Applied learning design in an online teacher-education course

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MEd, BAVE

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Doctor of Philosophy

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DECLARATION

I declare that this dissertation is my own work and contains as its main content work that has not previously been submitted for a degree at any tertiary institution.

JILLIAN J. DOWNING
ABSTRACT

The profile of students enrolled in higher education is changing rapidly. Compared to a generation ago, students are likely to be older, juggling study with work and personal commitments and may well be the first in their family to attend university. These students arrive at university with a significant store of life experience but often filled with trepidation about their capacity to succeed academically. Despite their classification as ‘non-traditional’ students it is usually assumed that they will engage effectively with traditional approaches in the learning and teaching environment. Yet the high attrition rate amongst this cohort suggests that providers should be considering new ways to engage and retain these students.

This study investigated an alternative pedagogical approach in a teacher-education course whose cohort consisted entirely of non-traditional students. Building on previous research on authentic learning, a set of applied learning design principles was created to guide the development and delivery of a course of fully online units in a four year undergraduate degree. Applied learning is a pedagogical approach often associated with vocational education and training but it has potential for greater application within the higher education sector. The applied learning design principles guiding the course aimed to enable students to directly apply what they were learning about to real-life contexts, in order to bring theory and practice together in meaningful ways. This study investigated the experiences of students over an eighteen month period using the iterative process of design-based research, to assess the influence and effectiveness of the applied learning design principles.

The findings of this study contribute new knowledge about the characteristics and needs of non-traditional students and their behaviour in the learning environment. The findings uncovered a vulnerability for self-doubt and withdrawal, sitting alongside a common desire to contribute altruistically to the learning community. Indeed, it appears the provision of opportunities to give meaningfully to the learning community may actually help students to address concerns over their worthiness and capability to succeed in higher education. The investigation concludes that an applied learning approach that respects and integrates the students’ lived experience can lead to positive, even transformational outcomes for students.
This study produced new understandings of an alternative pedagogical approach in a higher education context. The applied learning design principles can assist course developers in building an environment that links university study to the workplace more effectively and facilitates the development of graduate attributes. Additionally, the findings reveal ways for teaching staff to capitalise on the affordances of web-based technology to support geographically and characteristically diverse students. In an era of unprecedented growth in the numbers of non-traditional students embarking on higher education, this investigation provides a set of tested principles to guide the pedagogical design of online teacher-education and, potentially, more broadly in higher education.
ACKNOWLEDGEMENTS

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Secondly, I would like to thank my colleagues at the University of Tasmania for their support, particularly my teaching partner, John Kertesz, who shares my passion for teaching and whose commitment to students is remarkable and unwavering. His role during my PhD widened to include shielding me from extra work while I focussed on writing my thesis, to hugs and cups of tea when times got tough.

I would also like to express my gratitude and appreciation to my supervisor, Professor Jan Herrington, whose support has remained constant, positive and focussed. I look forward to supervising my own PhD students in time, and aim to emulate her approach and commitment to quality research and timely progress.

Finally, I would like to sincerely thank my family and friends, who have known when to leave me alone, when to drag me out for some rest or recreation, and who have never doubted my ability to complete this thesis.
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ABBREVIATIONS AND TERMS

A number of abbreviations have been regularly used in this thesis:

<table>
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<th>Abbreviation</th>
<th>Full title</th>
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<tbody>
<tr>
<td>EAL</td>
<td>Bachelor of Education (Applied Learning) Units</td>
</tr>
<tr>
<td>EDU</td>
<td>Bachelor of Education Units</td>
</tr>
<tr>
<td>PE</td>
<td>Professional Experience (practicum)</td>
</tr>
<tr>
<td>RTO</td>
<td>Registered Training Organisation</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td>VET</td>
<td>Vocational Education and Training</td>
</tr>
<tr>
<td>MyLO</td>
<td>My Learning Online – the Learning Management System at the University</td>
</tr>
</tbody>
</table>

To enhance understanding, clarification is provided below for a number of terms referred to in this thesis:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>Course</td>
<td>An approved university qualification that consists of a number of specific units of study.</td>
</tr>
<tr>
<td>Unit</td>
<td>A semester-long (13 weeks) study of a particular subject.</td>
</tr>
<tr>
<td>Pre-service teacher</td>
<td>A teacher-education student who has yet to undertake a paid role as a teacher in any educational setting</td>
</tr>
<tr>
<td>VET teacher</td>
<td>A teacher who is employed in a VET setting, and who has not yet completed an approved teaching qualification that enables them to apply for standard teacher registration (i.e. is able to teach in the school sector)</td>
</tr>
<tr>
<td>Registered teacher</td>
<td>A teacher who has completed an approved teaching qualification and has met the conditions for standard teacher registration.</td>
</tr>
<tr>
<td>Colleague teacher</td>
<td>A registered teacher working in a school setting who supervises a university student participating in a PE practicum.</td>
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CHAPTER 1

Introduction

The changing profile of today’s university students is challenging institutions to reconsider their approach to teaching and learning. Australia, like many other nations, aims to increase the percentage of the population who have succeeded at university, with the Bradley Report (2008) identifying a target of 40% of 25-34 year-olds holding Bachelor level qualifications by 2020. 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). These ‘non-traditional’ students will arrive at university with a store of life experience but may have struggled in their preparatory schooling. As such, they are more likely to be considered at risk of failure in a university context (Bartram, 2009; Kahu, Stephens, Leach & Zepke, 2013).

In order to engage, retain and achieve positive educational outcomes, these non-traditional students require a teaching and learning environment that responds positively to their characteristics (Roberts, 2011). There is, however, little evidence of any changes in the teaching and learning approaches taken by providers (Gilardi & Guglielmetti, 2011; Meuleman, Garrett, Wrench & King, 2014). Rather, these students are expected to conform with long-held approaches that position the lecturer as expert and the student as novice, without due regard for what life experiences those students have and how their existing skills and knowledge could be integrated with what they are learning about (Knowles, Holton & Swanson, 2011). These tensions may be exacerbated in an online environment, which is likely to be the learning environment of choice for students who are juggling work, family duties and study (Munro, 2011). Indeed, the growth of the online offerings mirrors the rise in non-traditional students seeking to engage in higher education (Allen & Seaman, 2014; Australian Bureau of Statistics, 2011), and highlights the need for course design that responds appropriately to an increasingly diverse student cohort (Bonk, 2009, Gayton, 2009).

Within teacher-education, there are additional challenges. Claims that graduates are not ‘class-room ready’ (Department of Education & Training, 2014) have increased pressure on universities to improve their pedagogical approach and strive for a closer connection between theory and practice in the undergraduate experience in order to produce
graduates who can confidently and competently take their place in the profession (Darling-Hammond, 2013). In order to do this, teacher-educators have a responsibility to model, and make explicit, the type of teaching and learning environment that is being espoused within schools - where students feel empowered to take more responsibility for constructive and meaningful learning, to build their analytical and evaluative skills and develop the personal attributes that are required for a lifetime of learning and development (Korthagen, 2010; Loughran, 2014).

The teacher-education course that was the focus of this study included many in-service Vocational Education and Training (VET) teachers within its cohort. As one of the major contributors to the educational context in Australia, the VET sector operates within a number of contexts, including schools and Technical and Further Education (TAFE) colleges. It takes responsibility for the continuing education of nearly two million students (from high school age to mature age) in Australia each year (Group of Eight Australia, 2014). Within the sector, there are approximately eighty thousand teachers employed, mostly on a part-time basis, delivering a wide range of courses (e.g., construction, hospitality, aged care, business, retail, tourism, arts, child-care) and catering for both employed students (e.g., apprentices) and pre-employment students (Productivity Commission, 2011).

Teachers within the VET sector are likely to have had a successful career within their discipline (specialist) area before moving into a teaching role. Typically, they become teachers because of a desire to give back to the industry that supported their vocational career and their role extends beyond teaching to working closely with employers and providing additional support to an increasingly diverse student cohort (Kell, 2006). Unlike many other countries, teachers employed within the VET sector in Australia are not required to hold a degree in teaching. Rather, the minimum requirement to teach or assess students completing any of the VET qualifications (Certificate I to Advanced Diploma) is a Certificate IV in Training and Assessment (Cert IV TAA/TAE), which is a relatively short course to complete (ASQA, 2015). Additionally, all VET teachers should have relevant industry experience and hold the vocational qualifications (such as Diplomas) in their subject area to the level that they are teaching.

While some VET teachers may have university degrees in their discipline area, about 60% of TAFE teachers do not (Productivity Commission, 2011). Hence, the typical educational profile of the VET teacher is quite different to a registered teacher in the
school sector, who has completed a four year degree in teaching, or a degree in their discipline area (e.g., science) followed by a post-graduate degree in teaching. Among the VET teachers who undertake teacher-education courses at university, almost all fit the description of non-traditional students and seek an environment that supports their characteristics and needs (Productivity Commission, 2011).

It is within this context that the study is situated, where universities are embracing widening participation, employers are seeking graduates who are work-ready, and students are hoping for an engaging and fulfilling learning environment that responds to their characteristics and aspirations.

**Background of the course that is the focus of the study**

A discussion paper written for the Australian Council of Deans of Education (ACDE) noted the “differences between the espoused educational philosophies, cultures and traditions associated with vocational education and academic/general education” (Henry, 2004, p. 28). This was particularly evident (and exacerbated) during a short-lived educational reform in Tasmania in 2009 that saw the VET and school sectors combined on many campuses throughout the state. In some instances, the cultural differences between the teacher cohorts magnified to such an extent that staff lunch-rooms were metaphorically, if not physically, divided between the VET teachers and the school-teachers. Contrasting this experience and despite the short-lived nature of the reform, the melding of sectors did highlight the benefit of having a more diverse teaching cohort working together to improve the educational outcomes for students. Hence, there was a demonstrated need to encourage more VET teachers to undertake a teacher-education degree, enabling them to be registered to teach in either the school or VET sector and begin to address the differences between the two teacher cohorts.

In 2011 the University of Tasmania created a new undergraduate degree to respond to the identified market. Aimed principally at the teachers employed by the major provider of VET in Tasmania (at the time known as the Tasmanian Polytechnic, but subsequently re-branded as TasTAFE) the new course was also marketed to VET teachers in TAFEs in other states as well as ‘pre-service’ teachers; tradesmen and women who were seeking a new career in teaching after working in their industry sector (e.g., a carpenter wanting to become a wood-work teacher, or a chef aspiring to be a cooking teacher).

The course coordinator (who is also the researcher) believed the course could help in a number of ways to bridge the perceived cultural gap between school-teachers and VET
teachers. Firstly, graduates would have completed the same level of educational qualification as their school-teacher counterparts. Secondly, students would be completing practicums in schools throughout their course and building their knowledge of that sector. Thirdly, students would be studying alongside other teachers-in-training in a number of units common to all the teacher-education undergraduate specialty areas (primary, secondary, health and physical science) and, in doing so, would begin to make connections with peers that could continue well after graduation.

It was expected that for the majority of the commencing cohort, the course would be their first experience of university. Many were likely to be the first-in-family to attend university and, as mature-aged entrants, away from formal study for a considerable time. Additionally, they would be adding university study to other roles such as employee, parent or carer, which necessitated a fully online mode of study. Combined, their characteristics indicated that engaging in the course could be a somewhat daunting prospect and that they would, therefore, be seeking a supportive learning and teaching environment.

The first cohort of students in the Bachelor of Education (Applied Learning) commenced study in July, 2011. The course consisted of four years of study, with eight stand-alone units in each year spread over two semesters. The speciality focus of the course, ‘applied learning’, represented the desired pedagogical approach in VET settings – bringing application and theory together in an integrated fashion that facilitated effective learning (Blake, 2007; Guthrie, Harris, Simons & Karmel, 2009). The aim of the academic coordinator, therefore, was for the course to model best practice in applied learning while reflecting the scholarly approach and academic rigour expected in higher education. This required consideration of an alternative approach to the design and development of units within the course, creating a learning environment that ‘walked the talk’ of applied learning within a university degree course and responded to the needs of non-traditional students.

To that end, and as part of the initial phase of this study, a number of theoretically grounded design principles were articulated to guide the development and delivery of the course. This study considered the instantiation, refinement, and evaluation of these design principles. It was conducted in parallel with the continuing course development and delivery, with the findings from each iteration influencing the continued
The development of the course. The study commenced in 2012, with data being collected over three (13 week) semesters, during 2013 and 2014.

**Significance of the study**

This study builds on the work of others, particularly in the area of authentic learning (cf. Herrington, Reeves & Oliver, 2010; Knowles, Holton & Swanson, 2011; Korthagen, 2001) by looking closely at the opportunities that exist when students are combining study with work and hence have the desire and the opportunity to authentically apply what they are learning to a real-world context. Many other disciplines beyond teacher-education are considering how work-integrated-learning can be more effectively structured, and the findings of this study should contribute meaningfully to that discussion.

This study also responds to the need to better understand the characteristics of non-traditional students and the ways in which providers can ensure that the learning and teaching environment responds constructively to their characteristics and preferred manner of engaging in higher education.

**Research questions**

The following research questions guided the conduct of the study:

1. In what ways do students engage with authentic, applied learning tasks?
2. How do students respond to a course of units designed using applied learning principles?
3. How do teaching staff respond to a course of units designed using applied learning principles?

**Personal background of the researcher**

I have a long background as a teacher in the VET sector as well as working as a consultant in adult education in the national and international context. I began studying teacher-education at university when I was in my mid-thirties, while raising small children and working as a training consultant in Singapore. On completion of my (fully online) undergraduate degree four years later, I began teaching in a sessional role at my local university in Tasmania.

It was during my studies as an undergraduate that I experienced a learning and teaching environment that did not take into account my own life experiences and knowledge,
even though they were highly relevant to my studies. Teaching staff appeared, at times, to be unsure of how to support and manage students like myself who had not followed the more traditional route to university. What struck me most of all was that, despite a successful career, commencing university as a mature-aged student was challenging and I was often at risk of losing confidence in my ability to succeed. One incident in particular, when a lecturer publicly criticised a posting I had made on the online discussion forum, almost triggered my withdrawal from university and still remains a painful memory many years later. I remain acutely aware of the vulnerability many mature-aged learners have for self-doubt despite other significant success in life. As a result, in my present role as course coordinator I am deeply committed to ensuring that all students feel respected, valued, and able to contribute meaningfully to the course and its associated learning community.

The design principles that underpin the course and are the subject of this study reflect, therefore, not only their theoretical underpinnings but also what I have learnt over nearly 30 years of working with adult learners in a wide range of contexts, including the last eight years in higher education.

**Overview of the research design**

Design-based research (DBR) formed the methodological framework for this study. This approach is also known as *design research, educational design research, design experiments* and *development research*, and involves an iterative process of analysis, design, development and implementation of a specially designed intervention (Design-based Research Collective, 2003). Initially conceived and articulated by Collins (1992) and also Brown (1992) it is an approach that is particularly appropriate for educators who seek to incorporate research into practice, and better understand the ‘messiness’ of real-world practice in a particular context (Anderson & Shutuck, 2012). Importantly, the goal of design research, and this project in particular, is not to compare the capacity for one particular approach to be better than another (e.g., to achieve particular learning outcomes). Rather, design-based research seeks to find new or better ways to overcome known problems or challenges, and draws upon the experiences of the researcher, the participants and other stakeholders in a cyclic process to examine and improve outcomes (Barab & Squire, 2004). In this study, the intervention was a set of design principles that aimed at creating and supporting an applied, authentic experience for non-traditional
students in a teacher-education course, and consisted of three iterations completed over an 18 month period (three semesters).

According to Reeves (2006), design-based research consists of four phases, with the first phase involving the analysis of practical problems by researchers and practitioners. This is followed by the development of potential solutions (Phase 2), iterative cycles of testing and refinement (Phase 3) and a final reflection to produce tested ‘design principles’ for the solution (Phase 4). In this study, Phase 1 was informed by the findings from preliminary consultations with a range of stake-holders, which will now be described in detail.

**Preliminary consultations with stake-holders**

As part of the curriculum planning for the new course, informal discussions were held with prospective students (VET teachers), their employers and other stake-holders to help identify the desired characteristics of the course. A series of sessions were held at TAFE campuses around Tasmania, with approximately 200 participants attending. The purpose of these sessions was two-fold: firstly, for the prospective students to hear more about the proposed course in terms of content, outcomes, structure and expectations, and secondly, for the attendees to contribute meaningfully at an early stage to how the course should ‘feel’, in terms of the learning and assessment activities and the online delivery format. The diversity of participants attending these sessions was immediately apparent, comprising a wide range of ages, experience (both vocational and teaching), educational background and employment basis (sessional, contract, part-time or fulltime).

These informal discussions with prospective students revealed some consistent themes, including a fear of not being ‘clever enough’ for university, and a corresponding desire for an empathetic and constructive approach to the development of academic skills, particularly researching and writing. Attendees recalled negative experiences at school and some identified as having left school at the minimum age of 16 years. All had since completed vocational qualifications, such as apprenticeships, but few had attempted university study. There were repeated references to fear at the thought of returning to study but this was balanced by a sense of excitement that it might be possible to succeed in an educational context that had, for many, been discounted. Conversely, some attendees appeared to be confident academically and interested in participating in the course for continued professional development. There was recognition that successful
completion would lead to the opportunity to become eligible for teacher registration and a wider range of employment opportunities, particularly within the school sector.

The consultations with stakeholders clearly indicated a desire for learning activities that were directly connected to the daily practice of teachers and that helped, therefore, to make connections between theoretical concepts and the realities of their own context. There was a logical desire for the course to model the applied learning approach many aspired to. Simply put, the course needed to ‘walk the talk’ of applied learning. This was important for the learning activities as well as the assessment strategies; there needed to be an authentic, applied approach to the course. Another consistent message was a desire for acknowledgement and incorporation of existing skills and experience, so that every student could build on what was known already, rather than be treated as a ‘blank slate’.

The nature of the practicum component within the course (80 days of supervised teaching placement in a range of educational settings over the course) was also discussed at length, with a desire expressed for a tight integration between theory and practice, in order to ensure that the practicum component was not just ‘time spent in class’ but rather would add meaningfully to existing skills and knowledge.

As a whole, the stakeholders were enthusiastic for an environment where students would collegially interact with others. Those who were already teaching in VET observed how it was increasingly difficult to find opportunities to talk collegially with their peers, and how they often had very little idea of others’ professional practice. Across campuses, the same vocational qualification might be taught in different ways and teachers were interested in how the course might enable a greater sharing of ideas or collaboration on approaches and resources.

Finally, the prospective students repeatedly expressed concern that they would be adding study to an already busy life, juggling multiple roles such as employee, parent, carer or partner and, as such, would likely need a degree of flexibility in relation to how they engaged in their study and managed the completion of assessment tasks. Understandably, they warned that if one of their many roles had to be abandoned it was most likely to be their role as a student at university. An online learning environment was noted as absolutely essential, given their work and family commitments, though there was concern over the level of technical skill and knowledge that would be required.
It appeared, therefore, that prospective students would require an environment that responded well to their characteristics or there would be a significant risk of a high withdrawal or failure rate. By the conclusion of the initial investigation, it appeared that what was considered critically important for the stakeholders had been captured. Within the broader requirements for university and professional accreditation, the course design needed to enable students to connect theory and practice though applied learning activities in online environments, encourage meaningful collaboration through a range of collegial interactions and, finally, support the development of the professional identity of mature-aged students. These conclusions were presented to senior TAFE managers and the Course Advisory Committee overseeing the formation and approval of the new course, and were confirmed as having captured the essence of what was required.

The development of the first units within the course commenced, with the first cohort beginning their study in the second half of 2011. In 2012, the foundations of this study were being laid, with a literature review on the three themes identified above marking the start of a deeper investigation into the challenges being faced by course designers and teaching staff. The findings of this literature review are presented in Chapter 2, but first an overview of the thesis will be presented.

**Overview of the thesis**

**Chapter 2: Initial literature review**
The initial literature review sought to explore the problem more deeply, in order to determine the extent to which it was present in broader contexts and how it was presented. The published literature was considered in light of the initial consultations with stakeholders, in order to move towards a clear articulation of the problem that would enable the formation of a potential solution. The initial literature review considered a number of areas, including the changing roles and demands of universities, current approaches and challenges to learning and teaching, the growth of online learning, and the challenges to current practices in teacher-education.

**Chapter 3: Literature review**
A second, more detailed literature review is presented in Chapter 3. This review sought to explore the most relevant published findings and theoretical concepts that could inform and guide the proposed solution to the problem identified. A range of literature was reviewed, exploring relevant theory and pedagogical models. This included authentic learning, collaboration in the learning environment, assessment practices, the
development of graduate attributes, and the ways in which students could be encouraged to develop the attributes required for professional and life-long learning. The second literature review enabled the articulation of the draft design principles that guided the development and delivery of the units of study in the course.

**Chapter 4: Research design**
This chapter describes the research design and methodological framework that guided the study. The different phases of the study are described in detail, including selection of participants, the conduct of the study, and ethical and pragmatic aspects of the research. The processes for the analysis of the data are explained and justified.

**Chapter 5: The learning environment**
This chapter provides an overview of the learning and teaching environment that was designed to instantiate the design principles developed in Chapter 3. It includes a description of the online learning environment, the types of activities students were involved in and the support they were provided with, and other aspects of the course, such as the required practicum component.

**Chapters 6: Authentically connecting theory and practice**
In this chapter, the analysis and findings for the first of six design principles are presented. This principle was concerned with the provision of learning activities that facilitated a meaningful connection between theoretical concepts and their application in practice. Examples of how the principle was enacted are provided, together with the ways in which students experienced those activities and the findings that explored how participants could most effectively connect theory and practice.

**Chapter 7: Incorporating the lived experience of students**
The second principle aimed at ensuring that the unit of study responded to the lived experience of students, including what they brought to the learning environment, as well as their lives while they were studying at university. This chapter considers how the principle was enacted, the challenges for both students and staff in the enactment of this principle, and the implications for providers, as more non-traditional students choose to enrol at university.

**Chapter 8: Collaboration in the learning community**
The third principle aimed to ensure that all students had meaningful opportunities to collaborate with their peers in the online learning community, in order to build the skills required in the workplace and to enhance the potential for learning. This chapter
considers the analysis and findings related to collaboration, and discusses how these relate to the literature.

**Chapter 9: Professional identity through collegial interaction**

An important role of universities is to build the professional identity of students, in order to best prepare them for their roles beyond their study. This chapter analyses the enactment of the fourth design principle, and identifies a number of challenges experienced by participants during the study.

**Chapter 10: Flexible, authentic assessment strategies**

Assessment is one of the most important, yet challenging, aspects of the teaching and learning process. In this chapter, the ways in which the fifth principle was enacted are analysed, along with the findings and implications for practitioners. The chapter explores a number of approaches to assessment, and the ways in which practices influenced outcomes for the participants in this study.

**Chapter 11: Student ownership of the learning**

The analysis and findings from the enactment of the final principle are presented in Chapter 12. This principle aimed to foster and encourage a growing sense of ownership over learning, in order to raise levels of engagement and build the attributes sought by graduation. With an increasingly diverse student cohort, the findings from the investigation into their experiences and willingness to take an increased degree of ownership are highly relevant to providers in today’s higher education sector.

**Chapter 12: Conclusions**

The final chapter in this thesis presents the conclusions for this study, articulating the contribution to theory and practice and leading to a final model of design principles for an applied learning approach in an online teacher-education course. The limitations of the study are outlined, and areas ripe for further research are identified.

**Conclusion**

This chapter has introduced the study, outlining the context and background to the investigation, including the preliminary consultations with stake-holders. The design and development of the new course was positioned in a global environment of increased online offerings, rising numbers of students combining study with employment, and demands for a more engaging, effective learning environment.
Thus, the development of guiding principles for an applied approach to the learning environment was a worthy undertaking. A study of the effectiveness of the design principles, using the methodological framework of design-based research, offered to contribute meaningfully to both theory and practice in teacher-education and higher education more broadly.

The next chapter addresses the initial literature review instigated in order to better understand the challenges that were the focus of this study.
Chapter 1 contextualised the study, provided an overview of the course and the initial student cohort and presented the findings from the preliminary consultations with relevant stakeholders. This led to identification of the main challenges facing designers as the course developed: connecting theory and practice through applied learning activities, encouraging meaningful collaboration, and supporting the development of the professional identity of mature-aged students.

