly authentic, applied learning environments that will motivate, retain, and effectively prepare students for their chosen career.

This paper has presented a set of design principles that have been developed for a teacher education undergraduate degree. Underpinned theoretically by applied learning, authentic learning, realistic teacher education, situated learning and reflective practice, the design principles will be modified and evaluated during the associated research study in 2013 and 2014. Ultimately, the design principles should provide the higher education sector with a tested framework for an applied learning approach, for both on-campus and online environments. Such an approach should facilitate increased levels of engagement and more effective preparation for the workplace; particularly the non-traditional learners who are seeking a meaningful and successful experience of study at university level.

References