In order to explore these challenges, literature from a number of areas was reviewed, including: the role and demands of the higher education sector, the characteristics and needs of non-traditional students, approaches to online learning environments, and issues within teacher-education—particularly those related to learning and assessment approaches. The key findings of the literature review are presented below, beginning with a consideration of the higher education context and its remit to prepare students for their workplace roles, as this relates closely to the desired outcomes sought by prospective students and their employers at the preliminary information sessions.

The role and demands of universities
The last few decades have seen significant challenges emerge in the university sector. Providers are under increasing pressure to extend beyond their traditional role of “repositories and organisers of knowledge” (Altbach, 2008, p. 6) and respond more actively to the priorities of government and practical needs of society (Trow, 2006). Employers have been calling for graduates who are more ‘work-ready’ (Oliver, Jones, Tucker & Ferns, 2007); employees who are ready and able to use the knowledge they have gained and apply it to the demands of their chosen vocation (Laurillard, 2002). In order to do this they must have had the opportunity to develop those skills in the course of their study (Biggs, 2003; Korthagen, 2001). The challenge, therefore, is for course designers and academics to create a meaningful learning environment that responds to the scholarly remit of universities and the pragmatic demands of society.

In 1990, Ernest Boyer published a now seminal report on higher education, which called for a scholarship of teaching and learning (SoTL). Boyer also proposed a scholarship of application which has relevance to the challenges associated with developing the type of
Boyer suggested that universities should be asking the question: “How can knowledge be responsibly applied to consequential problems?” (1990, p. 21). Boyer was challenging scholars and their institutions to bring theoretical knowledge and application together to better serve society and, by logical extension, inviting pedagogical approaches to do the same. Boyer believed that if knowledge could be applied to problems, then problem-solving could lead the agenda for curriculum development.

Laurillard (2002) supports Boyer’s call when she describes the type of attributes sought in university graduates, pointing to the need for teaching approaches that encourage knowledge creation rather than acquisition:

Universities will need graduates capable of contributing to the more fluid kind of knowledge creation that is needed by the professional practitioner, who is not confined to the well-trodden paths of expert consensus knowledge of the traditional university curriculum. Students’ long-term cognitive needs go well beyond the acquisition of consensual knowledge (p. 22).

As Laurillard identifies, graduates need to be able to contribute meaningfully to their profession, apply theory to practice and solve problems that arise in their workplace. In order to do this, teaching staff would need to feel confident in creating learning environments that are authentic to typical situations from the discipline area, or ensure that students are able to meaningfully engage in those contexts during their time of study.

Connecting Boyer’s (1990) work with technology, Scanlon (2014) argues that the digital age has enabled the scholarship of application to be more easily implemented, and suggests that academics should make more use of “networked communities” that allow “new ways to participate in wider global debates with diverse audiences” (p. 14).

Scanlon acknowledges that such an approach may challenge the epistemological status of academic knowledge but argues that developing the skills to manage this tension is a worthy pursuit for staff and their institutions. Notably, embracing contemporary understandings about how knowledge is created and shared will also help to develop the key attributes sought in graduates, which is the next area to be reviewed.

**Graduate attributes for lifelong learning and employability**

In Australia, graduate attributes became embedded into the curriculum approach in the early 1990s, when the link became clear with future employability. As a consequence, funding to universities became dependent on the provision of evidence that indicated how these attributes would be developed (Oliver, 2013). Typically, graduate attributes
include capabilities such as communication skills, problem solving, teamwork, critical thinking and independent learning skills. This aspiration, however, sits within an increasingly regulated environment characterised by a “rigidly prescriptive curricula that disempowers teachers and provides few opportunities to offer students meaningful ownership over their learning” (Dudley-Marling & Oppenheimer, 1995, p. 294). Boud (2000), however, urges teaching staff to extend beyond the immediate agenda for learning, preparing students “not just for what the course itself sets as its outcomes but to operate in a society whose form we can but glimpse” (p. 154), and in doing so, fulfil the role of universities to develop the attributes that graduates will need for work, life and citizenship (Miller, 2007).

Given that 20 years have passed since Australian universities formally embraced the concept of graduate attribute development, it might be presumed to be well and truly embedded within the teaching and learning environment. Yet, the evidence indicates that it remains elusive in many institutions. For example, in a project funded by the Australian Learning and Teaching Council (ALTC), teaching staff in 16 Australian universities were surveyed about their beliefs in relation to the importance of graduate attributes and their willingness and confidence to develop them in students. Overwhelmingly (74%), staff valued graduate attributes and thought they were important but significantly fewer (between 23 and 61%, depending on the particular attribute) felt that they had the confidence to help develop those attributes in students (de la Harpe & David, 2012). One of the attributes with the biggest difference between the perceived level of importance, and the willingness and confidence to teach it, was the attribute of independent learning. Just over 60% of respondents saw it as an important attribute, 50% were willing to teach it, 40% felt confident to teach it and only 30% actually believed there was currently enough emphasis on that attribute in their institution (p. 497). A noteworthy finding was that academics who felt most willing and confident to teach graduate attributes were those with more years of industry experience than their colleagues (de la Harpe & David, 2012, p. 501). The results of this project highlighted the discrepancy between what academics say they value and what their teaching practice actually reflects. The findings revealed that the level of willingness and confidence were significant predictors of the attributes being addressed in the learning environment, pointing to the need for appropriate professional development and support to assist teaching staff, particularly those who do not have recent or relevant industry experience (de la Harpe & David, 2012).
In a similar manner to the development of graduate attributes, the increasing diversity of students has implications for academics, including a need to reconsider traditional teaching approaches to ensure that it will encourage and support meaningful learning. The review now turns to the characteristics and needs of this rapidly growing cohort.

**Characteristics and needs of non-traditional students**

The number of non-traditional students in higher education is rising steadily as a result of policy implementation in Australia, the United Kingdom and the United States that encourages more of the population to gain a degree level qualification (Bradley, 2008; Brennan, 2008; Crozier, Rea, Clayton, Colliander & Grinstead, 2008; NCES, 2012). Consequently, today’s student cohort logically reflects a broader range of ages, characteristics, ethnicity, socio-economic status and educational backgrounds (Munro, 2011). As they all share the characteristic of not arriving directly from Grade 12, they are commonly referred to as ‘non-traditional students’. Definitions of this term vary but tend to include students who have at least one (many have several) of the following characteristics: mature aged, employed, with family commitments, from a minority group or a low socioeconomic background, with a disability, first-in-family to attend university, an early school leaver, or not academically inclined (Laing & Robinson, 2003; Munro, 2011; Roberts, 2011; Taylor & House, 2010).

With an increased likelihood of having left school early and without strong academic results, many non-traditional students begin their studies at university with lower levels of self-efficacy than those who have followed the traditional pathway (Gilardi & Guglielmetti, 2011). Despite the increase in the number of non-traditional students, and research that reflects their difference from the traditional undergraduate student, it appears that little has changed to respond to their needs. Brown (1988) argues that:

> Unless such students represent a sizable participating group, they tend to become invisible in the larger mass of undergraduates, and there is little pressure on academics to change their teaching style or on institutions to reorganise their provision (p. 26).

The higher withdrawal rate amongst the non-traditional cohort is often attributed to this (Laing & Robinson, 2003) and several studies have shown the value of providing greater support to these students (Bamber & Tett, 2000). Other research has identified that the relationship a non-traditional student forms with faculty staff and other students is a powerful influence on their academic experiences and a key indicator of continued enrolment and success at university (Gilardi & Guglielmetti, 2011; Roberts, 2011). An
important role of academics is to help non-traditional students connect work and life experiences with their theoretical studies, though Bamber and Tett (2000) caution that students may need assistance to understand that, in itself, experience is not enough in an academic course. Rather, their experience must be integrated effectively with the theoretical concepts and considered with “scholarly detachment and rigour” (p. 59). Bamber and Tett (2000) suggest that the challenge for teaching staff is to achieve a delicate balance of developing the self-confidence of the students by welcoming and incorporating their lived experience, then encouraging them to extend beyond that experience and to examine it in the light of theoretical literature.

From their research with adult learners, Knowles, Holton and Swanson (2011) proposed a number of assumptions that can be made about the adult learner. These relate to perceptions of their identity and self-concept as well as a sense of being responsible for their own decisions. Their research suggests that adult learners: “develop a deep psychological need to be seen by others and treated by others as being capable of self-direction. They resent and resist situations in which they feel others are imposing their will on them” (Knowles, Holton & Swanson, 2011, p. 63). Within educational settings, they warn of the dangers of treating adult learners like children, with an assumption of dependency on the teacher, suggesting that if this occurs adult learners will “…hark back to their conditioning in their previous school experience, put on their dunce hats of dependency, fold their arms, sit back and say ‘teach me’” (2011, p. 64). This type of reaction would not be congruent with the development of desired graduate attributes and signals the need for learning environments that encourage student-autonomy and self-direction.

The growing diversity of students has significant implications for academics in relation to how the learning environment is designed and developed and how students are supported. This is made even more complex as an increasing number of students participate in blended or fully online environments, which is the focus of the next part of the literature review.

**Online learning environments**

In 2013, over one quarter of all higher education students in Australia studied off campus, and many on-campus students also completed some of their study online (Norton & Cherastidatham, 2014, p. 27). Globally, the statistics reflect a similar scenario with approximately 33% (over 7 million) of all higher education students in the USA in
2012 enrolled in at least one online course (Allen & Seaman, 2014). In the United Kingdom, 77% of universities are strategically planning for their online education with 87% of those universities planning to increase their offerings (Higher Education Funding Council for England, 2011). The benefits of online education for students and their institutions are well established. It helps to develop the students’ capacities in a technology driven and globally connected workplace and, therefore, work-readiness on graduation (Bonk, 2009), while reducing pressure on universities to provide on-campus facilities. Significantly, it increases access to higher education for students living in regional or remote areas (Dell, Hobbs, & Miller, 2008) and for those balancing work and study (Chau, 2010).

As the number of online offerings in higher education has risen, the implications for those developing and delivering those courses have been the subject of debate. In 2001, Mark Prensky, a writer on learning and education, described those students born after 1980 as ‘digital natives’ who had grown up with access to computers and the internet and were, therefore, technology-savvy and deserving of an environment that better suited their way of engaging (Prensky, 2001). In a later publication, Oblinger and Oblinger (2005) largely agreed with the claims made by Prensky in terms of the capabilities of the ‘Net generation’ and supported his calls for radical changes to how technology was incorporated into university courses. These publications and others like them sparked widespread concern over how universities would respond appropriately, and whether or not there was a need to cater differently for older students (described by Prensky as ‘digital immigrants’).

Later research, however, has disputed the assertions made by Prensky and others in relation to the technical ability of the Net generation and also the claims of generational difference in technical confidence and competence. Reeves and Oh (2008), for example, reviewed the evidence from research and popular literature that reported generational differences in order to identify what implications, if any, were relevant to instructional designers working within technology enhanced learning environments. They concluded that, overall, there was little substantive research to back the claims of generational difference made by Prensky and others, and called for more investigation to be undertaken. In a more recent research finding, Lai and Hong (2014) surveyed 880 undergraduate and post-graduate students in order to document their use of digital technologies, comparing three age groups in the cohort (under 20, 20-30 and over 30 years of age). They also found that there was no significant generational difference in
the use of technology and that, regardless of age, the range of digital technology used was rather limited. Their findings are consistent with a study of over 2000 students from three Australian universities, conducted by Kennedy, Judd, Dalgarno and Waycott (2010) which also found that most students, regardless of age, only engaged with a limited range of digital technologies in their personal and university life.

While technology has enabled rapid changes in the ways students can engage and interact with their institutions and their peers, research on the student experience in online learning environments has identified a range of challenges for students. Apart from the technical competencies required, studies have revealed feelings of isolation and a perceived lack of support (technical, academic and/or social) in an online learning environment (cf. Heirdsfield, Davis, Lennox, Walker & Zhang, 2007; Murdock & Williams, 2010). This is reflected in the higher attrition rate from the online cohort than the on-campus equivalent (Roberts, 2011; Rovai & Downey, 2010). Additionally, the literature reports initial concerns held by academics about the efficacy and appropriateness of online teaching and learning (Gregory & Salmon, 2013) though such doubts appear to be dissipating with time (Fayer, 2013). This may be at least partly due to the growing number of satisfied graduates (and employers) from online degrees (Allen & Seaman, 2014) as well as improvements to the manner in which online learning is designed and delivered.

The research findings suggest, therefore, that there is an ongoing need to provide adequate support to students in technology-supported environments. Huber and Watson (2014) found that when adequately supported, older students are just as capable as their younger counterparts in gaining the technical skills required to engage and learn with technology. This is important for universities to note, as older students are more likely than their younger counterparts to be studying off-campus, principally because it eases the logistical demands of juggling study and work (Allan & Seaman, 2014; Oblinger & Oblinger, 2005), although increasingly, younger students also enrol in that mode of study (Norton, Sonneman & McGannon, 2013).

The following section explores the teaching and learning environment in more depth, together with research findings relevant to the challenges facing course designers. The review begins with an overview of issues facing teacher-education programs.
Issues within teacher-education
A recent ministerial advisory group found that there is still much work to be done to ensure that teacher-education graduates are ready to take their place in the classroom. The group’s report found that there is “significant public concern over the quality of initial teacher education” and a “high degree of variability in the quality of practice” in courses (Department of Education & Training, 2014, p. xi). In their response, the Australian Government agreed that there “is not enough information to properly understand what the most effective teaching practices are and what teacher-education approaches best prepare new teachers for the classroom” (Department of Education & Training, 2015, p. 9), and called for more research into which approaches best support the development of teachers-in-training. The findings support Mayer’s (2014) review of forty years of teacher-education programs in Australia, which also noted the critical need to better prepare students for a profession that is increasingly complex and requires practitioners who can solve problems with well-grounded theoretical understanding.

The recent concerns over the quality of teacher-education echo those expressed over the last few decades. It appears that traditional teacher-education programs may often not be preparing their students effectively enough, leading to graduate teachers who struggle once they are in charge of a classroom (Darling-Hammond, 2006; Korthagen, Loughran & Russell, 2006; Mayer, 2014). As a result, new teachers are likely to resort to the survival skills suggested by colleagues, rendering the years spent in study of dubious value for the graduate, the school and their learners (Shulman, 2004). Zeichner and Tabachnick (1981) suggest two main causes of this situation: firstly, and within the university, that theory is separated from practice through an emphasis on the traditional transmission of information and, secondly, in relation to placements in schools, that students are encouraged to focus on “how things were to be done without asking student to consider what was to be done and why” (p. 9, italics in original), hence encouraging a behaviour of acquiescence and conformity once employed in the schools.

Approaches to learning and teaching
The initial consultations with prospective students and the findings of scholars such as Biggs (2003), Darling-Hammond (2008) and Shulman (2004) emphasise the need for students to be actively involved in their learning, rather than passive recipients of content. Learning activities in themselves, however, cannot be assured to result in a meaningful experience. Dewey (1944) described experience as having an active and a passive element, a physical action and a cognitive reaction, and the “connection of these
two phases of experience measure the fruitfulness or value of the experience. Mere activity does not constitute experience” (p. 181). The challenge for educators, therefore, has been to design activities where the student attends to both phases and, drawing upon a socio-constructivist perspective (Vygotsky, 1978), interacts with others. Common approaches in higher education that aim to do this include collaborative learning, cooperative learning and problem-based learning (Barrows, 1985; Biggs, 2003; Johnson, Johnson & Smith, 1991). Such activities are designed to help students connect theory with practice and ‘make sense’ of what they are learning (Korthagen, 2010a).

There is a reasonable body of literature that has sought to identify the relative value of more active learning strategies compared to more passive ones, though evaluating the success or otherwise of such activities appears to be difficult in at least two ways: identifying exactly what is being studied, and measuring ‘what works’ (Prince, 2004). Machemer and Crawford (2007), for example, investigated student perceptions of the value of a range of teaching techniques in a semester-long course. The class sizes were large, between 125 and 180, with students attending 27 lectures (each two hours long) and spending an equal time participating in active learning techniques (such as cooperative and collaborative activities). The findings from the self-administered survey (343 surveys returned, reflecting a 54% response rate) revealed that students valued lectures and more active strategies equally. The key indicator for students in relation to value was not so much what they did but their perceptions of what activities would improve their exam performance. The students valued cooperative and collaborative activities the least, as they struggled to see how it would improve their exam performance. The study highlights the potential difference between the students’ perceived values and the actual learning achieved though specific activities. It also points to the importance of assessment tasks that require students to engage more deeply, and facilitate the development (and evaluation) of the attributes and skills that will be required in the workplace.

In another study, Vernon and Blake (1993) completed a meta-analysis of evaluative research comparing active learning techniques with more traditional methods of medical education, analysing 35 studies reported over 22 years of publications. Their findings suggested that active learning strategies were significantly superior with respect to students’ program evaluations (i.e., students’ attitudes and opinions) but those who had experienced traditional approaches performed slightly better in their national exams. Other aspects of the meta-analysis, however, suggested that active learning encouraged
greater class attendance, improved student mood and improved faculty attitudes. Overall, the authors concluded that active learning strategies were generally more effective than traditional approaches such as lectures. Perhaps too, their results indicate that traditional approaches such as lectures may still have a place in higher education but their use needs to be carefully planned and designed to support and complement more active strategies.

Other studies have moved past the comparative investigation of active versus passive learning strategies, and have sought to identify what characteristics of active learning are most useful to improving outcomes. In a meta-analysis of the published literature from 22 studies, Taconis, Feguson-Hessler and Broekkkamp (2001) identified what strategies were reported to be most effective in raising student performance and achievement in problem solving in science. The analysis showed interventions that utilised problem solving itself (e.g., through practice and training) had little effect, whereas interventions focussed on teaching the skills of problem solving as well as practice were most effective. Their findings indicate that activities that ensure the construction of an adequate knowledge base (problem schemata) and the skilful use of this knowledge in the problem solving activity will maximise the potential for learning. The analysis also found that prompt feedback to students on both the process and product contributed to a positive result and, finally, that students working in small groups did not perform well unless there were measures to guide the processes chosen by the students.

The initial consultations with stake-holders revealed a strong interest in collegially interacting with others and working collaboratively within a diverse cohort who shared a passion for teaching and learning. The prospective students’ enthusiasm was balanced, however, with a reluctance to rely on others or to have others rely on them, given their multiple roles and unpredictable study patterns. The findings in the literature suggest that collaborative activities in online environments do have the potential to enhance learning significantly by bringing multiple perspectives to bear, encouraging critical thinking, building social capital within the cohort and developing the type of communication skills valued in the workplace (Herrington et al., 2010; Oliver et al., 2007; Jonassen, 1991). Conversely, however, it can cause frustration and anxiety amongst students and lower the quality of work achieved (Capdeferro & Romero, 2012). Negative experiences tend to result from the need to rely on the input of others, or be relied upon, causing stress to non-traditional students with multiple roles and responsibilities (Gilardi & Guglielmetti, 2011). Students may also perceive a significant level of imbalance in terms of the commitment, responsibility and effort of their peers.
and resentment can build rapidly, particularly if the collaborative activity is assessed in a way that ‘free-riders’ benefit from the extra work put in by others (Capdeffero & Romero, 2012).

The pedagogical approach in teacher-education carries an additional responsibility as it must provide a model for future practice as well as enabling effective learning. As Bruner (1996) warns: “Pedagogy is never innocent. It is a medium that carries its own message” (p. 63). His words are a reminder to teacher-educators that a traditional content-led approach may communicate a message, even if unintended, that objective knowledge can be carved into neat units and delivered to diverse students. To respond to the challenges identified by Bruner and build the skills of graduates to engage collegially in discussions about teaching and learning, teacher-educators must feel comfortable in that role themselves. There is, however, limited evidence that this assumption that can be made (Korthagen, 2010b; Loughran, 2006). Rather, the associated literature abounds with examples of teacher-education students being encouraged to understand, accept and assimilate particular pedagogical approaches and educational theory whilst experiencing the modelling of a different approach from their lecturers (cf., Darling-Hammond, 2005; Loughran & Berry, 2005; Russell & Loughran, 2007). Students may not feel comfortable talking to their teachers about the apparent contradiction, so the mantra of ‘do as I say, not as I do’ runs a risk of being adopted by those students, and the cycle is likely to continue when they begin their own careers as teachers (Nolan, 2014).

**Approaches to online learning and teaching**

Scholars such as Terry Anderson (2008) and his colleague Heather Kanuka (2008) have focussed on articulating philosophical and theoretical approaches to online learning. Anderson (2008) argues while online learning is generally considered only a subset of how adults learn generally, the formation of a theory of online learning enables a broader conversation to take place, by creating a common language and a greater ability to share and compare experiences of fellow researchers, leading to enhanced understanding. In the context of a rapidly evolving educational context, his own and his collaborative work (cf., Anderson, 2008; Anderson & Dron, 2012; Garrison, Anderson & Archer, 2000) has had a significant impact on approaches to online learning and teaching environments.

In a thought-provoking review on what they refer to as ‘three generations of distance education pedagogy’, Anderson and Dron (2012, p. 81) note how understanding of
learning and technological development has progressed along similar trajectories. Their analysis began with consideration of the cognitivist-behaviourist orientation to learning, with its focus on the individual and changes in behaviour as a result of response to stimuli. Similarly, distance education at that stage usually involved either correspondence of learning material, or a computer-assisted program that was usually completed individually. Social interaction as part of the learning process was not considered necessary or possible in the early days of distance education. Following this first ‘generation’, the development of a social-constructivist understanding of learning occurred at the same time as technology became able to offer both synchronous and asynchronous modes of interaction between teaching staff and students as well as between students themselves. Both learning and technology acknowledged, valued, and incorporated connection and interaction.

Finally, in what Anderson and Dron (2012) refer to as the third generation, the concept of *connectivism* (Siemens, 2005) adopted an even less structured path to learning, and instead proposed a heavy reliance on dialogue, negotiation and networking to help learners develop their understanding and knowledge. Again, the affordances of technology have moved in tandem with (or perhaps because of) new approaches to learning, and internet enabled communication and networking now facilitates the interactions that are representative of a connectivist pedagogical approach.

### Approaches to assessment

Assessment looms large in the minds of both teaching staff and students, though its purpose and connotations for stake-holders appears to be diverse. Ramsden (2003) identified that for instructors, assessment was primarily concerned with “getting to know our students and the quality of their learning” (p. 180). This is in contrast to students who, when asked to describe assessment in just one word, variously proffered: *fear, stress, anxiety* and *judgement* (Vaughan, 2010, cited by Vaughan, Cleveland-Innes & Garrison, 2013, p. 81). Boud (1986, p. 36) discusses the ramifications of students fearing assessment, pointing to the findings of Fransson (1979) who concluded that when students perceived themselves to be under threat they will quickly adopt a surface approach to their learning.

From another perspective, the Higher Education Standards Framework which regulates the provision of higher education in Australia focuses on ensuring that “methods of assessment are consistent with the learning outcomes being assessed, are capable of
confirming that all specified learning outcomes are achieved and that grades awarded reflect the level of student attainment” (Higher Education Standards Panel, 2014, p.8). Given the importance of assessment practices to the way that students engage (Biggs, 2003; Boud, 2006; Ramsden, 2003), the variation in conceptualisation of assessment has implications for designers and developers of learning and assessment activities, perhaps particularly so for online learning environments where appropriate technology needs to support the assessment process.

The initial consultations with prospective students clearly indicated concern, even significant anxiety, over the assessment processes. This was not unexpected: typically for adult learners a return to study may evoke negative memories from school days and create significant concern in relation to the academic demands at undergraduate level (Taylor & House, 2010) and the competencies that will be required to engage in technology-supported learning environments (Anderson & Dron, 2012). Also consistent with the literature on adult learners (Knowles et al., 2011; Korthagen, 2001), the initial consultations revealed a common desire for assessment tasks to have a connection with typical workplace challenges and extend beyond the traditional essay to more practical, useful products that would have a life beyond the university context.

Boud (2006) contends that students in higher education have wanted assessment practices to change for many years but it has taken the external pressures placed on higher education providers by government and employer bodies, as they seek more work-ready graduates, to create a catalyst for change. As technological advances spark rapid changes in the ways organisations operate both internally and externally, employers need graduates who can quickly respond to new priorities and who can take ownership of solving challenges that arise (Reeves, 2000). In their review of the literature on the relationship between learning and assessment, Dochy, Seger and Sluijsmans (1999) concluded that it was reasonable to suggest that higher education had moved from an ‘era of testing’ to an assessment era that:

…sees the student as an active person who shares responsibility, reflects, collaborates and conducts a continuous dialogue with the teacher. Assessment is then characterised by a pluralistic approach and by the use of interesting, real life (i.e., authentic) tasks (p. 331).

Their views are supported by Boud (2000), who called for assessment practices to give more responsibility to the learner and, in doing so, facilitate the development of lifelong learning skills. He described this approach as sustainable assessment: practices that would “meet the needs of the present without compromising the ability of the students to
meet their own future learning needs” (p. 151). Drawing from the work of others, such as Bowden and Marton (1998), Boud highlighted the need for students to be able to become better at discerning good quality work from not so good, and to know how to act upon formative feedback in order to improve performance. Of critical importance to Boud (2000) was for assessment to have a broader duty than testing that particular learning outcomes have been achieved – it must always be considered to have a ‘double duty’ that reflected a longer term view of the development of the individual and was, in essence, authentic to the future needs of the student.

**Design elements for applied online learning**

Course designers and developers face the challenge of providing a supportive, engaging and effective environment that responds to the needs of their students and their institutions. The initial literature review identified that universities are expected to build the graduate capabilities of their students—to prepare them for their chosen discipline and for a lifelong journey of learning. This expectation is accompanied by an increasingly diverse student cohort and a growing demand for a more flexible learning and teaching environment. Combined with the findings from the initial consultations with practitioners, the completion of the initial literature review enabled the challenge to be more clearly articulated:

To formulate and test design principles to guide the development of an online learning and teaching environment that embraces an applied, authentic approach to learning and assessment activities, recognises and responds to the needs of non-traditional students, and helps to build the type of graduate attributes sought by industry and the students themselves.

The challenge was broken up into six different elements, each deserving further exploration, in order to then formulate a potential solution through specific design principles for the online teacher-education course. These elements are presented below:

*Authentically connecting theory and practice*: The learning environment needs to provide students with opportunities to make meaningful links between theoretical concepts and their practical application. Such an approach appears likely to encourage greater engagement and build the work-readiness of graduates. Learning activities need to build graduate attributes that reflect the confidence and capacity to problem-solve, communicate effectively, collaborate and integrate theoretical knowledge to new and novel situations.
Incorporating the lived experience of students: The literature review identified that the universities are experiencing increasing enrolments from students who are considered non-traditional. Many of these students arrive at university with significant life experience and seek an educational experience that recognises and responds to that experience.

Collaboration in the learning community: In response to contemporary understandings of how learning occurs, there is a need for the learning environment to encourage and facilitate collaborative student activities, within both face-to-face and online learning environments.

Encouraging a professional identity through collegial interaction: Students are expected to be ‘work-ready’ when they graduate, and universities have a role in building those attributes that ensure their professional capacity and confidence, particularly in relation to interacting with others.

Integrating flexible, authentic assessment strategies: The initial literature review revealed the sometimes problematic nature of assessment, and the tendency for students to focus on ‘what the lecturer wants’ rather than seeing assessment as a learning process in itself. This leads to a surface approach to study and reduces a sense of autonomy and ownership over the learning process. Importantly, the initial review identified the importance of ensuring that students become better at discerning good quality work, in order to build the type of attributes desired in graduates.

Encouraging ownership of learning: The research indicates that a more diverse cohort, motivated by a wider range of reasons for attending university, needs a learning environment that encourages and supports a greater degree of ownership over their learning. Such an approach also builds the graduate attributes sought by employers, as it prepares students for a lifelong approach to learning.

Each of these elements is explored in more detail in the next chapter.
CHAPTER 3

Literature review: Design principles

Chapter 2 provided an initial review of literature relating to the problem identified in the first phase of this study. Essentially, the initial literature review sought to better understand the challenges identified in the consultation with prospective students, and to identify areas worthy of further investigation. Six elements were identified as a basis for design principles. A second more in-depth review was then conducted to explore published research within each of the six identified elements that could assist in formulating a response to the challenge. The review of the literature related to each of these elements is presented below, together with a draft design principle and explanation for each, to guide the design of online learning courses.

Element 1: Authentically connecting theory and practice
The initial consultations and literature review identified the importance of activities that helped students make sense of what they were learning through a strong connection between theory and practice, and using authentic contexts to facilitate this process. Four aspects of this element are discussed below: meaningful learning, applied learning, authentic learning, and authentic contexts.

Meaningful learning
The work of cognitivist scientists, in particular Piaget (1952) and Ausubel (1968), provided a model for cognitive development and laid the foundations for constructivism—a philosophy that individuals ‘construct’ new knowledge rather than receiving it passively. An experience, therefore, is considered a necessary antecedent to meaningful learning (Dewey, 1904). From a constructivist viewpoint, a learner’s previous experience provides the cognitive ‘hook’ to connect new knowledge with, just as it may cause some disorientation if new, contrasting experiences challenge existing beliefs and understandings. Thus, learning occurs as an individual actively forms meaning from interactions in the environment, building on previous experience (Ausubel, 1968).

Kolb (1984) took this a step further, with his model of experiential learning that involved four phases: concrete experience, reflection on that experience, abstract conceptualisation on the basis of that reflection, and then active experimentation in order
to test the abstract model. Kolb did not factor in the social aspect in his model, despite Dewey (1904, p. 19) suggesting that a learning experience always includes “the social factor; the mutual interaction of different minds with each other”. Vygotsky (1978) further promoted the importance of social interaction in learning, suggesting that development first occurs on a social level and then on an individual level (he differed from Piaget here, in suggesting that the social interaction preceded individual development). Later work by Lave and Wenger (1991) also reiterated the important role of social interaction as part of the learning experience.

From a constructivist viewpoint, and aligning with the work of Ash (2010), the degree of meaningfulness in any activity is likely to be different for each learner, as each will have a unique set of existing concepts. So what is meaningful to one may not be meaningful to another. Ausubel (1960) proposed that meaningful learning will occur when there is “selective mobilization of the most relevant existing concepts in the learner’s cognitive structure” followed by the provision of appropriate subsuming activities that ensure “optimal anchorage for the [new] learning material” (p. 271). This provides a useful reminder that the primary role of the lecturer is to ensure that the pedagogical design will facilitate this process, accepting that the actual learning outcome may well be different for each student. Knowles (2011) also alludes to the individuality of meaning-making, with his assertion that an adult’s unique experience is the starting point for organising learning and that, from there, it will be the ‘need to know’ that will motivate the learner to engage meaningfully.

**Applied learning**

Historically, applied learning is most commonly referred to as *learning with your hands* and pedagogically is most closely aligned with experiential learning (Dewey, 1938; Kolb, 1984). It melds together the two kinds of knowledge that philosopher Gilbert Ryle (1949) suggested: *knowing that* and *knowing how*. Ryle (1949) proposed that integrating theoretical knowledge (*knowing that*) with practice (*knowing how*) enables a student to move beyond being trained and into a space where the skills of lifelong learning are internalised. Thus, applied learning brings together theory and practice in a manner that builds the type of attributes sought in graduates. It is a pedagogical approach that has been embedded into some educational sectors already, most notably in Australia through the Vocational Education and Training sector and also the Victorian Certificate of Applied Learning (VCAL) program. The Victorian Curriculum and Assessment Authority advocates “teachers’ use of applied learning, encouraging the context-based
integration of theory and practice through a ‘hands on’ and real-life approach to learning and teaching” (Blake & Gallagher, 2010, p. 58). With the growing interest in raising levels of student engagement (Krause, 2005; Munro, 2011) and the success of applied learning strategies in the VCAL program (Bartram, 2009; Blake, 2007) it appears that the stage is set for applied learning to become more widely adopted in the school sector. Within the higher education sector, the literature reveals a limited but growing interest in applied learning 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 pedagogy responds to the call for higher education to make provision for diverse approaches to learning and to aspire to measurable learning outcomes that will meet the present and future needs of industry and society (Schwartzman & Bouas Henry, 2009). The Missouri Western State University’s journal *Applied Learning in Higher Education* celebrated its first issue in 2009, with the co-editors explaining that the journal was needed because “the speed of implementing various applied learning practices has outpaced the ability to determine systematically what works best, when and why” (Schwartzman & Bouas Henry, 2009, p. 6). This is reflected in the dearth of literature that provides theoretically grounded pedagogical principles to guide course designers, developers and teaching staff who seek an applied learning environment for their students, particularly in a higher education setting. Ash and Clayton (2009) are one of only a handful of writers (cf., Blake, 2007; Michaelsen & McCord, 2011; Shacklock, 2006) who discuss applied learning pedagogy. Ash and Clayton (2009) suggest 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 focuses, therefore, on connecting theory with practice through context-based activity, and as such is broadly aligned with situated learning concepts (Brown, Collins & Duguid, 1989), the characteristics of adult education (Knowles et al., 2011; Mezirow, 1991) and communities of practice (Lave & Wenger, 1991). While not commonly associated with the higher education sector, the literature suggests that it has been well received in those contexts where it has been implemented (cf., Blake, 2007; Linsteadt & Williams-Decker, 2009; Oliver, 2011).
**Authentic learning**

Authentic learning shares some characteristics of applied learning, such as the focus on connecting theory with application through engaging, realistic activities. There is a significant body of literature from the late 1980s and early 1990s that reflects a growing interest in how schools, and education in general, could more effectively prepare students for a rapidly changing workplace. Resnick (1987) claimed that the consequences of universities taking over professional education meant that there was now a disconnect between theory and practice, and that “ways must be found to reintroduce key elements of traditional apprenticeship” (p. 17) which she described as a ‘bridging apprenticeship’. Collins (1989) responded with the notion of a *cognitive apprenticeship*, which he described as employing the “modelling, coaching and fading paradigm of traditional apprenticeship, but with emphasis on cognitive rather than physical skills” (p. 1). Collins took the key characteristics of situated learning and considered how technology within the educational environment could mimic ‘real’ conditions, with a particular focus on two kinds of modelling: the modelling of processes and the modelling of expert performance—both characteristic of a traditional apprenticeship. This was further developed by Collins and his colleagues Brown and Holum (1991) as they suggested that in order to develop transferable skills, teachers needed to:

- Identify the processes of the task and make them visible to students;
- Situate abstract tasks in authentic contexts, so that students understand the relevance of the work; and,
- Vary the diversity of situations and articulate the common aspects so that students can transfer what they learn (p. 3).

In the early 2000s, the concept of authentic learning came to represent educational approaches that simulated realistic contexts, complete with their inherent complexity, and there were a number of researchers who contributed to this field of inquiry. Barab, Squire and Dueber (2000) considered how to make teacher-education more effective through an authentic approach and described two possible models: a *simulation* model, where the classroom activity is made as similar as possible to the classroom environment through ensuring factual, procedural and task authenticity to the real-world, and a *participation* model, which involved immersing students into authentic communities of practice throughout their development as teachers, in other words, in practicum placements. Unwin (2000) focussed on authentic learning through her assessment approach, believing that “when students perceive activities as having personal and real-world relevance, they are more likely to feel positive about those activities and put effort
into them” (p. 72). Unwin (2000) found that students became more engaged in these forms of assessment tasks, and also that as a teacher she was able to understand her students more deeply and respond to their needs more appropriately. Indeed, she felt that the “professor-student role was completely transformed, and new relationships were born” (Unwin, 2000, p. 85).

In 2006, and in her role at the time as editor of the *Journal of Authentic Learning*, Rule (2006) tried to identify the key themes of authentic learning. She and her colleagues at the State University of New York reviewed a broad range of papers that they considered to best represent authentic learning. From the 45 journal papers reviewed, Rule (2006) identified four common themes:

1. The activity involves real-world problems that mimic the work of professionals in the discipline with presentation of findings to audiences beyond the classroom;
2. Open-ended inquiry, thinking skills and metacognition are addressed;
3. Students engage in discourse and social learning in a community of learners; and,
4. Students are empowered through choice to direct their own learning in relevant project work (p. 2).

The themes identified can be seen in later research findings concerning authentic learning. Herrington, Reeves and Oliver’s (2010) authentic learning framework— Influenced by situated learning theory—proposes an approach to curriculum design that responds to criticisms of more teacher-centred pedagogies that utilise transmission style methods and are devoid of context (Bruner, 1960; Dahlgren & Chiriac, 2009; Korthagen, 2010b; Loughran, 2009). Building on earlier work (cf., Herrington, 1997; Herrington & Oliver, 2000; Herrington & Herrington, 2006), their framework contains nine elements to guide the development and delivery of an authentic learning environment within higher education contexts:

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 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. As such, authentic learning is aligned with
situated learning concepts (Brown, Duguid & Collins, 1989) and work-based learning (Billett, 2002; Boud, 2014). The focus is not only upon the reality of the context and activities but more importantly upon encouraging the thought processes that will enable students to respond appropriately to realistic challenges. 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. Authentic real-life contexts, data and case studies can be used to immerse students in situations that replicate the challenges faced in a professional environment. Computers and multimedia technology can also help provide the complex contexts that constitute realistic situations by providing access to data, tools and people (Bonk, 2006; Herrington et al., 2010).

Darling-Hammond’s (2006) research focuses on how to improve the effectiveness of programs so that graduates are classroom ready and able to integrate what they have learnt into their practices as a teacher; in other words, that the teacher-preparation has been authentic to the requirements of the profession. Darling-Hammond is a strong promoter of more structured, well planned and supported placements in schools, noting that traditional versions of teacher-education often had:

…students taking batches of front-loaded course work in isolation from practice and then adding a short dollop of student teaching to the end of the program—often in classrooms that did not model the practices that had previously been described in abstraction (Darling-Hammond, 2006, p. 307).

Darling Hammond believes that effective teacher-education programs include three critical components:

1. Tight coherence and integration between course work and clinical work in schools,
2. Extensive and intensely supervised clinical work that integrated with course work using pedagogies that link theory and practice, and,
3. Closer, proactive relationships with schools that serve diverse learners effectively and develop and model good teaching (Darling-Hammond, 2006, pp. 306-308).

These components all align with an authentic approach to learning, recognising the complexity of problems and the need to have expert practitioners who are able to assist students at critical times. Students would be immersed in real-life contexts and able to apply their theoretical understandings as well as their practical experience, while interacting and learning from those around them.
Korthagen (2001) also recognised the importance of an authentic approach to learning, initially with his desire to make mathematics more engaging and effective to high-school students through asking them to wrestle (mathematically) with real-life problems rather than adopting a more traditional approach to the subject. Korthagen’s focus then moved to teacher-education, where he investigated how to integrate an authentic approach within higher education. The Realistic Model of Teacher Education (Korthagen, 2001) reflects a strong emphasis of the holistic individual development of the pre-service teacher, and also the development of self as a central aspect of teacher-education (Combs, 1965). It is aligned with the perspective of situated learning (Cobb & Bowers, 1999; Lave & Wenger, 1991) as it recognises the importance of people and place in the learning process. For Korthagen, an effective teacher-education program firstly models good teaching practices in the university context, demonstrating rather than lecturing about active learning strategies. Secondly, his model aims to ensure that placements in schools are tightly integrated into the students’ curriculum and include a range of collegial interactions between the students, their supervising teachers, and teacher-educators in order to maximise learning and build the skills teachers need in a dynamic profession (Korthagen, 2010b). The five tenets of Korthagen’s model are:

1. Realistic teacher education starts from concrete practical problems and the concerns experienced by student-teachers in real contexts.
2. It aims to promote reflection by the student-teachers on their feelings, thinking, and acting within context, and on the relations between those aspects.
3. It builds on the personal interaction between the teacher educator and the student-teacher and also between the student-teachers.
4. It takes the three levels of professional learning (gestalt, schema and theory level) into account, as well as the consequences for the kind of knowledge that is produced as a result (episteme or phronesis).
5. It has a strongly integrated character. Two types of integration are involved: integration of theory and practice and integration of several disciplines (Korthagen, 2001, p. 257).

Korthagen’s (2001) model is particularly appropriate for programs that attract students who are already working as VET teachers, as it offers a framework that is equally applicable for teacher-education and workplace contexts, and hence adds a further element of authenticity as students can rehearse the practices that should continue after graduation.

The literature reports many examples of authentic learning within the learning and assessment approach, as well as the place of learning itself (cf., Ashton, 2010; Blake, 2007; Darling-Hammond & Snyder, 2000; Korthagen, 2001; Reeves, Herrington & Oliver, 2005; Shulman, 2014; Smith, 2003). Lombardi (2007) provides a useful
reminder that authenticity in curricula is much more than practical problem solving activities and is instead a change to “the entire way in which a course is conceived, so that instruction revolves around complicated, true-to-life dilemmas” (p. 13).

Herrington et al. (2010), Korthagen (2001) and Darling Hammond (2006) share a common vision for authentic, applied experiences for students. Their models and frameworks recognise the need for active learning experiences that bring theory to practice in contexts that are either real, or draw upon the same cognitive structures that will be used in the real context. Each places the learner at the centre, responds to the socio-constructivist nature of learning, and aspires to build reflective, capable graduates ready to contribute meaningfully to their profession. While Herrington et al. (2010) focus on the potential for technology to support authentic learning, Korthagen and Darling-Hammond recommend closer connections, pedagogically and organisationally, between universities and schools in order to enhance student learning outcomes.

While authentic learning has established itself as an accepted educational approach, writers who work within adult learning context, such as Andersson and Andersson (2005) and Ash (2010), have considered the more individual aspect of authenticity in their research. Acknowledging the diversity that will be found in adult learning environments, Andersson and Andersson (2005) consider the need to make learning personally meaningful to the learner, explaining that the “central aspects of authentic learning are to take learners’ perspectives and to create a learning environment by referring the content to the learners’ actual life experiences” (p. 424). Their study of Somalian refugees participating in a structured resettlement program in Scandinavia illustrated the challenges of responding authentically to learners with diverse backgrounds, each refugee having travelled such a different journey before the resettlement process. Ash (2010) takes a stronger line, suggesting that authentic learning is not possible if authenticity to self is ignored. He argues that:

Use of the term authentic learning increases the likelihood that learning of significance in real world contexts will automatically be ascribed to those contexts. However, if authenticity is a basic mode of being then learning tasks, content and contexts (real-world or other) are not its source. It is the learner who chooses whether to bring authenticity to their learning (p. 7, italics in original).

Ash (2010) provides a useful reminder that authenticity starts with the individual, and argues that the extent of each learner’s awareness and understanding of their own backgrounds, values and beliefs will affect the manner in which they engage in authentic learning approaches. Both the teacher and the learner hold some responsibility to
consider and reflect on what constitutes a ‘real’ or meaningful learning environment, in order to maximise the potential for learning. This includes consideration of what an authentic context might be, as will now be discussed.

**Authentic contexts**

One of the challenges of authentic learning is the provision of an authentic context. In their seminal work, Brown, Collins and Duguid (1989) proposed that “situations might be said to co-produce knowledge through activity. Learning and cognition, it is now possible to argue, are fundamentally situated” (p. 32). They were suggesting, therefore, that not only was the selection process of particular cognitive strategies influenced by the particular domain but also that the domain itself was responsible for the production of knowledge. Learning, cognition and knowledge were all fundamentally bounded by the situation, or context.

Brown, et al. (1989) recognised the potential for their theory of situated learning to be applied within the school environment, suggesting 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).

Despite Brown et al.’s (1989) suggestion that teachers act as practitioners, a more likely scenario appears to be the use of strategies that require students to leave the formal learning environment and seek ‘authenticity’ in a workplace. Internships, cadetships, practicums and professional placements often form a part of the higher education experience and, while providing excellent examples of a ‘real’ context’, still require a connection to what is being studied at university. Dalgarno, Kennedy and Merrit (2013) argue that there is often a lack of connection between theoretical study of a particular discipline and the learning that is likely to occur during a practicum placement. They suggest that this may be due to several factors, such as a limited understanding by the student of the practice context particularly in the early years at university, a lack of application of theory within the university context, or practices within the workplace setting that are not consistent with what was espoused at the university.

Other literature also reveals mixed success with work-based placements, with issues including a lack of proper supervision (Darling Hammond, 2006), a lack of opportunity to be fully immersed and involved at the site (Loughran, 2006), logistical challenges to place an increasing number of students (Mayer, 2014), the potential to learn undesirable
practices (Zeichner & Tabachnick, 1981) and a lack of connection between the placement experiences and the university curricula (Korthagen, 2010a). Even for those students who are combining study with employment in their discipline area (e.g., the VET teachers in this program) there are some challenges to ensuring meaningful learning through everyday experiences in their workplace. The (authentic) settings where the student is employed may not be representative of the wider disciplinary community: for example, a small private school versus a large TAFE campus. There may be a lack of adequate managerial or financial capability to support placements outside of the employee’s normal (paid) role within the same organisation, thereby limiting the student’s exposure to a variety of contexts, or the practicum experiences may simply not be valued (and therefore supported) by the leaders of the organisation, leading to an inability of the VET teachers to expose themselves to a range of diverse contexts (Guthrie, Harris, Simons & Karmel, 2009).

The challenges of providing authentic contexts in formal educational settings may well have been the catalyst for Herrington (1997) to investigate whether a multimedia-based learning environment designed on principles of situated learning could lead to higher order thinking and problem solving. Herrington’s (1997) work concluded that cognitive authenticity could be gained through a well-designed learning environment and, thus, meaningful learning was possible. Cognitive authenticity is a way of describing the mental processes that are, in effect, the same as required when the individual is performing the same or similar tasks in the ‘real world’. Designing a learning environment that will, whether within a technology-enabled classroom or any other learning environment, trigger those same cognitive structures is challenging but offers a way to improve the learning outcomes significantly. Striving for an authentic context within the learning environment adds to the work of Brown et al. (1989) because it introduces the possibility of purposefully bringing in additional components, such as theoretical concepts that might otherwise not be encountered in the workplace, in order to enable rich connections to be made with existing knowledge formed through practical experience.

The analysis of literature on authentic connections between theory and practice led to the articulation of the first draft design principle, to assist educators to design and develop an applied, authentic learning environment in the online teacher-education course.
**Design Principle: Provide learning activities that connect theory and application in authentic contexts**

Table 1, below, gives the design principle together with examples of how it could be implemented, and the theory and literature from which it was derived.

**Table 1: Design Principle 1, examples of implementation and its theoretical underpinning**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
</tr>
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| Provide learning activities that connect theory and application in authentic contexts. | Learners will be:  
• Involved in activities that integrate theoretical concepts with practical application;  
• Encouraged to make connections between what they are studying and the real workplace issues and challenges;  
• Engaging with authentic problems and integrating those with their studies; and,  
• Working closely with practitioners to better understand the skills and knowledge required in the workplace. | Experiential Learning Theory (Dewey, 1938)  
Authentic Learning (Herrington, Reeves, & Oliver, 2010)  
Situated learning (Brown, Collins, & Duguid, 1989)  
Realistic Teacher Education (Korthagen, 2001)  
Applied teacher–education (Darling-Hammond, 2006) |

The need for learning to integrate with the lived experience of students came across very strongly in the initial consultations with practitioners described in Chapter 1. The analysis of literature related to this notion is described next.

**Element 2: Incorporating the lived experience of students**

This element responds to the research findings in the field of adult education, and the contributions of psychologists, philosophers and practitioners who have advanced current understandings of the characteristics and needs of the adult learner. This review focuses on one particular aspect of the research into adult education: the role of the lived experience and what is known about the value of recognising and incorporating that experience into learning environments. In this section, three aspects of the ‘lived experience’ will be explored through the literature: past experience, experience in the learning process itself, and reflection on experience.

**Past experience**

One of the most influential thinkers and writers about the role of experience in learning was Eduard Lindeman (1885-1953), a youth and social worker whose writing focussed on social philosophy and adult education. Sharing views (and a friendship) with John Dewey, Lindeman saw education as a way to progress social justice and community development. His book *The meaning of adult education* (1926) strongly reflected Deweyan views on the critical role of experience in the learning process, when he proclaimed:
The resource of highest value in adult education is the learner’s experience. If education is life, then life is also education. Too much of learning consists of vicarious substitution of someone else’s experience and knowledge (Lindeman, 1926, pp. 9-10).

Lindeman (1926) recognised the situated nature of learning, calling for adult education to be “given a setting of reality” (p. 9), and advocated the value of social interaction and group work. Yet Lindeman (1926) did not consider his approach to adult education as one that suited vocational education (which for him included higher education) as he saw this revolving around a “world of specialists [who] equip students with the proper means for arriving at their selected goals.” (p. 47). Perhaps this indicates a belief that students in higher education were not yet able to match an adult’s ability to “dig down into the reservoirs of experience” (p. 11). Alternatively, rather than dismissing such an approach in vocational/higher education, Lindeman may simply have been focusing on his desire for education to continue throughout adulthood and to be designed and implemented appropriately. Lindeman’s work is considered seminal in the adult education sector and he is also credited with some key strategies in school-based settings, such as small-group discussions (Stewart, 1987).

Malcolm Knowles, whose first book about adult education was published in 1950, also considered an adult’s store of experience as a key resource in the learning process. Heavily influenced by Lindeman, Knowles outlined a model for adult learning (andragogy) that was based on a number of assumptions, or characteristics, of adult learners. Knowles is often credited with coining the term andragogy but Lindeman first mentioned the term in American literature in 1926 and actually credited Eugen Rosenstock (Frankfurt Academy of Labor) with its first use (Stewart, 1987). Knowles presented his model as a process model, which he believed stood in contrast to a content model traditionally employed in education. In other words, the teacher or facilitator is not so much responsible for dealing with the ‘what’ of learning but the ‘how’. Part of this process was recognising and responding to the lived experience of adults, as he agreed with Lindeman that it “is the richest resource for adults’ learning, therefore the core methodology of adult education is the analysis of experience” (Knowles et al., 2011, p. 39).

Knowles’ work was also influenced by the work of the Carl Rogers, a founder of the humanistic approach to psychology and whose approach to education was an extension of what he had learnt as a therapist. Knowles agreed with the emphasis Rogers placed on the role of the teacher to ensure that learners feel secure enough to reflect on experiences
and to assimilate new meanings from those experiences (Knowles et al., 2011). Knowles’
work has attracted significant debate about whether it is indeed a model for adult
learning, or an identification of the characteristics of adult learners, or a model for
teaching and it has been criticised for a lack of empirical evidence to support claims
made (Blondy, 2007; Brookfield, 1995). His ideas, however, remain influential and his

**Transformational learning**

Jack Mezirow’s interest in the potential for learning to trigger an experience that could
be considered ‘transformational’ first began when his wife decided to go back to college
as a mature-aged student. He observed how this experience deeply affected her and
prompted a transformation of some of her long-held views. Mezirow went on to develop
a model for transformational learning, which involved ten phases, beginning with a
disorientating dilemma, such as a “prospect of an empty nest” (Mezirow, 1981, p. 8)
followed by phases that included self-examination, critical reflection on (often long held)
assumptions, exploration of new roles or relationships, acquisition of the knowledge and
competence for those roles or relationships and then reintegrating into life with a new
perspective (Mezirow, 2000). Mezirow believed that discourse with others played a key
role in bringing assumptions to light and facilitating a new perspective to develop and,
hence, that the role of the educator was to create an environment that supported this
process. The work of Paulo Freire informed Mezirow’s theories in this regard, in
particular the need for the learning environment to be democratic, welcoming input from
students, and encouraging critical and reflective discourse between participants.

A recently published empirical study on transformative learning (Nohl, 2015)
investigated the experiences of 80 people from diverse backgrounds and representing a
mixture of ages and characteristics. He asked them to freely describe an account of their
life history from the beginning to the present time. Nohl wanted to find out the extent to
which the participants moved through the phases as described by Mezirow. These
interviews revealed experiences that were life-changing, yet the events that triggered
them were not necessarily disorienting or even any kind of a dilemma. Rather, he found
that “transformative learning may begin unnoticed, incidentally, and sometimes even
casually, when a new practice is added to old habits” (Nohl, 2015, p. 44). His findings
concurred with Mezirow in relation to the later phases, with the participants
restructuring their lives in response to their new biographies and relating “themselves
anew to the world” (p. 47).
Perhaps for non-traditional students in higher education, transformation may occur in a similar way: progressively, somewhat unpredictably and even incidentally. The challenge is for the educators to structure an environment that would safely allow that to happen. With diverse cohorts, this could be challenging. An academic colleague and former doctoral student of Jack Mezirow, Jeanne Bitterman, made the following comment on the Columbian University “In Memoriam” web-page after his death in September, 2014:

Jack was a romantic, in the sense that he truly believed that if you put people with all those differences in a room, they’d negotiate the powerful differentials of their mindsets and backgrounds and engage in a meaningful dialogue…Our program is still constructed around that outlook, though we’ve learned over the years that it takes expertise to assist those conversations (Bitterman, 2014).

Bitterman’s words highlight two important aspects: firstly, that the experiences (and resultant perspectives, beliefs and values) that people bring with them into the learning environment will mean that engaging in meaningful dialogue with each other may be challenging, unpredictable and possibly disruptive (in the educational sense of the word) and, secondly, that this process must be supported by teaching staff who are expert in the role, modelling, promoting and facilitating constructive and engaging interaction between students as they interact and learn from each other throughout their studies.

**Reflection on experience**

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 reflective practice reveals several conceptualisations of the term. Dewey (1938) believed that reflection entails a ‘chain of thoughts’ that “are linked together so that there is a sustained movement to a common end” (p. 5), and 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).

Dewey’s work has been taken up by others, most notably in teacher-education by Donald Schön and Stephen Brookfield (1995).

Schön 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. For Schön, *reflection-in-action* is when “practitioners surface and criticize…tacit understandings… and can make new sense of the stations of uncertainty
or uniqueness” (Schön, 1983, p. 61), and become, therefore, a “researcher in the practice context” (p.68). Schön (1987) aligns with the humanistic approach of Carl Rogers, stating that “the most important things cannot be taught, but must be discovered and appropriated for oneself” (p. 92), aided by a knowledgeable and supportive environment. Schön’s work with Chris Argyris led to the concept of single-loop and double-loop learning, which has been widely adopted in organisational learning development theory (Argyris & Schön, 1996).

Other writers, such as Brookfield (1995), have focused on reflection within the teaching profession. Brookfield (1995) suggests 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 (1995) believes that by viewing our practice through multiple lenses we are able to identify “distorted or incomplete aspects of our assumptions that need further investigation” (p. 29). Similarly to Schön, Mezirow and Rogers, Brookfield sees the role of the educator is to help facilitate (and model) critical reflection in order to consider and construct new interpretations of existing beliefs and perspectives. Brookfield’s model of critical reflection is commonly included in teacher-education and more broadly in adult education contexts.

This particular element, Incorporating the lived experience of students is grounded on the foundational work of Dewey, Piaget and Ausubel for their recognition of the important role of experience in the learning process. Others have extended their work, recognising the importance of what the students bring to the learning environment and the potential for new experiences, and reflection on those experiences, to lead to significant changes to long-held beliefs and notions of identity. Their work, and others, led to the formation of the second design principle:

**Design Principle: Recognise the lived experience of students**

Table 2, below, presents this draft principle together with examples of how it could be implemented, and its underpinning theory.
Table 2: Design Principle 2, examples of implementation and its theoretical underpinning

<table>
<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
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</thead>
</table>
| Recognise the lived experience of students. | Learners will be:  
• Recognised as having relevant and valuable life experiences;  
• Encouraged to critically reflect on those experiences in the learning process;  
• Invited to consider alternative approaches and perspectives; and,  
• Engaged in deepening their understanding through new experiences in a range of settings. | Adult learning theory (Lindeman, 1926; Knowles, et al., 2011)  
Transformational learning (Mezirow, 2000)  
Workplace learning (Billett, 2004)  
Reflective practice (Brookfield, 1995; Schön, 1983) |

The next element brings together two main bodies of literature. First is collaboration with particular consideration of group work and the challenges that lie within this strategy, particularly in the online environment. Secondly, community within the student cohort is considered, together with the means by which these two aspects can complement each other to enable meaningful learning.

**Element 3: Collaboration in the learning community**

This element responds to the current understandings about student collaboration in higher education, with a particular focus on online learning environments. The initial consultations with prospective students identified a desire for the online community to become a place for collaborative problem solving of typical workplace and teaching challenges. Despite concerns about the processes and equity of collaborative work, the initial literature review highlighted the potential benefit of students sharing their experience and working together to help integrate theoretical concepts with practical applications, so further investigation was warranted.

This review considers the major contributors to educational practices relating to cooperation and collaboration and the pedagogical approaches that will foster engagement with and between students. It will include an examination of the role of reciprocity within online learning environments, given the enthusiasm of the prospective students to contribute to each other’s learning and to the online community.

**Collaboration**

There is a considerable body of literature on both collaborative and cooperative learning in education and recognition that both terms can be considered processes or states, with some shared and distinct characteristics. Oliver, Herrington, Herrington and Reeves (2007) suggest that group work can be considered along a continuum of dependence, with cooperation describing students working together for mutual benefit but remaining
reasonably independent, to collaboration at the other end of the continuum, where students are working interdependently and jointly creating products that exceed what might be expected by any individual activity. They propose that collaborative learning can be achieved when students have shared goals, are mutually dependent and interact openly to reach agreement on roles and responsibilities.

Roschelle and Teasley (1995, p. 70) offer a similar distinction: “cooperative work is accomplished by the division of labour among participants, as an activity where each person is responsible for a portion of the problem solving”, whereas collaboration is seen as “the mutual engagement of participants in a coordinated effort to solve the problem together.” Roschelle and Teasley were particularly interested in how a shared conception of a problem might be enabled in a technology-enhanced environment. Similarly to Smith and MacGregor (1992), they see collaborative problem solving taking place in a “negotiated and shared conceptual space, constructed through the external mediational framework of shared language, situation and activity – not merely inside the cognitive contents of each individual’s head” (p. 70-71, italics in original). Such views indicate that collaboration can be considered to be any group activity where the outcomes (whether they be products or merely individual learning) are better than if the participants had worked alone.

The literature reflects a number of perspectives that have been evaluated in collaborative activities, such as the measure and value of the meaningful social interaction it generates (Park, 2014; Woo & Reeves, 2007), the degree to which collaboration affects a sense of ownership (Hall & Buzwell, 2012; Caspi & Blau, 2011), the role of tutors and teaching staff (Forbes, 2012; Rovai, 2007; Salmon, 2013; Thorpe, 2002), and the extent to which technology enables or hinders collaboration (Zheng, Niiya & Warschauer, 2015). Much of the research on ‘cooperative learning’ has tended to focus on the degree to which the dependence and behaviour of individual members affect motivation and outcomes (cf. Johnson & Johnson, 1998; Slavin, 1980).

In recent research on the behaviour of participants in online courses, such as Massive Open Online Courses (MOOCs), there have been some interesting studies examining why participants may choose to cooperate with each other even when there is no formal sense of dependence at all. Cheng (2014) analysed the discussion postings in a MOOC and uncovered a significant number of altruistic acts that expressed a desire and a willingness to cooperate and help other participants unconditionally. Cheng discovered
that the number of altruistic acts rose as the course progressed, becoming part of the
social norm within the online community and enabling the discussion forum to become a
place for the co-creation of knowledge. Cheng’s analysis also found that if an instructor
was largely inactive in an online environment, then the number of altruistic acts was
likely to rise as greater student cooperation compensated for the absent lecturer, and
improved the learning outcomes for all. His findings support the research of Batson et al.
(1981) who found that individuals are more likely to display altruistic behaviour when
they feel empathy for other individuals in the cohort.

In another study, Angelaki and Mavrodis (2013) analysed the responses from 108
undergraduate students to investigate the impact of emotional communication between
students. They found that the expression of positive emotions provided a significant
boost for participants, while negative ones were experienced less intensely. In relation to
negative emotions communicated, the sense of isolation was most effectively mitigated
by peers’ responses (rather than from the lecturer) as they realised that they shared
concerns about their studies and faced common difficulties. In a similar study, Zembylas
(2008) conducted research to describe and analyse adult learners’ ‘emotion talk’ during
the first 30 weeks of a distance Master’s level program, in order to determine what role
the discourse played in learning. Zembylas found that the positive emotions expressed
by students helped their peers to deal with negative feelings from studying online.
Additionally, he found that the online community began to develop a stronger sense of a
cooperative kinship once they had mastered the multiple means of communication in the
course, and that by engaging in critical evaluation of how they had felt and ways that
they had learnt to deal with the challenges of online learning had increased their positive
feelings.

Other researchers have investigated the extent to which participants may adopt a culture
of reciprocity in the way that they interact with their peers in the online learning
environment. In their study, Aviv, Erlich and Ravid (2005) conducted an analysis of 75
discussion forums where a minimum of 10 participants had posted at least once during
the semester-long study. Their findings indicated that in an environment where posted
messages are readable by all, participants quickly learn who is and who is not a potential
reciprocator. At first, participants are likely to expect the teaching staff to be the major
responder but then some begin to take on the role themselves, as they develop their
online identities such as providers of technical advice or general support and, in doing so,
gain respect from others (Aviv, Erlich & Ravid, 2005, p. 8). They found that participants
soon realised that they had to contribute, and perhaps reciprocate as well, before they gained anything from the activity. This has implications for the way in which teaching staff moderate discussion forums, in order to best nurture a sense of cooperation and the development of a sense of community in the learning environment.

**Learning communities**

The term ‘learning communities’ was first associated within classroom practices as recognition grew that knowledge existed not just in the heads of individuals but in the collective minds of a particular group of people (Roth & Lee, 2006). The term became associated with the work of Lave and Wenger (1991) and, in particular, their notion of a *Community of Practice* (CoP). Wenger (2005) suggests that a community of practice can turn into a community of learning because it can provide an environment where participants are respected and encouraged to share their experiences, leading to the safe exploration of new insights. Wenger explains that when learning is viewed as an experience of identity, it involves both a process and a place: “it entails a process of transforming knowledge as well as a context in which to define an identity of participation” (p. 215). Wenger’s words are a powerful reminder that a community is both a context for newcomers to learn, and also a nurturing place for the creation of knowledge. The concept of learning communities supports Vygotskian’s (1978) notions of development through problem solving under the guidance of others, and recognition that individuals will participate in different ways over time.

In educational contexts, the work of Shulman (2004, p. 493) also considered the characteristics of a learning community. Shulman offered six principles (following, in italics) that he believed characterised such communities. Firstly, it would be *generative*, meaning that the subject-matter to be learned would not only be essential to the discipline under study but would serve as the basis for future learning. Secondly, the learner would be *active*, rather than passive, in the process of learning. Next, the learner would be critically *reflective*, able to understand the cause and effect of actions, and become more aware of their own metacognitive processes. *Collaboration* would feature in a learning community, scaffolding and supporting each other and recognising that each individual brought particular strengths to the context. Additionally, there would be a *passion* evident in both students and teachers, a commitment to the present and future goals and a belief in the ideas and activities underpinning those goals. Finally, there must be a *community* or a *culture* that supported and legitimised the efforts of the
members, accepting a level of risk and unpredictability, and expecting new ways of learning to become apparent during the journey.

Shulman (2004) drew attention to the work of Peter Drucker, a theorist in organisational management, who recognised that increasing complexity meant that individuals could no longer be expected to cope with the fast moving workplace environment with traditional organisational structures and processes. According to Ducker, management now needed teams of people, each with specialised knowledge who together developed the capacity to learn how to learn, and solve emerging problems. Shulman recognised that what Drucker was saying also applied to teaching a curriculum; no longer was it possible to ‘teach’ everything. Instead, teachers needed to foster the type of environment where participants learnt how to work together to gain understanding and solve problems. Shulman acknowledged that his principles were unlikely to be adopted in the classroom, as it would likely become a chaotic, unpredictable and uncertain place. This, he accepted, went against “the first rule of teachers’ survival” (p. 496). Yet, Shulman challenged teachers to step outside their comfort zone, to:

*Design a classroom environment where the students will engage in the kind of reflective, collaborative, intellectual and emotional activities, which, if successful, will lead them to construct understandings and to ask questions that were not in your lesson plans or in your unit designs. Design for uncertainty, not certainty. Design to maximize chance (Shulman, 2004, p. 496-497).*

Shulman challenges the reader not to judge strategies by the extent to which they fit the normal expectation of an effective learning strategy but perhaps more appropriately by how any particular strategy might engender the development of the types of skills and knowledge that is desired, whether in a school, university or workplace setting. By extension, Shulman’s proposition is a reminder that while students’ perceptions of learning are important, the lecturer can (and, arguably, must) look beyond the immediate reaction of students, to something that is more attuned to holistic development, and aligned with desired graduate outcomes.

The third draft design principle represents the culmination of the findings from the initial consultations and literature review and the more comprehensive examination of the literature.

*Design Principle: Provide opportunities for meaningful, collaborative construction of knowledge within the learning community*

The principle, together with its underpinning theory and examples of how it could be implemented are shown in Table 3.
Table 3: Design Principle 3, examples of implementation and its theoretical underpinning

<table>
<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
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<tr>
<td>Provide opportunities for meaningful, collaborative construction of knowledge within the learning community. Learners will be: • Encouraged to take on roles that enable them to contribute meaningfully to the online community; • Invited to contribute altruistically to the learning environment for the benefit of their peers; and • Supported as they undertake collaborative activities, in recognition of the challenges that lie within it, particularly in the online environment.</td>
<td>Authentic Learning (Herrington et al., 2010) Communities of Practice (Lave &amp; Wenger, 1991) Learning communities (Salmon, 2011; Shulman, 2004) Community of Inquiry framework (Garrison, Anderson &amp; Archer, 2001)</td>
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The next area for review concerns the role universities play in developing the graduate attributes of confidence and capability to professionally engage with others – an outcome sought by students and potential employers.

Element 4: Professional identity through collegial interaction

This element initially emerged as a result of the consultations with prospective students and the desire to respond constructively to the perceived cultural differences between practitioners in different education sectors. All stakeholders sought to lift the professional identity of the VET teachers so that each graduate would feel empowered, not only by the skills and knowledge that they brought to the course as mature-aged students, but also by their new capabilities and attributes developed during their study and progressively evidenced in their portfolio. Additionally, the initial literature review identified wide-spread concern that university graduates were leaving their institutions without being ‘work-ready’, particularly in relation to interpersonal and problems solving skills and having the capacity to work autonomously and professionally. As a result, teacher-education graduates were likely not to meet the expectations of employers or feel satisfied with the transition into their chosen career.

The in-depth literature review of this element began with consideration of the expectations of the university to develop the students’ professional identity over their course of study, and their progress towards being able to evidence their attainment of the professional teaching standards required by the national accreditation body on graduation (Australian Institute for Teaching and School Leadership, 2015).

Investigation of research on collegial interactions and community building, and how they might enable those attributes to be nurtured was also reviewed. Additionally, this
review sought to identify the potential for the teaching staff to model the attributes being espoused, as part of the course design.

**Teacher-education and professional identity**

Similarly to other professions, teachers are working in a rapidly changing environment and one in which their practice is open to increased scrutiny from others. In order to operate effectively in this type of environment, teachers need to have a solid sense of ‘self’: who they are and what they stand for. Wenger (1999) argues that there is a “profound connection between identity and practice” (p. 149), which develops over time and with experience:

> As we encounter our effects on the world and develop our relations with others, these layers build upon each other to produce our identity as a very complex interweaving of participative experience and reificative projections (Wenger, 1999, p. 151).

Wenger is identifying the developing nature of identity, influenced before, during, and after the students’ time at university. The layers that Wenger describes are a reminder to educators that each student arrives with a unique perception of self, and will assimilate new experiences with what has gone before, leading to new layers over time.

Korthagen (2001) focuses on identity within teacher-education, suggesting that there is a moral obligation to help students develop an understanding of their own identity. He suggests that students may not naturally recognise how influential their own previous life experiences will be on their approach to teaching, and that it is imperative to have learning activities early in a teacher-education program to reflect on, and acknowledge the influence of, those life experiences. Importantly, Korthagen notes how the students’ own experiences from their school days are particularly influential to their initial identity as a teacher. As students progress in their teacher-education course, Korthagen suggests that the initial focus will be on more surface levels of the environment and behaviour but this is followed by changes to the deeper layers of competencies, beliefs, professional identity and mission.

These assumptions align with the findings from both the initial literature review and the consultations with the VET teachers, and flag the potential for students to reconstruct or modify their own identity through an undertaking such as a university. Other writers, such as Zembylas (2005) and Loughran and Berry (2005) support Korthagen, calling for teacher-educators to support the development of a professional identity through activities that will encourage students to reflect on the influence of complex relationships between
teachers, students, colleagues and the school community. Kozminsky (2011, p. 13) suggests that a teacher’s professional identity presents an answer to the question “who am I, or what am I as a professional?” and argues that various factors contribute to the construction of professional identity, including the context of teaching, their experiences as a teacher, and their personal biography. Kozminsky (2011) invites educators to embrace the concept of inquiry dialogue that:

...scrutinizes the complexity inherent in teaching and facilitates the creation of ‘professional identity in motion’ – an identity that is aware of its complexities and continues to grow (2011, p. 12).

For Kozminsky (2011, p. 12), the complexity in teaching contexts can be categorised into four main areas:

1. Knowing versus continuing to learn;
2. Educating versus teaching a content area;
3. Taking part in a democratic-participatory discourse versus hierarchical-managerial discourse; and,
4. A culture of control versus a culture of empowerment.

Essentially, the four tensions identified by Kozminsky provide a succinct summary of hotly contested areas in education and provide evidence of the need for educators who can engage effectively with these debates, both within teacher-education and within the education sector itself (Darling-Hammond, 2004; Shulman, 2004). If the curriculum focusses on engaging with the tensions Kozminsky identifies, and explicitly considers ways to overcome those tensions, then it seems possible that both the teacher-educators and their students will be well placed to manage a rapidly changing workplace environment. Kozminsky’s (2011) concept of an ‘inquiry dialogue’ offers a way for teacher-educators to model the development of their own professional identity while supporting the students to do so as well. This would fit well with the existing skills and experience that the non-traditional students would bring to the learning environment, and offers a way to incorporate and recognise those attributes as part of the learning approach.

Several other writers offer strategies to build the professional attributes of teachers. Loughran (2006) advocates that teaching-about-teaching should include an ongoing dialogue of inquiry with and between students that considers tensions such as those identified by Kozminsky (2011) and “bring assumptions to the surface and to confront them in meaningful ways, [as] one way of jointly exploring the complexity of teaching while simultaneously inviting a questioning of the likely misunderstandings associated
with allocating intentions to actions” (Loughran, 2006, p. 22). For this to occur, however, teacher-educators will require the confidence to publicly examine their own practice and bring to light the assumptions embedded within it. Brookfield (1995) articulates the value in modelling such critically reflective teaching practices:

The most powerful way you can communicate what you stand for as a teacher is to make sure you practice what you teach. The degree to which you are prepared to take the risks you ask students to take and the extent to which you are genuinely open to new ways of thinking about teaching and learning will determine how far students are prepared to do those things themselves” (p. 112).

If teacher-educators are willing and able to do this, then it will be much easier to ask students to do the same, in a similarly authentic manner. This approach aligns with what Grossman, Hammerness and McDonald (2009, p. 283) describe as “pedagogies of enactment”, or approximations of practice where students take on authentic roles and learn through direct application to real situations and contexts. For courses with students who are already working in their profession, this is particularly relevant and appropriate. Grossman, Hammerness and McDonald (2009) stress the need for multiple opportunities for students to develop and refine their practices, starting with relatively safe, controlled settings (perhaps within the learning environment itself) to more challenging environments beyond the university. Such strategies align well with Korthagen’s (2001) model of Realistic Teacher Education, as discussed earlier, where students will be immersed in complex and real-world activities.

In a similar manner, Laurillard (2002) also calls for a teaching approach that moves beyond a transmission model and into one that models teacher-educators as reflective practitioners themselves. Doing so, Laurillard contends, will promote the development of the student’s own professional identity. Laurillard (2002) proposed a ‘conversational framework’ model to guide this process, which:

…captures the essence of university teaching as an iterative dialogue between teachers and student(s), operating on two levels: (1) the discursive, theoretical, conceptual level and (2) the active, practical, experiential level – the two levels bridged by each participant engaging in the process of adaptation (practice in relation to theory) and reflection (theory in light of practice) (p. 144).

Laurillard’s (2002) model offers a way for teaching staff to (re)consider their role in the learning environment, whether that be on-campus or online, and invites educators to model and foster a collegial sense of inquiry, engaging in collegial interactions and developing the habits of reflective practice. There is a clear alignment between Laurillard’s (2002) conversational framework and Kozminsky’s (2011) inquiry dialogue
and their models appear well suited to enable students to develop a professional identity as they progress through their course.

**Australian Professional Standards for Teachers**
The students’ sense of professional identity needs to be developed in a manner mindful of the requirements of professional accreditation bodies. In Australia, teacher-education programs are guided by the requirements of the Australian Institute of Teaching and School Leadership (AITSL), a government-funded body which is responsible for program accreditation as well as the professional standards prescribed for teachers at different levels of their career. The graduate level of the Australian Professional Standards for Teachers (AITSL, 2011), describes what graduates from teacher-education courses should know and be able to demonstrate when they complete their course of study.

One of the seven domains within these standards is *Professional Engagement*, which describes the personal and professional attributes of an effective teacher. According to this standard, graduates should feel confident in their ability to reflect critically on their practice, plan for continual professional development, and engage in collegial interactions with a wide range of stakeholders in the educational community, including students, colleagues, parents, principals and professional bodies (AITSL, 2011).

Traditionally, this aspect of student development has largely fallen within the practicum component (Darling-Hammond, 2006; Loughran, 2014) but as identified earlier, it is difficult to be sure of what the student will actually do while on practicum and the extent to which their professional identity will be nurtured. As a result, there is potential, or arguably an imperative, for the university itself to take a greater responsibility for developing these attributes.

Other literature supports the call for a renewed focus on the professional attributes of graduate teachers. Mayer’s (2014) review of teacher-education in Australia over the last 40 years concluded that programs needed to better prepare students for a career where their work is “always part of a larger system and workforce…Thus the challenge is to capture the collaborative and collegial dimensions of teachers’ work” (p. 470). In an era of constant challenges and change in educational policy and practice in schools (Jenssen & Sonnemann, 2014) such attributes will be critically important in terms of career success (de la Harpe & David, 2012; Oliver, 2013). Mayer’s (2014) review supports Laurillard’s (2002) contention that university graduates must be able to demonstrate
more than an accumulation of consensual knowledge; they must also have the ability and confidence to participate fully in community conversations and debates about how society responds to the demands of the 21st century.

**Collegial interactions and a community building**

It takes confidence to engage professionally with others, particularly in contested areas such as education. In today’s schools, the teachers, principals, parents, community and professional bodies come together to discuss and plan for improvement (Owen, 2014; Vescio, Ross & Adams, 2008). Professional learning circles, special interest groups, even ‘PDs (professional development) at the pub’ are becoming part of the culture of progressive schools and regions (Scott, Clarkson & McDonough, 2011). The contribution of Lave and Wenger (1991) and, in particular, their concept of Communities of Practice (CoP) has been enthusiastically adopted by the education sector and nowadays teachers are members of many communities within and beyond their school or college. Importantly, the role teachers embrace in each of these communities may well be different, and change over time. This has implications for how teachers see themselves, what their professional identity actually is, and how they will continue to change and develop that identity over time.

As identified by Laurillard (2002) and Kozminsky (2011), the role of reflection is critical in professional practice. Importantly, this needs to extend beyond self-reflection (Loughran, 2006) to one that recognises the value of a community in shaping and reshaping beliefs and the profession. Shulman (2004) reiterates the value of collegiality and communities:

> Without a community of practice, individual professionals would be trapped in a solipsistic universe in which only their own experiences were potentially educative. By creating and fostering the work of communities of practice, individual experience becomes communal, distributed expertise can be shared, and standards of practice can evolve (p. 537).

The concept of Communities of Practice (CoP) has been widely embraced by the educational sector. What began for Lave and Wenger (1991) as an investigation into how learning happens inside workplaces has grown into an educational model (Lea, 2005). Yet, Wenger (1998) reminds us of the key characteristics of a Community of Practice, including:

- Sustained mutual relationships – harmonious or conflictual;
- Knowing what others know, what they can do, and how they can contribute to an enterprise;
• Mutually defining identities;
• Substantial overlap in participants’ descriptions of who belongs; and,
• Local lore, shared stories, inside jokes, knowing laughter (p. 125).

These are characteristics that form over considerable time and, most likely, through a shared journey typical of an organisation’s mission. While not disputing Shulman’s assertion that CoPs can and should form, it is worth remembering that many educators will be members of a number of communities but not necessarily ones that are all (by Wenger’s definition) a true CoP (Wenger, 2015, personal communication). Such communities might include professional associations, industry bodies, parents or employer groups and such like, and with each one the particular membership role could be different. Drawing upon Lave and Wenger’s (1991) concept of legitimate peripheral participation, an educator might fulfil a relatively minor role in one particular community, while be highly active and central to whatever activity is underway in another community. Importantly, Wenger argues that members do not always need to be on a trajectory to become full members, recognising that “different participants contribute and benefit differently, depending on their relations to the enterprise and the community. In fact, combining these layers is a source of dynamism” (1998, p. 117).

The role of teacher-education, therefore, is to encourage students to develop the ability and confidence to seek and undertake different roles within a CoP, knowing that this role might look different in each community, and may change over time.

In summary, all university graduates should feel that their professional identity has been nurtured and developed during their period of study. They should graduate eager to embrace membership of a number of professional networks, and feeling capable of contributing meaningfully to those networks. In this way, graduates will be ready to take their place in the workplace, confident of their ability to engage with the challenges that exist in a rapidly changing society. The literature suggests teacher-education has struggled to achieve this aim, perhaps because of an assumption that the practicum component will facilitate it, or perhaps because teacher-educators may not be sure how best to approach this aspect within course-work. Additionally, practitioners might find that modelling the characteristics of a developing professional identity could be confronting to their own sense of authority in the learning environment, and lead them back to a more traditional approach. Thus, the need to explicitly address this aspect of student development is the focus of the next design principle.
**Design Principle: Encourage the development of a professional identity through collegial interactions**

Such approaches aim to develop the confidence to engage collegially and constructively with others, in and beyond the workplace context. Table 4, below, presents a draft design principle which aims to foster such a learning environment, together with examples of how it could be implemented and the theory and literature from which it was derived.

Table 4: Design Principle 4, examples of implementation and its theoretical underpinning

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<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
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<tbody>
<tr>
<td>Encourage the development of a professional identity through collegial</td>
<td>• Encouraged to be actively involved as a member of their professional community;</td>
<td>Identity and practice (Wenger, 1999)</td>
</tr>
<tr>
<td>interactions.</td>
<td>• Building evidence of their attainment of the professional standards of teacher-</td>
<td>Reflective practice (Brookfield, 1995; Schön, 1983)</td>
</tr>
<tr>
<td></td>
<td>education graduates;</td>
<td>Communities of Practice (Lave &amp; Wenger, 1991)</td>
</tr>
<tr>
<td></td>
<td>• Engaged in robust discussions and interactions with their peers and teaching staff on</td>
<td>Dialogue of Inquiry (Kozminsky, 2011; Loughran, 2006)</td>
</tr>
<tr>
<td></td>
<td>a wide range of topics relevant to their profession; and,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Actively building their professional identity.</td>
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The next area to be reviewed is the literature related to authentic, applied assessment practices in higher education.

**Element 5: Flexible, authentic assessment strategies**

This element emerged from the pre-course consultations with prospective students and their employers. It was clear that assessment was regarded with a significant degree of anxiety and associated with testing rather than an integral aspect of learning.

Accordingly perhaps, stake-holders communicated desire for an environment where competencies could be demonstrated in number of ways, and not through traditional examinations. Aligned with the general approach in vocational education, the prospective students indicated their preference for creating products that would reflect their achievement of the learning outcomes as well as serving an authentic purpose in the workplace. This desire was consistent with the overall objective for the course to be integrated with students’ workplace duties, and consistently applied in both theory and practice.

The initial literature review revealed the sometimes problematic nature of assessment, and the tendency for students to focus on ‘what the lecturer wants’ rather than seeing assessment as a learning process in itself. This leads to a surface approach to study and reduces a sense of autonomy and ownership over the learning process (Boud, 1988).
Importantly, the initial review identified the importance of ensuring that students become better at discerning good quality work, in order to build the type of attributes desired in graduates.

A further investigation into assessment practices was warranted to identify from the research findings those assessment practices that could inform the design of the course. Specifically, the literature review identifies approaches that could be authentic and applied to typical workplace expectations, could consist of a number of tasks completed over a period of time, and could be integrated with the learning process rather than purely an evaluation of what had been learnt. The affordances of technology to enable and support contemporary approaches to assessment were also investigated, with a particular interest in how best to integrate off-campus experiences with online coursework activities. Finally, and mindful of the characteristics and needs of non-traditional students, the notion of flexibility within assessment was explored in this second in-depth literature review.

To begin with, however, the research findings from the school sector were examined, as practices within this sector have influenced higher education approaches to assessment.

**Authentic assessment practices in schools and the importance of feedback**

The last few decades have seen consistent calls for greater authenticity in the assessment process. Aligning with a view that considers assessment and learning as synonymous, Newmann and Wehlage (1993) were amongst the earlier writers who proposed a more authentic approach to assessment in school contexts. Authentic assessment practices in schools were also the focus of Wiggins (1998), who argued that assessment was of “no value unless it is educative—that is, instructive to students, teachers, and school clients and overseers” (p. 8). These authors share a desire to situate the student in a cognitively authentic context, and reflect an outlook that is stretching beyond the classroom context. They also place an explicit focus on the student rather than the teacher and reflect a constructivist perspective towards learning, recognising the value of feedback, revision and refinement of products.

Feedback, and its role as an integral part of the learning process, has been the focus of a number of well-known researchers, including Royce Sadler and John Hattie, and their findings remain highly influential a decade or more after publication. Sadler’s (1989) theory of formative assessment was offered as a potential solution to what he described
as “specific deficiencies in the instructional system” (p. 119). Of most concern to Sadler was the perceived lack of consideration for developing the ability of students to monitor the quality of what they were producing and the ability to regulate their behaviour accordingly. Like Black (1986), Sadler was concerned that too much emphasis had been placed on summative assessment, and that the process of assessment lay primarily with the teachers rather than the student, as the assumed expert in judgement-making.

As Black and Wiliam (1998) noted in their substantial review of the literature, the findings consistently indicated that receiving constructive feedback on progress was far more valuable than the “restricted forms of test which are only weakly linked to the learning experiences of students” (p. 7). Aligned with Black and Wiliam (1998), Wiggins (1998) also recognised the importance of formative feedback, suggesting that the “best feedback is highly specific, directly revealing or highly descriptive of what actually resulted, is clear to the performer, and available or offered in terms of specific targets and standards” (p. 46).

The professorial address by John Hattie (1999) presented strong empirical evidence to support Black and Wiliam’s concerns in relation to feedback. Hattie’s synthesis of over 500 meta-analyses of various influences on (school) student achievement concluded that feedback was a critically important contributor to effective learning. Hattie’s analysis indicated that the greatest influence on learning was feedback that helped students to understand how to do particular tasks better, rather than providing praise or other rewards. The timing of feedback was also important; it needed to be provided as quickly as possible, and definitely while students still had an opportunity to review their work and make improvements. Notably, Hattie (1999) found that technology, such as video, audio or computer-assisted instructional feedback offered an effective way to provide constructive feedback to students because of its ability to assist with the logistics of providing feedback to large student cohorts.

**Authentic approaches to assessment in teacher-education**

Within teacher-education, there have been similar calls for more authentic assessment practices that better prepare students for their professional careers. Mirroring society in general, studies in the early 2000s described the rapidly changing educational sector, with an increasingly diverse cohort of students, broadened curriculum expectations and a growing appreciation of teaching for understanding and application rather than a reliance on rote learning (Darling-Hammond & Snyder, 2000). Assessment practices within
teacher-education courses needed to respond accordingly and reflect authenticity to the desired attributes of graduates and help to develop the skills to teach and assess appropriately in schools.

Reflecting alignment with the assessment criteria suggested for school environments (described above), and after analysing and synthesising a broad range of research findings, Darling-Hammond and Snyder (2000) proposed an assessment framework that they believed could measure teaching as well as enhance the ability of graduates to teach well. Their framework consisted of four aspects:

1. Assessments sample the actual knowledge, skills, and dispositions desired for teachers as they are used in teaching and learning contexts, rather than relying on more remote proxies.
2. Assessments require the integration of multiple kinds of knowledge and skills as they are used in practice.
3. Multiple sources of evidence are collected over time and in diverse contexts.
4. Assessment evidence is evaluated by individuals with relevant expertise against criteria that matter for performance in the field (pp. 527-528).

The four aspects that Darling-Hammond and Snyder (2000) identified aim to ensure that assessment will be authentic to the ‘real world’ of teaching, and provide students with the opportunity to rehearse the behaviours that will be further developed as they begin their careers in the classroom. The framework also aligns with the calls from scholars such as Sadler (1998), Hattie (1999), Boud (2000) and Black and Wiliam (1998) for new approaches to assessment that looked beyond knowledge recall and relatively narrow testing of conceptual understanding.

However, some six years after the publications of researchers like Wiggins (1998), Darling-Hammond (2000) and Reeves (2000), Herrington and Herrington (2006) argued that assessment approaches in higher education showed little evidence of undergoing any significant change. They asserted that there were two major impediments to change – an institutional regime in universities that often restricted the ability of teaching staff to move beyond traditional approaches and, secondly, a lack of pedagogical consideration for how best to align tasks (both learning and assessment) to the desired learning outcomes. In response to the pedagogical impediment, Herrington and Herrington (2006) offered a framework for authentic assessment, proposing that a task is likely to reflect an alignment between the learning and assessment activities and the desired outcomes if it:

- Reflects fidelity to the conditions under which performance would normally occur, and connectedness and transfer to the world beyond the classroom;
• Requires problems solving skills and higher order thinking;
• Requires production of knowledge rather than reproduction;
• Requires significant student time and effort in collaboration with others;
• Is characterised by substantive conversation;
• Requires students to be effective performers with acquired knowledge, and to craft polished performances or products;
• Promotes depth of knowledge;
• Stimulates a wide range of active responses;
• Involves complex, ill structured challenges that require judgement, multiple steps and a full array of tasks; and,
• Is seamlessly integrated with the (learning) activity (p. 147).

Their framework aligns with the earlier studies on school assessment practices but moves beyond that in terms of their consideration of the workplace context, and the attributes that employers are seeking in university graduates. In this way, it responds to the observation by Boud (2006) that stakeholders outside of the university context have been increasing pressure on providers to improve the authenticity of learning and assessment approaches.

Patrick et al.’s (2008) scoping study on work-integrated-learning in Australia found strong employer support for more integration between university and the needs of employers, in order to ensure a greater range of authentic learning experiences for students. Research by Oliver (2013) also highlighted the value of universities adopting an outcomes-focussed approach and using authentic approaches to the development of graduate attributes. More recently, federal government reviews (Department of Education & Training, 2014) of teacher-education programs in Australia recognised that while there are “pockets of innovative and authentic assessment in Australia… these approaches are not widely applied” (p. 31). The report recommended that there be more:

Diverse and authentic mechanisms, including peer and self-assessment, portfolios, electronic media and collaborative assessment….more authentic assessments would consider the actual knowledge, skills, and dispositions required of teachers as they are used in teaching and learning contexts (p. 32).

Reviews such as this emphasise the important role that educational designers and academics have to ensure that assessment practices reflect what is needed by the future employers of graduates. This includes, as will be discussed now, the use of technology to enhance the assessment process.

**Technology in assessment**
The potential for technology to support authentic assessment is significant, and it does so in a number of ways. Firstly, as Hattie (1999) noted some time ago, technology can offer a more efficient way to provide timely, explicit and constructive feedback. Simple
applications and tools, such as the ability to track changes, insert comments, and such
like can be completed relatively quickly and easily, and increase the value of the
feedback through a more specific and direct connection with what the student has done,
and could do into the future. Students studying off campus and without direct access to
staff appreciate having personalised feedback that can help them understand what their
lecturer feels about their work and what aspects need further development (Hattie, 1999).

At much the same time Reeves (2000) highlighted the potential for online learning
environments to capitalise on the affordances of technology, by integrating software
applications such as concept maps, simulations and portfolios to enable the type of
formative assessment being advocated. Importantly, there was not, as Boud (2006)
observed, necessarily a need to invent new assessment activities but rather that the
learning tasks:

…need to be innovative in the context of the course and the experience of the
students, so that students respond to the task in hand and not to their
preconceptions of what a particular assessment method does” (p. xix).

In response, Herrington et al.’s (2010) framework for authentic learning provides greater
detail on the manner in which designers and teaching staff can adopt an alternative
approach to assessment. Their model reiterates the need for tasks to be authentic not just
in terms of the products being created but also to the context within which the tasks are
situated, suggesting that an appropriate context enables a secondary layer of learning.
For example, teacher-education students might prepare an individual learning plan (ILP)
for a learner with disabilities using the actual forms from the Education Department, and
be part of a scenario role-play where experts such as a psychologist or school counsellor
attend and interrogate the learning plan with the student in a collaborative manner.

For assessment activities that are based in other contexts, such as the workplace or in
schools, applications such as ePortfolios, blogs, discussion forums and wikis can directly
address specific learning outcomes and reflect the development of those skills (Bonk,
2009). Many web-based applications also facilitate a peer-review process easily and
effectively and in doing so enhance the potential to develop the sort of graduate
attributes being sought by employers and professional accreditation bodies. The types of
products created through such an approach may not resemble traditional forms of
assessment but they are likely to be rich in their content and provide strong evidence of
learning and achievement (Lesage, Riopel, Raiche, Sodoke & Beland, 2010).
Technology can also enable an increased level of individuality in the assessment approach, leading to flexible assessment.

**Designing for flexible assessment**
The concept of flexibility in higher education is often associated with the mode of delivery, such as a fully online or a blended approach of on-campus and online study (Vaughan, Cleveland-Innes & Garrison, 2013). With respect to *flexible assessment*, the most common association with such a concept relates to offering students greater choice in terms of their assessment regime — for example, choosing from a number of different assessment tasks to make up the required quota (Cook, 2001; Gikandi, Morrow & Davis, 2011). Collis and Moonen (2002) were among the early writers to consider a broader notion of flexibility, with their identification of four key components: technology, pedagogy, implementation strategies and institutional framework. Within the pedagogical component, Collis and Moonen (2002) drew attention to the adult education sector and its recognition of the need to allow students to individualise their learning experience, enabling it to be “relevant to the adult learner, closely related to her own learning history, has transfer to her work, and is efficient in terms of her time and energy” (p. 229). Boud (1988) links the notion of autonomous learning with assessment practices, claiming that if “assessment is determined unilaterally by staff” (p. 36) then students are likely to adopt a surface approach to learning and reduce the potential for meaningful achievements.

The notion of pedagogical flexibility is expanded upon by Osborne and Housten (2012) after their review of flexibility in learning paths to and within higher education in the United Kingdom. Similarly to Collis and Moonen (2002), they allude to the pedagogical approach in adult education but then broaden the notion of what constitutes flexibility:

> By flexibility we refer to both spatial and temporal matters, namely changes that allow students access to education in locations and modes, and…to those mechanisms that challenge constructions of what constitutes knowledge at higher education level and the means by which knowledge can be acquired and demonstrated (Osborne & Housten, 2012, p. 119).

This perspective invites educators to broaden their consideration of flexibility and to (re)consider how students might gain and demonstrate their achievement of the desired learning outcomes. Flexibility, therefore, potentially may be enacted in many ways, such as the mode, task, forms of evidence and time allocated for the creation of products. As Osborne and Housten (2012) point out, however, this may challenge educators as they may need to reconsider previously held assumptions about what sort of evidence...
actually does reflect the constitution of knowledge, and how that evidence might be negotiated. For example, the notion of engaging in discussions with students about possible options in assessment approaches is constructive – it gets students thinking about what the learning outcomes are, and how this learning might be gained and evidenced (Biggs, 2003).

Flexible assessment practices help to build the type of graduate attributes (e.g., problem-solving, communication, collaboration) that are sought by universities and future employers (Boud, 2000; Oliver, 2013). Francis (2008) found that even first year undergraduate students were highly receptive to the opportunity to have a greater degree of choice over assessment tasks and, as Boud (1995) pointed out, “what is important are learning outcomes, no matter how they are achieved” (p. 5).

Understandably, there is a potential for staff to show resistance to a more flexible approach to assessment, with concerns about additional time and knowledge that may be required to devise, support and assess more diverse submissions (Collis & Moonen, 2002). In an era of widening participation and increased competition for students, however, considering ways to increase and support a more flexible approach to assessment is likely to be a wise investment. There will nevertheless be a need for strong institutional support for staff as they consider ways to make assessment more flexible for students (Oliver, 2013; Osborne & Houston, 2012).

Authentic assessment practices reflect a student-centred approach and thus lend themselves to incorporating a higher degree of flexibility than traditional, highly structured and teacher-led assessment (Fook & Sidhu, 2010; Gulikers, Bastiaens & Kirschner, 2004). While the notion of flexibility may not be explicitly mentioned in the authentic assessment framework proposed by Herrington and Herrington (2006), it would seem to be an inherent component of it. Their framework includes criteria such as: reflecting fidelity to authentic workplaces, being characterised by substantive conversations, and the ill-structured nature of the challenges and tasks, all of which inherently require a degree of flexibility due to the complex nature of the challenges. In meeting such criteria, therefore, authentic assessment tasks should by their very nature be flexible as well. They should also respond positively to the widely-accepted characteristics and needs of adult learners (Knowles et al., 2011; Tough, 1971), particularly the need to see the relevance of tasks and the benefits from their completion, as well as the opportunity for learners to be responsible for their own decisions.
This literature review explored the research findings that relate to assessment practices in higher education, with a particular focus on authenticity within the assessment regime, and the extent to which technology can facilitate such an approach. Recognising the apprehension that non-traditional students (and, indeed, many traditional students) may have when it comes to assessment, as well as their desire for integration with the learning activities and connection to real workplace issues and challenges, the notion of authentic assessment practices appears to be highly appropriate for a teacher-education course. However, despite over two decades of calls for a more authentic and applied approach to assessment, there is still a lack of empirical research in the published literature reporting on exactly how authentic assessment was implemented, and what the results were. Perhaps the challenge to design and support authentic tasks is simply too daunting. This may be particularly so in times of increased compliance and quality assurance processes that, unfortunately, can encourage a more simplistic, modularised and traditional approach to the attainment of specific learning outcomes (Lombardi, 2008).

The initial consultations and literature review, together with a deeper examination of research findings related to assessment, enabled the formation of the fifth draft principle:

**Design Principle: Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings**

This design principle is presented in Table 5, together with examples of how it could be implemented, and the theory and literature from which it was derived.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
</tr>
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| Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings. | Learners will be:  
• Completing assessment tasks that require the skills and knowledge associated with their future roles in the workplace;  
• Creating practical products that will be meaningful and useful to learners in their profession;  
• Participating in peer-review and formative feedback processes; and,  
• Engaging in a number of activities in any one assessment task. | Authentic Learning (Herrington et al., 2010)  
Authentic assessment (Herrington & Herrington, 2006)  
Sustainable assessment (Boud, 2006)  
Formative feedback (Black & Wiliam, 1998; Hattie, 1999)  
Authentic assessment in teacher-education (Darling-Hammond, 2000; Shulman (2004)) |

The next, and final, area to be reviewed is the notion of student ownership of learning.
Element 6: Encouraging student ownership of learning

In many respects, this element represents the desired outcomes from all the elements preceding it. A strong sense of ownership is generally accepted as a positive attribute, and one that most aspire to. Yet the initial literature review found only a limited body of research into this area, particularly in the higher education sector, despite calls for graduates with greater confidence to take responsibility for their actions and work autonomously. Explicitly designing for opportunities for students to take on an increasing level of ownership over their learning would respond to the demands on universities to improve graduate outcomes and work-readiness. As Malcolm Knowles, in his preface to Boud’s (1988) examination of student autonomy, noted:

> Teachers in higher education throughout the world need (1) to know that there is a respectable (preferably research-based) rationale for autonomous learning, (2) to know that its benefits have been successfully implemented in practice and (3) to have specific guidelines and techniques for implementing it (p. 5).

The detailed literature review sought to garner a deeper understanding of this element, leading to the development of the sixth draft design principle, and thus respond to Knowles’ call. This discussion includes four areas of relevance, specifically: ownership of learning, the relationships between students and Faculty, the approach to the learning environment and the potential of ePorfolios to be an integral part of the students’ experience.

Ownership of learning

There is a limited body of literature on the notion of student ownership of learning but what does exist suggests that it represents the degree to which students feel a sense of independence, autonomy and choice in the way they engage in their studies (Dudley-Marling & Searle, 1995). Fostering a sense of ownership of learning is a worthy aspiration, both to increase student engagement and develop the graduate attributes sought by employers.

Much of the literature relating to the notion of student ownership of learning reports on studies within the school sector, sparked by concern over a lack of enthusiasm and ability of school children to write creatively. Initially, research focussed on the affective dimension of writing and reading, with studies indicating that children were more likely to want to read and write if they valued the ability to do so, believed that they had the necessary skills and knowledge and were allowed some choice in topic selection (Au, Scheu, Kawakami & Hermon, 1990; Graves, 1983). In other words, students needed to
see the purpose of what they were doing, and feel that they had some ownership over what they actually created through their writing.

At the same time, contemporary understandings about learning and cognition changed the way knowledge was being considered. It was no longer assumed that knowledge could be ‘delivered’ to the learner but, rather, it was individually developed and constructed through physical, mental and social activity, and in connection with previous experiences (Ausubel, 1968). Dudley-Marling and Seale (1995) consider this perspective towards learning as critical to the concept of ownership: “from a constructivist perspective, meaningful learning will always depend on the degree to which learners are able make learning their own” (p. vii). Essentially then, ownership of learning starts at the point of making meaning from a particular event, and then extends to the bigger picture of continual growth and development. Hence, individuals ‘own’ their learning at every stage, and from early childhood to a lifelong pursuit of growth and development.

In their work with teachers in schools, Dudley-Marling and Seale (1995) found that the concept of ownership was complex and required an appropriate balance between independent student work and teacher support. Their research findings suggested that a key contributing factor to fostering student ownership of learning was to ensure that students recognised that what they were learning had value beyond the classroom setting. Strategies that encouraged school-students to take ownership of their learning were those that helped build a greater sense of autonomy, power, voice and responsibility; for example, encouraging students to plan for their own learning and how they will evaluate the effectiveness of those strategies:

It is when the individual has to take responsibility for deciding what criteria are important to him, what goals must be achieved, and the extent to which he has achieved those goals, that he truly learns to take responsibility for himself and his directions (Rogers, 1983, p. 158, cited by Boud, 1988, p. 36).

At the same time as researchers in the school sector were investigating the notion of ownership, others were focussing on patterns of student engagement within the university sector. Concerned that students appeared to prefer to be “spoon-fed” and were only capable of “regurgitating” information, McKay and Kember (1997, p. 55) led an investigation of an alternative approach in a degree course in health care in a Hong Kong university. In this course, students were encouraged to take a greater ownership of their own learning through a higher degree of autonomy in a range of learning activities and collaborative strategies. Despite a number of student complaints about an increased workload, the results indicated a much higher degree of engagement, a deeper approach
to learning, and improved student outcomes. McKay and Kember’s (1997) conclusions aligned with the work of Biggs (2003) and his widely accepted claim that it is ‘what the student does’ that matters. This correlates with the school-sector research but did not add particular detail on the role of the teacher in building the students’ sense of ownership.

The literature on ownership of learning is congruent with understandings of adult education, adult learning and workplace learning. Lindeman (1926) was amongst the first scholars to describe what he considered to be an adult’s deep desire to be self-directed in their learning and to engage with others in the pursuit of further knowledge and development. This is closely aligned with the work of Knowles et al. (2011) in their theory of andragogy and particularly the characteristic of adults that they described as self-concept, or the desire to have responsibility for their own decisions in life. This led to considerable debate in the 1980s about the degree to which adult learning environments should encourage self-direction (Billett, 2004; Brookfield, 1986). For example, learners in adult education courses usually choose (self-direct) to partake in particular courses and tend not to respond positively if it is conducted in a very traditional, teacher-led manner with little room for choice and learner-autonomy (Boud, 1986; Knowles, et al., 2011; Tough, 1971). On the other hand, adult learners recognise and desire expert support and guidance at critical times, so it is a matter of ensuring the right balance in each particular context and in consultation with the learner (Brookfield, 1986; Herrington & Herrington, 2006; Mezirow, 1991). The literature on adult learners is largely synonymous with that on non-traditional students but the research of practitioners such as Bamber and Tett (2000) provides a useful reminder that these students will need support to help connect their lived experience with the theoretical concepts at university. In particular, a balance is required between encouraging students to value their experience but inviting them to venture beyond it.

The challenge of finding the balance between self-direction and support seems to exist in a range of learning environments. In their study of two classes of 7th and 8th grade students, Dudley-Marlin and Oppenheimer (1995) described “the political struggle between teachers and students over whose knowledge is valid” (p. 293) even when the intentions of the teacher were well-meaning. When observing the teachers, the researchers repeatedly observed the teacher inviting students to be creative in their writing, yet at the same time requiring tight adherence to formulaic structures. The students were understandably hesitant to move beyond the boundaries set by the teacher and deferred to the instructions provided, because the teacher was the reader and the
marker of the work and there was no other audience or purpose for their writing. Overall, the researchers concluded that the students felt very little personal connection or value in their writing and saw the exercises as just a means to an end. The following extract refers to the 8th grade students in their study but could, arguably, be witnessed in undergraduate classrooms as well:

We often observed students complete one writing assignment, check it off, and quickly move on to another one. Talk about writing between students focused on proofreading (“You spelled it wrong. It needs two t’s.”), questions about mechanics (“How do you spell fitness?”), and discussions about how much writing they had done or still had to do. We rarely observed a student share a piece of writing with another student except for proofreading (p. 294).

This behaviour, they concluded, was unsurprising given the instructions that students received for their creative writing activity. One such example was:

Write a short paragraph describing who the Amish people are. Be sure to include details about their clothing and customs (p. 284).

Dudley-Martin and Oppenheimer (1995) concluded that teacher-behaviour was a very significant influence in relation to the extent which students felt a sense of ownership. Ownership did not come from being abandoned in a sink-or-swim approach; in contrast, it came from the way teachers interacted, instructed and engaged with the children.

Boud (1988) concurs with the need for teacher support, particularly as students begin their journeys in higher education. He notes that:

Students’ views will be influenced by their prior experience, their stage of intellectual development, the context of other courses, the attitudes of their teachers and the assessment procedures (p. 39).

The research findings reiterate the need for teaching staff to know how to encourage an increasing level of student ownership of learning through building their sense of independence, autonomy and choice, in the creation of a worthwhile product. Two main areas will be considered in meeting this challenge: relationships between students and faculty, and the approach to the learning environment.

**Relationships between students and faculty**

The way in which students perceive their teachers, and their relationship with those teachers, is a significant factor in how well they engage in their studies and the degree to which they will develop a sense of independence and autonomy (Hattie 2007; Shulman, 2004). Chickering and Reisser (1993) suggest that “relationships of inspiration, informality, openness and warmth have particular implications for the development of autonomy” (p. 329). They argue that achieving emotional independence is the first step
towards autonomy, and describe four major aspects of positive relationship building: accessibility, authenticity, knowledge and ability to communicate effectively (p. 335). Accessibility does not necessarily mean that the lecturer is available seven days a week, eight hours a day, but it does mean that they are approachable and recognise student contact as a positive and legitimate process (Trigwell & Prosser, 1991). Authenticity will be perceived when students feel that their teacher has a well-established system of values and beliefs that transpire into their practice, and that they will be consistent in their approach with students (Kreber, 2013). Knowledge relates to having a reasonable understanding of human development and learning theory and the ability to understand and respond appropriately to the different ways students may react and behave over time. And finally, the ability to communicate is critically important, not only about academic issues, but also to confidently “take time to help a student who faces debilitating personal experiences” and seek appropriate assistance when necessary (Chickering & Reisser, 1993, citing Kuh, Schuh, Whitt and Associates, p. 337).

Communicating a genuine respect for students, recognising their worth and actively listening to them, not just for facts but also for their feelings, appears to foster a sense of self-worth and encourage a growing level of independence (Knowles et al., 2011). Frameworks such as Chickering and Reisser’s identify the importance of connections with students, and ensure that staff are seen as accessible, respectful and genuinely caring about their students’ well-being. In an era of larger class sizes and fewer opportunities for one-on-one time with students, the importance of establishing a positive and supportive environment becomes more important so that students feel confident to seek advice or counsel when needed.

**Approach to the learning environment**

A number of approaches to course design and the learning environment appear to support students to develop the attributes associated with a greater sense of ownership over learning. The degree of ownership of learning is low when students perceive that the only audience will be the teacher (Dudley-Marling & Seale, 1995). Rather than seeing learning activities and assessment tasks as ‘hurdles to be jumped’ (Gilardi & Guglielmetti, 2011), the students need to feel that the products that they are creating will have a value beyond the life cycle of the unit of study and that the audience will extend beyond the assessor.
An authentic, applied learning environment must, by definition, have a broader focus than the university context and the teachers within it, so that it is aligned with fostering a greater sense of ownership over learning. Students can engage and grapple with genuine problems, seeking the resources and information they need to formulate solutions, and producing tools that may well be useful after their study has completed (Herrington & Herrington, 2010). Importantly, students will be sharing their developing product with others, as they interact and engage, and this will help them to feel that there is a greater purpose and value with what they are doing. Access to experts, perhaps from industry or research bodies, will also help students to develop an understanding of how effective practitioners operate in a rapidly changing world (Darling-Hammond, 2005) or, as described by Wenger (2014), as learning occurs in the “landscapes of practice” (p. 13). Shifting the students’ focus from the lecturer to the world where they aspire to work (or already are) should encourage a sense of purpose and demonstrate a value that extends well beyond the marks allocated for the resulting product.

In authentic, applied learning environments, students are involved in complex tasks that are multi-dimensional and completed over a significant period of time (Rule, 2005). As student behaviour is heavily influenced by the demands of assessment (Snyder, 1971), assessment should reflect a high value on the process that the student has undertaken, not just the end product (Boud, 2006). This brings Biggs’ (1989; 1999; 2003) concept of constructive alignment into focus, to ensure that desired learning outcomes, learning activities and assessment tasks “address the same agenda and support each other” and keep “students ‘entrapped’ in this web of consistency” (Biggs, 1989, p. 64). Additionally, the assessment criteria and standards (Sadler, 2005) must clearly support the value assigned to the process that the students have undertaken and the degree to which they have behaved autonomously and exercised choice wisely. Criteria that are weighted in such a way that encourages students to consult widely (literature and experts, for example), review in collaboration with others (peers, or colleague teachers, perhaps) and demonstrate critical reflection and modification along the way (Brookfield, 1995) will foster a stronger sense of ownership of learning. To this end, technology-supported learning environments can help to connect students and experts, and allow for processes such as peer-review or collaboration to be facilitated, documented and assessed.

**ePortfolios as a tool to encourage student ownership of learning**

As discussed in earlier chapters, the rapid development of technology-supported learning environments has supported students to gain and evidence their learning in a greater
number of ways. It can allow students to be more autonomous in how they approach tasks, choosing between different applications according to what best suits the process they are undertaking and their own particular context. Importantly, it enables the creation of products that will continue to have a purpose beyond a document submitted to a lecturer for assessment. One particular technological application that has been embraced by many universities is the ePortfolio tool.

The use of portfolios (whether hand-written, electronic or web-based) in higher education has been the focus of much discussion and many publications (cf., Banta & Palomba, 2015; Faulkner, Aziz, Waye & Smith, 2013; Hallam, et al., 2010) for some decades, with general agreement that they are potentially of great benefit to the student. Principally, they are seen as being an effective tool to facilitate reflection, document achievement of required competencies, and provide a rich representation of the journey that the student has travelled over their course of study (Coffee & Ashford-Rowe, 2014). ePortfolios have become mainstream in many discipline areas but most notably nursing (Green, Wyllie & Jackson, 2014), education (Darling-Hammond & Snyder, 2000), engineering (Kajfez, et al., 2013) and business studies (Wang, 2014).

An ePortfolio allows the student to ‘tag’ artefacts, to allow for easy identification for particular purposes. It is also possible to make a presentation of chosen artefacts from the collection, depending on the intended audience and purpose (e.g., an assessment task or a job application) and then for that presentation to be shared electronically via a hyperlink. This process is reflected in Figure 1, below.

Figure 1: ePortfolio structure (Barrett & Garrett, 2009)

There is significant interest in ePortfolios in higher education in Australia, with broad acknowledgement of their potential to:

...assist students become reflective learners, conscious of their personal and professional strengths and weaknesses, as well as to make their existing and
developing skills more explicit, with an associated value apparent in the graduate
recruitment process. (Hallam, et al., 2010, p. 1)

Within teacher-education, there has been strong endorsement of their value, with the
latest Federal inquiry into teacher-education recommending that ePortfolios be
considered as a way of evidencing achievement of the national standards for teacher
registration, as is presently the case in Singapore and a number of European countries
(Department of Education & Training, 2015). Since the advent of Web 2.0, affordances
that enable collaborative sharing and reviewing have increased the potential value of
ePortfolios. Additionally, the capacity for students to retain access to web-based
ePortfolio after graduation and continue to use it for personal, employment or career
progression greatly increases the value that students associate with its inclusion and their
sense of ownership over the product (Schroff, Trent & Ng, 2013).

There are a number of limitations and challenges noted in the literature concerning
ePortfolios. Some studies have revealed staff and student concern over the technological
challenges involved (Oakley, Pegrum & Johnston, 2014), while others have suggested
that an ePortfolio is “akin to a positive portfolio and assessment of learning, rather than
assessment for learning” (Faulkner, Aziz, Way & Smith, 2013, p. 873). Additionally,
some investigations have found that while reflection is certainly evidenced in
ePortfolios, it takes considerable support and encouragement to ensure an appropriate
level of criticality in those reflections (Oakly, Pegrum & Johnston, 2014; Zhu, 2011).
This may account for why, despite widespread interest in ePortfolios, their take-up in
higher education institutions is patchy, and often centred in programs rather than an
institutionally wide implementation (Hallam, et al., 2010). It seems that successful
integration of ePortfolios occurs when staff and students feel well supported in mastering
the technology (Downing & Dyment, 2013), perceive a benefit beyond the purposes of
assessment (Shroff, Trent & Ng, 2013), are provided with choice in how they present
their artefacts (Slade & Readman, 2013) and when it is apparent that future employers
also value ePortfolios (Department of Education & Training, 2014).

The second and more comprehensive literature review suggests that encouraging
students to take an increasing level of ownership over their learning will foster higher
levels of engagement and satisfaction and help develop the graduate attributes sought by
universities and future employers. It is a notion that can be fostered through a
supportive, positive and constructive learning environment. This might involve, for
example, the creation of a meaningful product over time, in consultation with others and
needing decisions to be made and justified. Whether students are on-campus or fully online, ePortfolios offer one way for students to comprehensively evidence their learning and show-case products that they have created while at university. Mastering the technology can be challenging for both students and staff, and there is an accompanying need for institutional support at all levels. The investment appears worthwhile, however, as graduates are more likely to leave their educational provider confident that they are well equipped for their future role in a rapidly changing workplace.

Encouraging an increasing level of student ownership of learning appears to be a valid and worthy aim of higher education, and hence led to the formation of the sixth and final draft design principle to guide the course:

**Design Principle: Encourage student ownership of learning**

This principle together with examples of how it could be implemented, and the theory from which it was derived is reflected in Table 6.

Table 6: Design Principle 6, examples of implementation and its theoretical underpinning

<table>
<thead>
<tr>
<th>Principle</th>
<th>Examples of implementation</th>
<th>Associated theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage student ownership of learning.</td>
<td>Learners will be: • Encouraged to take increased responsibility for their approaches to learning and assessment; • Engaged in activities that draw upon their unique experiences and contexts; • Evidencing their achievements in an ePortfolio; and, • Collaborating with peers towards mutual achievement of learning goals.</td>
<td>Student autonomy in learning (Boud, 1988)身份和所有权 (Chickering &amp; Reisser, 1993) Ownership of Learning (Dudley-Marling &amp; Seale, 1995) Adult learning theory (Knowles et al., 2011) Reflective practice (Brookfield, 1995) Authentic learning (Herrington et al., 2010)</td>
</tr>
</tbody>
</table>

**Conclusion**

This chapter has presented a comprehensive review of the literature that informed the development of six draft design principles considered fundamental to a solution to the problem identified in Chapter 1. Each principle informed the design, development and delivery of units of study within the teacher-education course that is the focus of this study. The design principles reflect a desire to provide an engaging, constructive and collaborative learning environment that responds to the needs, characteristics and experience of the students within the course, and develop their professional knowledge and skills in ways that can be directly applied in their own workplace contexts.

The next chapter describes the methodology used to guide the research study, beginning with a brief discussion of the qualitative research paradigm.
CHAPTER 4

Research Design

Chapters 1 and 2 provided a background to the study, including an examination of a real-world problem through the perspectives of the stakeholders as well as an initial review of relevant literature. This first phase led to a clearer understanding of the nature of the challenge facing course designers. A second, more comprehensive review of the literature (Chapter 3) was then undertaken, to inform the development of a number of theoretically underpinned draft design principles that offer a response to the identified problem.

In order to have a reasonable measure of confidence in the legitimacy of any response to the research questions, it is necessary to firstly develop an appropriate framework to support and guide the research. Eisner (1991) suggests that it is useful to consider that all research sits on a continuum between purely quantitative to purely qualitative and that all have “the capacity to inform significantly” (p. 31). This view draws attention to what Patton (2015) refers to as a “paradigm of choices” that requires the researcher to consider “methodological appropriateness as the primary criterion for judging methodological quality” and a consequential “situational responsiveness” (p. 39) to ensure adherence to the chosen paradigm. This acknowledges the potential for a combination of qualitative and quantitative methods in the same research project to most effectively respond to the particular search for greater understanding. O’Leary (2004) pragmatically offers what she refers to as a “strategic safety net” for intending researchers as they wrestle with choices – to remember that credible design “is reliant upon three key prerequisites: the design addresses the question, it is suited to the researcher; and that you have the ethics approval, resources, time and access necessary to achieve the task” (p. 101).

This chapter begins with a discussion of the qualitative paradigm and design-based research, as well as positioning the researcher in terms of her own perspective and role in the study. This will be followed by a detailed explanation of the chosen research methods and the data analysis procedures. The chapter will also provide an overview of the participants and the nature of their involvement in the study. Finally, this chapter will respond to a number of issues relating to quality in research, including ethical
considerations, credibility, dependability and transferability. The overall aim of the chapter is to provide a clear picture of how the research was conducted, and accordingly, ensure a deeper understanding of the findings.

The qualitative paradigm
The research questions guiding this study are seeking a greater understanding of the experiences of participants and, from that understanding, a better positioning to contribute to the field of education – specifically to the challenge of providing an applied, authentic learning experience to non-traditional students engaged in an online teacher-education course. The research is situated in a qualitative paradigm, where “researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them” (Denzin & Lincoln, 2011, p. 3). This stands in contrast to quantitative research, where statistical analysis of data leads to a greater confidence to determine, predict and generalise findings (Mason, 2013). Eisner (1991) provides a reminder, however, that all knowledge, including that gained through a quantitative approach, is ultimately referenced in qualities and that all worthy research contributes to helping us understand the world we live in. A number of writers have identified the main characteristics of qualitative research, including Mason (2013), Strauss & Corbin (1990), Eisner (1991) and Lincoln and Guba (1985). Patton (2015, p. 40-41) brings together their work into twelve characteristics and allocates them to particular aspects or stages in the research process. Appendix A describes how this research study responded to each of these characteristics identified by Patton.

The interpretive complexity of the qualitative research environment gives rise to a critical need for the researcher to position themselves in a particular paradigm and to clearly articulate this position, in order for the findings to be most meaningfully understood by the reader. To that end, the researcher in this study situates herself in the constructivist paradigm which “assumes a relative ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co-create understandings), and a naturalistic (in the natural world) set of methodological procedures” (Denzin & Lincoln, 2013, p. 13).

Following the selection of a qualitative research approach, the next step was to identify a research design that would be the most appropriate for the inquiry. The research design needed to respond positively to a number of desired characteristics, including:
• The need to better understand and respond to the challenge facing teaching staff in the design and continued development of the course;

• The potential for students to be active participants in the research and benefit from that participation;

• The capacity for a prolonged period of data collection, analysis and modification of the course; and,

• The potential for the findings of the study to contribute meaningfully to challenges experienced more broadly within teacher-education.

An overview of design-based research will now be presented, in order to justify its selection as an appropriate choice for the research approach.

**Design-based research**

Design-based research (DBR) is also known as *design research, educational design research, design experiments* and *development research*, and while 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).

Design-based research is an emergent approach originally conceived by Brown (1992) as she sought to develop more innovative educational settings while at the same time conducting experimental studies of those innovations. It stands apart from other research approaches in education because it embraces the inherent inclusion and involvement of the participants, offering the potential for research sites to become “communities of learning and interpretation, where students are given significant opportunity to take charge of their own learning” (Brown, 1992, p. 141). By the mid-2000s, interest in design-based research approaches was rising, with several journals dedicating issues to examine the approach more comprehensively. The editors for a special issue on design-based research methods in the *Educational Psychologist*, Sandoval and Bell (2004), explained the need for such an examination:

> An educational psychology that is both usable in a practical sense and scientifically trustworthy cannot proceed without directly studying the phenomena it hopes to explain in its inherent messiness (p. 199).

Within that issue, Joseph (2004) describes how design-based research in education aims to “provide insight into learning in real-world contexts”, aiming to contribute to “research, design, and pedagogical practice” (p. 235). The researcher must first identify a challenge or a ‘problem’ within a particular context then, through discussion and
research with stake-holders, propose a solution to that problem. The proposed solution is tested over a number of iterations to refine both practice and theory (DiSessa & Cobb, 2004). This approach is suitable for this study as it will enable the study of progressive reiterations of the student experience in an online teacher-education course, and facilitate an informed response to the research questions.

Importantly, the goal of design-based research is not to prove that one approach works better than another to achieve the same outcomes (i.e., the achievement of learning outcomes). Rather, it seeks to find better ways to overcome known problems, drawing upon the experiences of the researcher, the participants and other stakeholders in a cyclic process to examine and improve outcomes (van den Akker, Gravemeijer, McKenney, & Nieveen, 2006). Design-based research offers an effective methodology for this study because it involves faculty members in the active development and continued improvement of the design of a particular course, knowing that the outcomes will have the potential for transfer to other courses as well as contributing to the scholarship of teaching (Joseph, 2004; Reeves, Herrington, & Oliver, 2004). It therefore sits comfortably within the qualitative research paradigm, as it aims to articulate the theoretical perspectives that emerge from the findings from a prolonged period of data collection and analysis (Creswell, 2003).

Consistent with the aims of design-based research, the data collection methods, which included interviews, focus groups and informal discussions, enabled the inquiry to also serve as professional development for the participants. As argued by McKenney, Nieveen and van den Akker (2006), data collection methods can be structured “to stimulate dialogue, reflection or engagement among participants” and there is a “natural synergy between curriculum development and teacher development, and the sensitivity to this can provide more fruitful research and development opportunities” (p. 74). Perhaps this was particularly so in this study, as the student-participants were largely in-service VET teachers who recognised the potential for a deeper understanding of their experiences as a student to influence their concurrent teaching roles.

**Overview of the design-based research methodology and the research phases**

The overall methodology aimed to gather a comprehensive data set that could be analysed to determine the appropriateness and effectiveness of the theoretically underpinned design principles guiding the development and delivery of the online teacher-education course. A number of methods were utilised to collect data from
participants, the analysis of which informed the continuing course development and delivery over the 18 month study. This is illustrated in Figure 2.

Figure 2: An overview of the research study

Phases in design-based research
Reeves (2006) describes four phases in design-based research. These phases are depicted in Figure 3, and they are then used to describe the methodology of this study.

Figure 3: Iterative phases of design-based research (Reeves, 2006, p. 59)
Table 7 presents an overview of how the study responds to each of the phases suggested by Reeves (2006). Each phase is then described in more detail.
Table 7: The four phases of design-based research and the associated activity in the study

<table>
<thead>
<tr>
<th>Research Phase and Interventions</th>
<th>Processes in each phase in the study</th>
</tr>
</thead>
</table>
| **Phase 1: Analysis of practical problems (May-Dec, 2011)** | - Identify concerns of prospective students and priorities of employers  
- Ascertain the challenges likely in gaining professional accreditation  
- Identify unique characteristics and needs of incoming cohort of students  
- Identify challenges of a fully online environment for diverse learners  
- Position the problem within relevant research findings and identify if the study of the implementation of a potential solution could address gaps in the research. |
| - Consultations with  
  - prospective students  
  - employers  
  - professional accreditation body  
  - teaching staff  
- Initial literature review to explore the problem more widely. |
| **Phase 2: Development of solutions (Jan 2012-January 2013)** | - Articulate the theoretical framework that will underpin the draft design principles  
- Describe the manner in which the draft design principles will be instantiated into the course  
- Consideration of technological innovation to ensure the use of appropriate learning technologies  
- Describe the participants’ learning environment |
| - Second literature review to inform the creation of draft design elements to address the problem identified.  
- Development of draft design principles  
- Design and development of the learning intervention or solution  
- Articulate the theoretical framework that will underpin the draft design principles  
- Describe the manner in which the draft design principles will be instantiated into the course  
- Consideration of technological innovation to ensure the use of appropriate learning technologies  
- Describe the participants’ learning environment |
| **Phase 3: Iterative cycles of testing and refinement (Feb 2013 – July 2014)** | - Refinement of principles and/or their enactment in response to findings from the previous iteration |
| - Completion of three iterations of testing and refinement. Each iteration consisted of one semester (13 weeks) |
| **Phase 4: Reflection to produce “design principles” for the solution (2015)** | - Articulation of final design principles to guide an applied learning design for non-traditional learners in an online teacher-education course  
- Reflection on the outcomes of the study and response to the research questions. |
| - Reflection after the final iteration to refine the design principles for the solution identified in Phase 1. |

**Phase 1: Analysis of practical problems by researchers and practitioners in collaboration**

This phase was conducted between May and December, 2011. To begin with, informal discussions were held with prospective students and their employers, as well as the professional accreditation body for teachers in Tasmania, as described in Chapter 1. These discussions facilitated an information exchange about the hopes, aspirations, concerns and priorities for the new course. This process was prior to the commencement of the research study, so the data served as an informal resource for the researcher, in order to specify “assumptions about the intellectual and social starting points for the envisioned forms of learning” (Cobb et al., 2003, p.11).

In a similar manner, the researcher’s extensive experience in the adult-education sector informed her understanding of the context and challenges that lay in designing a suitable course for the intended cohort. The challenge identified in this inquiry was that the intended cohort, largely non-traditional adult learners, were seeking a fully online learning experience that would be closely connected to their real-world needs as VET teachers and provide an applied, authentic and engaging approach to the learning and teaching.
Following these initial activities, a review of relevant literature facilitated a deeper understanding of the problem, and the consequential challenge that existed (Chapter 2).

**Phase 2: Development of solutions informed by existing design principles and technological innovations**

The second phase began with a more comprehensive literature review (Chapter 3) which led to the articulation of a set of draft design principles to guide the new course. The review continued throughout the entire project as the analysis of data brought new things to light and served as a catalyst for further investigation. In this phase, the outcomes from Phase 1 were articulated into a draft framework for applied learning in online teacher-education. Consistent with the concept of the researcher being a ‘bricoleur’ (Denzin & Lincoln, 2011), aspects from multiple research sources were selected and refined to form the framework to guide the design of the solution. The framework, shown in Table 8, reflects the six principles together with brief descriptions of how they were manifested in the course and the guidelines provided to teaching staff.

Table 8: Design Principles, guidelines for implementation and examples of their manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff should:</td>
<td>Students are:</td>
</tr>
<tr>
<td>1. Provide learning activities that connect theory and application in authentic contexts.</td>
<td>• Design learning tasks that can be completed in authentic contexts, such as students' workplaces or practicum placements.</td>
<td>• Invited to consider their own, authentic, contexts as they are exposed to theoretical concepts within adult education.</td>
</tr>
<tr>
<td></td>
<td>• Encourage students to publicly share the connections they are making between theory and their real-life contexts, through discussion forums, web-conferences and study groups.</td>
<td>• Involved in tasks that 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, therefore, be often ill-defined and multi-faceted, and require completion over a sustained period of time, drawing together what has been learnt from a variety of sources and recognising that there is not necessarily a ‘right’ answer.</td>
</tr>
<tr>
<td></td>
<td>• Work closely with practitioners and other experts in the field, in order to better understand the skills and knowledge required in the workplace.</td>
<td>• Involved in activities that bring them into direct contact with experts in the field, as well as educational organisations.</td>
</tr>
<tr>
<td>2. Recognise the lived experience of students.</td>
<td>• Gain an understanding and appreciation of the students' work-roles and responsibilities.</td>
<td>• 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.</td>
</tr>
<tr>
<td></td>
<td>• Consider how learning tasks can encourage students to interrogate their existing beliefs and consider new perspectives that they are exposed to.</td>
<td>• Engaged 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.</td>
</tr>
<tr>
<td></td>
<td>• Focus on the desired learning outcomes and recognise that there may be multiple ways for students to gain and evidence their learning through integration with other, concurrent, workplace roles and responsibilities.</td>
<td></td>
</tr>
<tr>
<td>Principle</td>
<td>Guidelines for implementation</td>
<td>Manifestation in the learning environment</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td><strong>3. Provide opportunities for meaningful, collaborative construction of knowledge within the learning community.</strong></td>
<td><strong>Staff should:</strong>&lt;br&gt;• Design learning activities that invite students to work together in order to achieve mutual goals.&lt;br&gt;• Encourage students to contribute altruistically to the learning community, recognising that many students will bring considerable experience and knowledge to the community and be willing to share that with others.&lt;br&gt;• Integrate opportunities for students to peer review each other’s draft assignments, recognising this collaboration will build skills that will be valued during and after university study.&lt;br&gt;• Supported to work collaboratively in each unit within the course. Activities such as collaboratively created wikis, blogs, group journals and the online discussion forum activities will be included to ensure that all students have regular opportunities to engage and learn with and from each other.&lt;br&gt;• Encouraged to be actively involved in the student community in areas where they feel comfortable and competent, drawing upon their previous experiences in teaching or learning environments.</td>
<td><strong>Students are:</strong>&lt;br&gt;• Supported to work collaboratively in each unit within the course. Activities such as collaboratively created wikis, blogs, group journals and the online discussion forum activities will be included to ensure that all students have regular opportunities to engage and learn with and from each other.&lt;br&gt;• Encouraged to be actively involved in the student community in areas where they feel comfortable and competent, drawing upon their previous experiences in teaching or learning environments.</td>
</tr>
</tbody>
</table>

<p>| <strong>4. Encourage the development of a professional identity through collegial interactions.</strong> | <strong>Staff should:</strong>&lt;br&gt;• Role model a professional identity in all communications with students.&lt;br&gt;• Encourage students to see themselves as professionals, and communicate an expectation in activities such as discussion forums.&lt;br&gt;• Design activities that require students to adopt leading roles in activities, while remaining in a supportive role.&lt;br&gt;• Encourage students to investigate and consider membership in a variety of professional bodies and community groups.&lt;br&gt;• Incorporate activities such as web-conferences and campus gatherings that include experts from related fields and enable students to develop their skills in professional communication. | <strong>Students are:</strong>&lt;br&gt;• Encouraged to take on a variety of roles within the university learning community.&lt;br&gt;• Actively involved in collegial discussions and negotiations, developing the attributes that are expected by graduation and form part of professional accreditation and membership in the teaching community.&lt;br&gt;• Engagement in 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. Through activities designed to require collaboration and cooperation, students will need to be able to explain their own stances on particular issues and contexts.&lt;br&gt;• Invited to seek membership of communities beyond the university community.&lt;br&gt;• Encouraged to 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. |</p>
<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment</th>
</tr>
</thead>
</table>
| **5. Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings.** | - Consider the ways in which assessment tasks can be designed to allow students to integrate their own workplace contexts into the task requirements.  
- Be prepared to allow students to modify some aspects of the assessment tasks in order to maximise its value in real workplace contexts, while retaining the inherent requirements of the task.  
- Create assessment tasks that result in a product that students will see the value of beyond the marking process.  
- Incorporate opportunities for students to collaborate and/or peer-review, seeing such activities as valuable in developing the desired graduate attributes.  
- Be aware of current issues and challenges in authentic workplaces and consider how assessment tasks can help to address these challenges. | - Required to complete assessment tasks that draw upon the required skills and knowledge in their future workplaces, and which acknowledge the complexity and subjectiveness of such places.  
- Supported in creating practical products that will be meaningful for students in their daily teaching practices.  
- Required to collaborate with others as part of the assessment preparation process, recognising the context of the real working world.  
- Invited to integrate formative feedback from peers and teaching staff, with a view to develop valued graduate attributes such as problem solving, communication and independent thinking.  
- Required to 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 (in other words, the learning and assessment activities may be integrated). |

| **6. Encourage student ownership of learning.** | - Consider ways in which students can take more control of their learning approaches as they progress in the course.  
- Design activities that encourage students to consider how they can integrate their studies with real challenges in their workplaces.  
- Continue to provide support to students while inviting students to take increased responsibility for their learning.  
- Communicate with students in ways that acknowledge and respond to the experience that they have gained in other contexts, and encourage them to have greater confidence in their ability to take ownership of learning. | - 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.  
- Invited 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.  
- Supported to take an 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.  
- Invited to take on a supportive role themselves, particularly with their less experienced peers. |

Chapters 4 and 5 describe the framework and its enactment in the design of the learning environment. At the conclusion of Phase 2, six draft design principles had been
Phase 3: Iterative cycles of testing and refinement of solutions in practice
Within the Bachelor of Education (Applied Learning) course, 10 semester-long units were developed according to the design principles identified in Chapter 3. There were three iterations of testing and subsequent refinement of the design principles and their instantiation into the course (3 units in Iteration 1, 5 units in Iteration 2 and 6 units in Iteration 3), with the increasing number of units reflecting the progressive development of the course (see Appendix B for details of the units each iteration). Each iteration consisted of one semester (13 weeks). Data were collected after each iteration, with the findings informing each subsequent iteration.

It is important to note that while each iteration was informed by the findings of the iteration that preceded it, the nature of the course offerings meant that each iteration had a different set of units being delivered, and hence, was unique. While one unit (EAL102) was delivered in all three iterations, there were, of course, different students enrolled each time and the content of the unit was also subject to change for reasons unrelated to the investigation.

The iterative cycles of testing and refinement were, therefore, conducted through consideration of the course as a whole and the experiences of the participants, investigating what had occurred in each cycle and refining the manner in which the solution was being applied. Focus groups and interviews were conducted between semesters (iterations) and the subsequent analysis led to refinement and enhancement over the next iteration. This approach is consistent with the intentions and purpose of design-based research as the methodology does not aim to prove that one particular approach is better than another—rather it seeks to progressively improve a solution through testing, reflection and refinement (Reeves, 2006). To this end, the findings are presented through the lens of each design principle, reporting on what was learnt through successive testing and refinement of each principle over the three iterations of the investigation.

Research site
There were three major sites for data collection:
1. The online learning environment (MyLO), which included discussion forums, assessment items, practicum blogs and other electronic communication with lecturers.

2. The University campus (in two locations, Hobart and Launceston, Tasmania) for focus groups and interviews.

3. The TasTAFE campus (three locations: Hobart, Launceston and Devonport) for interviews.

**Participants**

**Student participants**
All students who were currently enrolled in units of study within the Bachelor of Education (Applied Learning) received an email invitation to participate in the research project. Initial participation was through the completion of an electronic survey. The survey was conducted twice; it was distributed during the first iteration and at the end of the third iteration in order to have data for the start and the conclusion of the investigation. In the first iteration, 93 invitations (see Appendix C) were distributed, and 43 participants began the survey (with 41 completions), representing a response rate of 46%. In the third iteration, 79 email invitations were distributed, and 41 participants began the survey (with 38 completions), representing a 52% response rate. The surveys were completed anonymously.

The final question in each survey invited further participation in the research project. Those respondents who were happy to be available for further participation were then automatically redirected to another survey where they could leave their names and contact details. This way, their original responses in the survey remained anonymous. Of the 43 respondents to the first survey, 31 volunteered to be available for further activities associated with the research project. Of the 41 respondents (who would have included some current participants) in the second survey, 14 additional respondents offered to be available for further research activities. This meant that a total of 45 respondents offered to be part of further research activities. Those participants then received an email with the information sheet and consent form (see Appendix D), for completion and return to the researcher.

Over the period of the study, there were 31 female participants, and 14 male participants who participated in further activities. Their ages varied from 25 to 67 years, with an average age of 44. Most (29, or 66%) lived in Tasmania, and some in Queensland (6, or
14%), with the remainder living in other mainland states (Western Australia, New South Wales or Victoria). Pseudonyms are used for all of reported findings in this study.

**Academic participants**

There were 12 academic participants in this study. Of these, three (including the researcher) were involved in all three iterations and nine were involved only in the second iteration, when emergent findings from the first iteration triggered an extra research activity; two focus groups were conducted to explore staff perceptions of authentic assessment. Similarly to the student participants, pseudonyms are used, with ‘Janet’ being the pseudonym for the researcher.

**Research methods**

In order to gather credible data that best responded to the research questions (O’Leary, 2004), a number of methods were selected for the study including surveys, focus groups, interviews and collection of relevant documents produced by participants. Table 9 provides an overview of research process and the methods employed in each iteration. Following this, each of these methods is briefly reviewed and positioned within the context of the study.

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Surveys</th>
<th>Focus Groups</th>
<th>Interviews</th>
<th>Document collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tbody>
</table>

**Surveys**

Two surveys were conducted as part of the study: during the first iteration and at the conclusion of the third iteration, in order to gain the most useful picture of changes over the entire period of investigation. Each survey was created, distributed and completed electronically, using Qualtrics online survey software held under licence by the University. Both surveys served as a recruitment tool for student-participants and as a data source to inform the subsequent focus groups and interviews. Surveys were completed anonymously, with participation being highlighted as signalling consent to become a participant for at least that aspect of the investigation.

The survey consisted of a number of open and closed questions (see Appendix E), and sought the respondents’ views on a range of issues related to their expectations, preferences and experiences in the course as well as some personal information such as
educational background and employment status (Mason, 2013). The open questions allowed for text entry, while the closed questions required participants to either choose from a list of responses, rank particular responses, or select from a Likert type of scaling (O’Leary, 2006). Each survey was open for a period of two weeks, with two email reminders circulated. On closure of the survey, the results were downloaded in two formats, Excel and Word. Qualitative data were uploaded into NVivo, for subsequent coding and analysis. A descriptive analysis of the results was completed shortly afterwards, and this informed the focus groups and interviews that followed.

**Focus groups**

Two focus groups with student-participants were conducted during each iteration (six focus groups in total). To encourage greater participation, focus groups were held in a variety of locations around Tasmania, usually in a TAFE or University meeting room. In addition, one focus-group was via web-conference, in order to facilitate the participation of interstate students. All participants were invited to attend the focus groups and provided with details of location, date and time. On average, approximately 6-10 participants attended each focus group. Some participated in only one focus group, while others attended multiple focus groups over the research period. While this form of participation represents volunteer sampling (O’Leary, 2006), each focus group was assessed as gaining a representative view of the overall participant cohort.

The researcher organised and facilitated all but one focus group. The last focus group was led by an academic who did not teach in the program nor was part of the study in any way, in order to allow ‘fresh eyes and ears’ to engage with the participants and their responses. This proved to be a worthwhile strategy, as participants needed to explain things in greater depth in order to help her understand. As identified by Patton (2015) there is a balance between ensuring a trusting and relaxed atmosphere, and ensuring that data collection tools are structured in a way to capture the most useful and relevant data.

The gatherings for each iteration had a particular focus. In the first iteration, the focus was on identifying when, and the extent to which, the course felt most applied and authentic to students. This focus was a result of the findings from the initial survey, which indicated a diversity in the degree to which students believed the course was helping to facilitate a connection between their studies and their roles as teachers. For the second iteration, the focus was on assessment, particularly collaborative assessment. This focus came about after informal discussions with students and staff about the
challenges being experienced at that time in particular units. And finally, the focus
groups in the last iteration focussed on the extent to which participants believed their
own approaches to learning and teaching had changed as a result of their experiences in
the course, and also their perspectives on the design principles underpinning the course.

For each focus group, a set of guiding questions were prepared (refer to Appendix F for
a sample of the guiding questions).

There were also two academic-specific focus groups were held to explore issues
concerning authentic assessment. The nine academic staff members who participated in
one or other of these focus groups taught within the Faculty but not in units that were
under the influence of the design principles guiding this study. These focus groups were
held on-campus, and volunteered to participate after responding to a Faculty-wide email
invitation.

**Interviews**
Semi-structured interviews (O’Leary, 2006) with individual participants followed the
focus groups. For each iteration a minimum of four interviews were conducted, either in
a face-to-face context or via telephone. A list of questions guided the interviews (see
Appendix G for an example), which aimed to be completed within 45 minutes. The
interviews sought to deepen the researcher’s understanding of particular experiences or
issues that were identified in the focus groups or from other data, such as documents
retrieved from MyLO (e.g., a discussion board posting, a blog entry or an assessment
submission). Thus, the selection process for interviews represented a ‘handpicked
sampling’, mindful of gaining appropriate representativeness while exploring “the limits
or boundaries of a situation or phenomenon” (O’Leary, 2006, p. 110).

To minimise any potential risk to trustworthiness, dependability and confirmability, the
researcher took great care to conduct the interviews in a professional, ethical manner and
to minimise to all practical extents the risk of her own body language and spoken words
leading interviewees in a particular direction or portraying judgement on anything that
was proffered during the conversation. In many cases, the interviews sparked further
exchanges as either the researcher or the participant sought to extend or deepen shared
understandings. Overall, it was considered that having a personal and professional
connection with the interviewees encouraged a trusting and congenial atmosphere and
facilitated deeper and more meaningful interactions.
All interviews and focus groups were digitally recorded and subsequently transcribed by a commercial provider. Transcripts were then comprehensively checked for accuracy by the researcher, and offered to participants for checking and editing if required (as discussed further in this chapter).

**Documents**
Lincoln and Guba (1985, p. 277) describe documents as material, either written or recorded, that were produced for a specific personal or professional reason rather than in response to a request by the researcher, and the term is used with this meaning here.

Documents collected in this research project included discussion forum postings, extracts from assessment submissions, unsolicited emails from students and artefacts from ePortfolios or blogs. Such documents offered a useful form of evidence that could then be further investigated through another research method, such as an interview. Given that they were produced without consideration of the research, they also provided a way of corroborating particular views or perspectives of participants, and hence, strengthen any conclusions drawn.

**Summary of participation**
There were 41 participants who completed the first eSurvey and 38 who completed the second eSurvey. Some respondents may have completed both eSurveys, while some may have completed either the first OR second survey. In total, 44 respondents agreed to participate in further activities related to the research study. Over the 3 iterations (18 months) of data collection, 34 participants were involved in further activities, including interviews, focus groups or document collection. The manner of their involvement is reflected in Table 10, below.

<table>
<thead>
<tr>
<th>Iteration</th>
<th>eSurvey n =</th>
<th>Focus groups n =</th>
<th>Interviews n =</th>
<th>Document collection n =</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>41</td>
<td>12</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>n/a</td>
<td>10</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>16</td>
<td>7</td>
<td>16</td>
</tr>
</tbody>
</table>

**Data Analysis**
For this study, the qualitative data analysis involved “organising, accounting for, explaining the data, in short, making sense of the data in terms of the participants’ definitions of the situation, noting patterns, themes, categories and regularities” (Cohen, Manion & Morrison, 2000, p. 147).
A rigorous and systematic approach was adopted to the data storage and analysis process. To begin with, *NVivo* was selected as the primary application to store, sort and analyse the qualitative data as it was collected. Creswell (2013) contends that the research stages of data collection, analysis and reporting are both interactive and iterative in qualitative research and this was the case in this study with the researcher inductively seeking more data in response to initial analyses. This process aimed to achieve what Cohen and Manion (1994) refer to as a “theoretical completeness, when the theory is able to explain the data fully and satisfactorily” (p. 494). Aligned with Miles and Huberman (1994), the analytical process aimed to produce results that were ‘thick’ with description and represented multiple data sources from a sustained period of time.

Data for analysis came from all the activities described above. All data were converted into a format that could be uploaded into *NVivo* and subsequently coded. For example, postings from discussion forums were copied and pasted into a Word document, as were blog postings and extracts from assessment submissions. Focus groups and interviews were digitally recorded and transcribed, then uploaded as Word documents. Qualitative survey data were uploaded as either Excel or Word documents (the Qualtrics survey application offers a number of ways to represent the results). All data were stored using the ‘Sources’ set-up in *NVivo* with the first level of division being the iteration number, then the secondary level of classification being the activity type, for example: interviews, focus groups, documents.

An inductive analytical approach was used to examine the data, with a particular focus on meaningful or symbolic content. The data were explored using the constant comparative method (Glaser & Strauss, 1967), which involves an iterative process of reviewing, sorting, assembling and coding the data to enable themes to emerge and theory to be ‘grounded’ in the data.

**Data coding**

Creswell (2013, p. 186) describes coding as “the process of organising the material into chunks or segments of text before bringing meaning to information” and, pragmatically, Miles and Huberman (1994) note that codes are “efficient data-labelling and data retrieval devices” that “empower and speed up analysis” (p. 65). The *NVivo* application uses the term ‘node’ to describe each unit of analysis, and the name of each node was typically a word or abbreviation that served as a logical representation of the data assigned to it. For this study, a combination of *a priori* and *inductive* codes were used (Johnson & Christensen, 2004). The *a priori* codes were closely connected to the design
principles, their theoretical underpinnings and the research questions developed for the study, while the inductive codes were responsive to new or unexpected data that emerged. There were six *a priori* codes for each iteration, and a further 24 inductive codes for the first iteration, 29 inductive codes for the second iteration, and 17 inductive codes for the third and final iteration (see Appendix H for the a priori and inductive codes for each iteration).

The first level of coding represented what Strauss (1987) refers to as open coding, which was then followed by a process of axial coding, which responds to the relationships and connections between the units of analysis. The axial codes recognised the overarching categories for related groups of codes, while acknowledging that some codes were valid in more than one category. The process of considering the different codes, making comparisons, merging codes and moving data within and between categories was a valuable aspect of the analysis, and in this respect it is considered that the process “resonates with the methodological notion of triangulation” (Cohen, Manion & Morrison, 2000, p. 151).

**Analysis approach**
The data analysis process adopted the approach of Miles and Huberman (1994) of data reduction, data display, and conclusion drawing and verification (p. 10-11). This was deemed the most appropriate approach because it allowed these three aspects to be interwoven throughout the data collection process in an iterative manner, as depicted in Figure 4.

![Figure 4: Interactive model of data analysis (Miles & Huberman, 1994)](image)

Data reduction is the “process of selecting, focusing, simplifying, abstracting, and transforming the data” (Miles & Huberman, 1994, p. 10). In this study, this occurred continuously from the start of the data collection period and included coding, clustering
into themes, removing duplications and extricating data from large documents. The NVivo application has the capacity to allow the user to organise a wide variety of displays of data according to specific criteria, such as date, participant, coding, location, data source and so on. This enabled any potential weaknesses (e.g., an over-reliance on data from one particular source) to be identified and responded to. The data display, therefore, also became part of the analysis process, ensuring a systematic approach to verify the plausibility, sturdiness and confirmability of any early conclusions.

The third activity in the analysis process is conclusion drawing and verification (Miles & Huberman, 1994), while holding any early conclusions “lightly, maintaining openness and scepticism” (p. 11) and recognising that over time the conclusions should begin to become more explicit and grounded (Glaser & Strauss, 1967). There was, as suggested by Cohen, Manion and Morrison (2000), a developing shift from description, to explanation to theme development.

By the end of Phase 3, data had been collected for three iterations, enabling a rich picture to emerge of the experiences of participants in the study over a sustained period of time. The findings from each iteration were able to inform the next, facilitating a growing understanding of the impact of the design principles on the course that was the focus of the study. This understanding marked the final phase in the study, which will be described next.

**Phase 4: Reflection to produce design principles and enhance solution implementation**

This final phase was conducted during 2015. While design-based research often aims to result in a ‘tested’ technology-based product (Reeves, 2006), this particular study aimed to produce a tested set of design principles that could guide teacher-educators who sought an applied, authentic online learning environment for non-traditional learners. The final phase, therefore, consisted of a period of reflection, consolidation, further literature searching and conclusion-making. The end product, a set of tested design principles, needed to respond to the requirements of rigorous research (Denzin & Lincoln, 2011) and appropriately represent the findings from the previous phases of the study.

**Ethical considerations**

Guided by the *National Statement on Ethical Considerations in Human Research*, produced by the Australia Government (2007), the researcher sought to anticipate and
address any ethical issues that might arise during the research, with particular concern for “respect for human beings, research merit and integrity, justice and beneficence” (p. 9). All the required approval processes were completed before the commencement of the study, and in accordance with Murdoch University (degree location) and the University of Tasmania (study implementation location) guidelines. With this study, there were a number of particularly important aspects related to ensuring ethical behaviour, and these will be discussed now.

**Researcher role**

In design-based research, researchers, practitioners, and participants often work together to achieve meaningful improvements in educational settings (van den Akker, et al., 2006). Putnam and Bork (2000) suggest that “rather than pretending to be objective observers, we must be careful to consider our role in influencing and shaping the phenomena we study” (p. 13). Apart from being aware of the potential impact of researchers with multiple roles, the most important response is to “strive for unobtrusiveness through making the research setting as natural and genuine as possible” (McKenney, Nieveen & van den Akker, 2006, p. 83).

In this study, the researcher held multiple roles, including lecturer, unit coordinator, course coordinator, researcher and participant. Additionally, the researcher had established relationships with some of the participants whom she had known through her prolonged involvement with the VET sector or their previous studies at the University. There are advantages to be found in multiple roles, including greater exposure to potentially useful and relevant data, and a capacity to interpret data in a more informed manner (Cobb et al., 2003).

There was a comfortable familiarity between many of the participants and the researcher, which encouraged a greater level of trust and willingness to share their experiences. This was evidenced in the confidence of participants to contact the researcher independently to share their thoughts on particular aspects of course design, or to correct the researcher if they thought she had misinterpreted their communications. As adults, the participants were able to draw upon significant experience as students as well as teachers and designers in their own right, which added significantly to the value of their contributions. There was a general feeling (often communicated with a gentle sense of humour) that this was a ‘team’ study and participants contributed with enthusiasm and commitment. Many appeared to recognise the benefits of examining and exploring the approach taken
in the learning environment (Loughran, 2009), and deepen their skills and confidence to collegially discuss the advantages and disadvantages of particular pedagogical approaches. The research study felt, therefore, appropriately aligned with the educational aims and intended outcomes for participants.

Conversely, the multiple roles of the researcher meant that there were potentially some risks to the validity and reliability of the study, which therefore required consideration and an appropriate response. For example, given that the researcher operates within the interpretative paradigm and accepts, therefore, the unavoidability of her own values and beliefs potentially influencing her interpretation of the findings, it was decided that there would only be a limited drawing upon her own reflections and contributions to the data set in order to ensure fair representation. The pseudonym ‘Janet’ has been used for the researcher’s contributions to the data set.

In relation to her role as a lecturer within the program, there was also a consideration of students who chose to become a participant in the study. Possible risks identified were that:

1. Students could feel pressured to become participants in the study;

2. Participants could feel pressured to say (or refrain from saying) certain things in the study instruments; and,

3. Participants might feel that their academic results could be influenced by their responses.

The specific strategies taken to reduce these risks were:

1. The invitation to participate in the study was sent by a research assistant independent of the course and the researcher;

2. All students were clearly advised that their participation (or decision not to participate) will not affect their academic results;

3. Participants were advised that any identifiable or re-identifiable data would only be collected after unit results have been finalised in each iteration;

4. The electronic surveys were administered by a research assistant who was independent of the course;
5. The results of the electronic survey were not be accessed until after results were finalised for the associated semester;

6. Any data that was identifiable or re-identifiable could be withdrawn from the study at the request of the participant, if he/she chose to withdraw from the study at any time; and,

7. A participant ‘advocate’ was appointed who was independent of the course and was able to give advice to any participant at any stage of the study.

The strategies to minimise risk appear to have been effective. The researcher is not aware of any concerns or issues that were experienced by students or participants as a result of the study. Rather, there are indications that it was a beneficial experience for those involved. For example, many participants were willing to be involved in a number of research activities over the 18 months of data collection and were keen to read the thesis on completion of the study.

In relation to the presentation of data in this thesis, pseudonyms have been for all participants to ensure anonymity. Within the thesis, a consistent approach has been adopted to identify the source of data that is represented in the findings. Following each extract presented from the data, the pseudonym is provided, then the data method, then the iteration number. Abbreviations have been used in this process, and are shown in Table 11.

Table 11: Codes and their associated activity

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>Interview</td>
</tr>
<tr>
<td>FG</td>
<td>Focus Group</td>
</tr>
<tr>
<td>EM</td>
<td>Email</td>
</tr>
<tr>
<td>eS</td>
<td>Electronic Survey</td>
</tr>
<tr>
<td>AT</td>
<td>Assessment Task</td>
</tr>
<tr>
<td>eP</td>
<td>Electronic Portfolio</td>
</tr>
<tr>
<td>DBP</td>
<td>Discussion Board Posting</td>
</tr>
<tr>
<td>SD</td>
<td>Staff Discussion</td>
</tr>
<tr>
<td>IT1</td>
<td>Iteration 1 (February – June, 2013)</td>
</tr>
<tr>
<td>IT2</td>
<td>Iteration 2 (July– November, 2013)</td>
</tr>
<tr>
<td>IT3</td>
<td>Iteration 3 (February – June, 2014)</td>
</tr>
</tbody>
</table>

An example is provided below:

I love being able to sit down and talk to somebody face-to-face. To me, that’s just more real and you can go off on a tangent, you can explore something in depth, and it’s hard to do that in writing. (Emma, IT1, IN)
This extract represents data from Emma (pseudonym for the participant), who volunteered this data in an interview (IN) in the first iteration of the study (IT1).

**Trustworthiness in qualitative research**

The interpretive nature of qualitative research is an obvious threat to an inquiry’s reliability and validity (Cohen, et al., 1994). Lincoln and Guba (1985) suggest that the concepts of *credibility, transferability, dependability* and *conformability* are more appropriate replacements, and hence will be considered in relation to this study. Altheide and Johnson (2011) suggest that “All theories, concepts, and findings are grounded in values and perspectives; all knowledge is contextual and partial; and other conceptual schemas and perspectives are always possible” (p. 581-582). Ultimately, however, qualitative research, and design-based research in particular, aims to improve educational interventions through an objective approach that may involve the dual roles of being an advocate and a critic of a particular design.

In order to identify and respond appropriately to any deeply held assumptions, design-based research “typically triangulates multiple sources and kinds of data to connect intended and unintended outcomes to processes of enactment” (Design-based Research Collective, 2003, p. 7). In the case of this inquiry, the criss-crossing in the analysis process between documents, focus groups, interviews, and other interactions with both student and academic participants allowed for the comparison and contrasting of evidence, and built confidence that the conclusions emerged from the data in a comprehensive and valid manner. Aspects of trustworthiness will now be discussed further, beginning with credibility.

**Credibility**

Creswell (2013) suggests that credibility in any findings can be raised in a number of ways, such as the researcher spending a prolonged time in the field, experiencing the participants in their actual setting as much as possible and gathering the ‘thick’ descriptions of settings and perspectives promoted by Miles and Huberman (2011). Acknowledging that the researcher and her academic peers were likely to hold particular beliefs and biases, a heavy reliance was given to the student-participant voice, as this was considered the best source to respond to the research questions and reduce the potential for researcher-bias in the results.
Transferability
Lincoln and Guba (1985) suggest that transferability is a more appropriate concept in qualitative research than generalisability, while still pertaining to the potential for the findings to be transferred to other settings. Responding to the questions suggested by Miles and Huberman (1994, p. 279), this study aimed to:

- Fully describe the characteristics of the participants and the research site, in order to permit adequate comparisons with other samples;
- Gather ‘thick’ descriptions to enable readers to assess the potential transferability to their own settings;
- Ensure that the findings are connected with prior theory; and,
- Describe processes and outcomes in a way generic enough to be applicable in other settings.

Dependability
Qualitative research tends to respond to the dependability of findings rather than reliability, as the latter term is more associated with results being consistent over time, while dependability focusses more on consistency across researchers and methods (Miles & Huberman, 1994). In this study, dependability was addressed by ensuring that:

- The design and implementation of the study were clearly articulated and adhered to;
- Data were collected over a full range of methods, time and respondents;
- Coding was reviewed by colleagues to check for bias; and,
- Connections with theory were clearly specified and considered throughout the study.

Confirmability
Confirmability considers the “relative neutrality and reasonable freedom from unacknowledged researcher biases” (Miles & Huberman, 1994, p. 278) and, if achieved, ensure that the findings are a result of the subjects and conditions of the inquiry (Lincoln & Guba, 1985), rather than the personal beliefs of the researcher. In this research study, the nature of the participants (both students and teaching staff) contributed to the confirmability of the findings, as all participants were experienced educators in their own right and, generally, were confident to challenge the researcher on any possible assumptions or biases.
Summary of methods to ensure rigour
A full range of strategies were employed to respond to the criteria of credibility, dependability, transferability and confirmability of the conclusions and the overall rigour of this study. These included:

- The provision of a clear description of the research approach and methods used;
- Detailed information about the participants and the research site;
- Situating the research in an authentic educational context and over an extended period of time;
- Seeking data from a wide range of participants and research methods;
- Providing rich descriptions that are reflective of the participants’ experiences;
- Involving the participants in the meaning-making processes and encouraging their examination and challenging of findings;
- Consistently engaging in self-reflection and examination to ensure that researcher bias did not influence the data analysis process and subsequent findings and conclusions.

Conclusion
This chapter has argued that design-based research offers a suitable methodology for exploring the experiences of students in an online teacher-education degree that aims to provide an applied, authentic approach to the learning environment. It has detailed the methodological processes in this approach, and outlined the phases, methods and procedures of data collection and subsequent analysis. Issues relating to the ethical conduct of the study and the role of the researcher have been addressed and claims for credibility have been justified.

The next chapter describes the design and development of the learning environment which instantiated the draft design principles articulated in Chapter 3.
CHAPTER 5

The learning environment

This chapter provides an overview of the learning environment designed as a response to the problem described in Chapter 1, together with examples of typical activities that were embedded within it. A number of screen-shots of the online learning platform are provided, along with descriptions of other components of the course, such as the Professional Experience (PE), or practicum, component.

As described earlier, Phase 1 of the study involved an investigation to better understand the problem. This included consultations with prospective students, their employers and the professional body overseeing teacher-registration for graduates (Chapter 1), as well as an initial review of relevant literature from research findings (Chapter 2). The next step was to conduct a second literature review, exploring research findings that might be able to inform the theoretical foundation for a potential solution (Chapter 3). For each of the six elements, a range of frameworks, models and theoretical concepts was examined, identifying key aspects that would be likely to help with the challenge of appropriate course design. The second literature review enabled six draft design principles to be formed, as described in detail in Chapter 3. The design principles would guide a response to the problem, by supporting the applied learning focus and fostering a productive and engaging online learning environment (as listed in Table 8 in Chapter 4).

Enactment into the learning environment

Once the design principles were articulated, teaching staff met to discuss how they would be enacted. To begin, a course philosophy was created that complemented and supported the design principles and which, as the course grew, would enable new teaching staff to understand the approach sought in the program. At the commencement of the study, the course was still in its infancy, with approximately 100 students enrolled and two full time teaching staff members (the researcher and one other). By the end of the study, several other teaching staff were involved in a number of units on a part-time basis, either as unit coordinators or tutors. The design principles were discussed with new staff members, whether they were teaching or tutoring in the program, as part of the induction into their role.
An overview of the learning environment is presented below, with the chapters that follow this one providing more specific details of how each principle was enacted. The overview intends to provide information on the specific learning platform as well as other aspects of the course, such as the practicum component and the integrated nature of the ePortfolio. Several screen shots within this chapter will provide a useful resource to better understand the learning environment that participants were engaged in. To begin with, however, the online learning platform will be introduced.

**The online learning platform**
The course that was guided by the design principles was offered in a fully online mode of study, and it comprised 32 semester units, each of 13 weeks duration. The online learning environment at the University was known as MyLO (My Learning Online) which was underpinned by the Desire2Learn Learning Management System. From their ‘home-page’ within MyLO, students could access the units they were currently enrolled in. For fully online students, the MyLO presence would typically include access to essential documents such as the Unit Outline, and a content area that typically contained a number of learning ‘modules’ and a weekly schedule to guide students. The learning modules usually included links to desk-top recordings and notes from lecturers, plus a variety of other resources such as scholarly readings, videos and podcasts. Through MyLO, teaching staff provided opportunities for students to engage in discussion forums and other collaborative tasks and activities, and it also served as the submission and review portal for assessment tasks. As a guide, students were expected to be engaged for 10 hours per week, per unit, including preparation time for assessment tasks.

**Approach to the design of units of study**
It was essential that the design of the units reflected the enactment of the design principles. Although teaching staff were encouraged to have ownership over the ‘look and feel’ of their own units, there was an expectation that students would experience a consistent instantiation of the design principles. For example, all units encouraged students to be actively involved in their learning, engaging with their peers and contributing to the development of an online community. Teaching staff were expected to respond promptly and positively to student postings in the forums, or to emails seeking advice or support. Teaching staff met regularly to discuss how their units were progressing and to share ideas about new strategies or activities that could better reflect the enactment of the guiding principles. Staff discussed ways in which students might be
able to combine assessment tasks from different units, as part of the flexible approach to assessment.

A typical example of learning content held within MyLO for units that were the focus of this study is shown in Figure 5.

Figure 5: Screen shot of learning content in MyLO

This screen-shot reflects the ‘home-base’ nature of the lecturer’s notes, and shows the links to videos, discussion forums, scholarly articles, and so on. The use of icons aimed to help students become familiar and comfortable with a range of activities that would appear in most of their units.

All units guided by the design principles also utilised the Blackboard Collaborate web-conferencing system. In a web-conference, participants communicated through audio,
text-chat or video and were able to engage in web-tours led by the moderator (usually the teacher). Anyone with a computer and internet access could join a web-conference, so it allowed teaching staff to have guest presenters (such as representatives from industry or specialist consultants) to join a session, regardless of their location. Web-conferences were recorded and could be accessed any number of times after the event through a web-link to the Blackboard Collaborate platform. A screen shot of a typical web-conference is shown below, in Figure 6.

![Figure 6: Screen shot of a web-conference in a unit](image)

The online learning environment could also include other web-based applications. For example, some units of study utilised wikis using the web-application *Wikispaces* while others used *My Brainshark*, which enabled students and staff to make narrated Powerpoint presentations and share these collegially via a hyperlink to the associated URL (Uniform Resource Locater). A screen shot of one wiki page is shown in Figure 7.
Professional experience

All students were required to complete 80 days of supervised Professional Experience (PE) during their course of study. Importantly, the PE component was embedded within specific units rather than being an activity independent of course-work (see Appendix I, which describes the course structure). This arrangement was in contrast to other teacher-education programs at the same university, where students were not expected to do anything other than focus on their placement; no other learning or assessment tasks were to be scheduled. The alternative PE structure in the course that was the focus of this study reflects the enactment of the course design principles—specifically to encourage a greater connection between theory and practice. There was a specific focus for each placement (applied learning in Year 1, inclusive education in Year 2, Literacy in Year 3, and the national professional teaching standards in Year 4). The focus formed a lens through which the student critically examined their experiences on placement, linking their theoretical studies with what they were experiencing.

Teaching staff actively planned for how students could apply what they were learning in those units and engage in critical discourse on the affordances and challenges of that focus area within a variety of educational contexts.
Following AISTL requirements, students on school placements were supervised by a classroom teacher, who was referred to as their colleague teacher (CT). Prior to the placement, each CT received information about the student that they would be supervising and about the course itself. This was important because most of the students were quite different to the traditional ‘student-teacher’, often arriving at their placement with considerable experience of teaching in VET settings. This was considered both a strength (they may well have already mastered some of the required competencies that their CT needed to assess against) and a vulnerability (the students could have well-established beliefs or practices that were in contrast to accepted good practice in school environments and needed to be challenged).

**ePortfolio**

From the outset of course design, the integration of an electronic portfolio (ePortfolio) was considered an important inclusion. An ePortfolio is commonly hosted on the Web and might include text, attached files, images, multimedia (such videos), and hyperlinks to other relevant sites. Many ePortfolios have a ‘blog’ feature, allowing the user to make discrete entries (‘posts’) that are generally more informal than other artefacts within the ePortfolio, and are displayed in reverse chronological order. One of the features of many blogs is the capability for other people to make comments on posts, and hence initiate online discussions.

During the period of this study, students created their ePortfolio in Pebblepad or the embedded ePortfolio tool in MyLO, depending on their enrolment date. There was technical support for both platforms, particularly from one staff member who coordinated the first unit in the course where all students established their initial ePortfolio. Students were encouraged to take ownership of their portfolio, with a minimum requirement in most units for some artefact inclusion, and an invitation to extend further if they wished. One of the most important tasks for students was to maintain a blog (linked to the main ePortfolio) whilst participating in their PE placements. As well as recording their experiences and reflections in this blog, students were encouraged to review and comment on their peers’ blogs, as well as inviting their colleague teachers (from the placement) and their university teachers to view and comment as well. Professional standards in regard to photographs or identification of children (from the practicum placement) were clearly communicated and upheld. Figure 8 depicts the instructions provided to students in relation to their first PE blog, and
Figure 9 and Figure 10 provide examples of student blogs and the peer conversations that accompanied them.

Figure 8: Guidance to students for their blog in PE1
Today I was responsible for planning and presenting the morning session to the UNL students. Thinking I was fully prepared I arrived at the Glenorchy Library to find that we had been moved from the visual room complete with computers and overhead projector systems to a smaller room at the back of the Library. There was only a whiteboard on the wall. Lyn had put up a mobile projector and fortunately for me, she knew how to operate it. My lesson was primarily a visual presentation, beginning with a follow-up video to one I had shown early in the program. “In the eye of the storm,” Jane Elliott, a teacher of third graders in the 1970’s, experimented by dividing her class into two groups - brown eyes and blue eyes to give the students a first-hand experience in the meaning of discrimination. It is a powerful video and certainly had an impact on the students. The video showed is 14 years later with the students discussing the effect her lesson has had on their lives. The aim of the session is to build on previous learning and link it to the students role in a work environment situation.

After watching the video the students were asked to discuss the issues as a group.

Strategies used to encourage the discussion were the use of open ended questions about
- Changes in attitudes
- Significant changes to society
- Highlighting the unique role of educators in childcare
- The opportunity for children to learn through the actions and words of the carer (role models) - acceptance of others is good and prejudice is not.
- Teachers as agents of change - teaching others to think critically about such issues they can model inclusiveness and social justice (Carrington & MacArthur, 2012)

The students really opened up during the discussion, voicing their opinions, agreeing, disagreeing, debating, sharing information and knowledge. Very positive outcomes - showing respect for each others opinions, acknowledging differences. One of the RAI students explained how difficult her search for a job that she had been doing for the last four years. The need for a job is clear but she had realized that she was not taking the initiative to find one. She is a refugee, she is a migrant with a Tasmanian University qualification who has married an Australian, they have a child now.

Cheers

Lyn

Others: Lyn has also been working on an RAI for the requirements for 2014. - all this while on 2 weeks leave - maybe I should be doing this.

As Jack says there is a lot of:

"off class" planning and organizational skills necessary for on the job teachers.

This blog is a great outlet for sharing ideas and for communication between students etc. I’m really enjoying being involved. Thanks for letting me ramble.

Cheers

Lyn

Thanks for your input Lyn and confirmation that this process is not only beneficial for me as a student learning from “doing” but for my colleagues as well. This really hits home the Applied Learning principles don’t you agree?) The whole experience has reinforced my opinion of what the Bachelor of Education (Applied Learning) has provided me. A course that practices what it preaches by engaging students in motivating and challenging activities that require collaboration and support using an approach that contextualises learning in a way that empowers and motivates.

Hi Lyn,

It’s great to revisit this blog after some time away and to see that the same level of reflection and linkage to theory has continued through your ongoing involvement with this class. Well done.

I’m also impressed by the collaborative approach you have taken to involve lyn in the reflective process (both within the session and within this ongoing blog).
Unit reviews and reflection on the design principles

As described earlier in this chapter, each unit of study within the course was developed by its Coordinator, who was also responsible for the teaching and assessment of all students. Unit development was guided by the design principles, and regular meetings were held with academic peers and the Course Coordinator to provide input into the planned learning and assessment activities. At the end of each semester (or iteration), each unit underwent a review, taking into consideration student feedback as well as the academic results achieved and any concerns that the Unit Coordinator may have experienced. Units were reviewed collegially, examining the extent to which they had responded to the design principles guiding the course and also the extent to which the design principles enabled or hindered the effectiveness of the unit. In this way, both the design principles and the actual units were potentially able to be altered as a result of the
review process. For example, if student feedback indicated a lack of satisfaction in relation to a particular task, then the task would be examined to see if the task was inconsistent with the design principles. This process continued for all units, in all iterations, enabling a comprehensive picture of the effectiveness of each principle to form.

**Conclusion**

This chapter has presented an overview of the learning environment, describing the Learning Management System (MyLO) and how units were presented within that environment. Examples were provided to illustrate how the principles were typically enacted in a number of units. The Professional Experience component within the course, and the accompanying student blogging was detailed with examples of typical postings to those blogs. Finally, the ePortfolio tool was introduced and examples provided to illustrate the manner in which students gathered evidence of their learning achievements.

The following chapters will examine the findings for each principle in turn, beginning with the Design Principle 1: *Provide learning activities that connect theory and application in authentic contexts.*
CHAPTER 6

Authentically connecting theory and practice

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 (Ash & Clayton, 2009).

In Chapter 5, the design and development of the learning environment was broadly described, including the overall approach to how the design principles were enacted into the units of study that were the focus of this research. This chapter presents the analysis and findings related to the instantiation of the first design principle, which encourages students to make meaningful connections between theory and practice, using authentic contexts to situate their learning activities.

The investigation sought to better understand the student experience in the activities and identify any particular characteristics of those activities that either encouraged or discouraged meaningful learning. The first principle is a key component of the notion of applied learning, where participants are actively engaging in a manner that integrates the application of theoretical understanding to a practical task. Table 12, below, depicts the first principle, along with guidelines for teaching staff and the ways in which it was manifested in the learning environment.

Design Principle 1: Provide learning activities that connect theory and application in authentic contexts

Table 12: Design Principle 1, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Staff should:</th>
<th>Manifestation in the learning environment</th>
<th>Students are:</th>
</tr>
</thead>
</table>
| Provide learning activities that connect theory and application in authentic contexts. | - Design learning tasks that can be completed in authentic contexts, such as students’ workplaces or practicum placements.  
- Encourage students to publicly share the connections they are making between theory and their real-life contexts, through discussion forums, web-conferences and study groups.  
- Work closely with practitioners and other experts in the field, in order to better understand the skills and knowledge required in the workplace. | - Invited to consider their own, authentic, contexts as they are exposed to theoretical concepts within adult education.  
- Involved in tasks that 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, drawing together what has been learnt from a variety of sources and recognising that there is not necessarily a ‘right’ answer.  
- Involved in activities that bring them into direct contact with experts in the field, as well as educational organisations. |
This principle reflects the desired course outcomes identified through meetings with a range of stakeholders, including prospective students and major employers, as well as the accreditation body for the course, the Teachers’ Registration Board of Tasmania. For students and employers, the principle provides reassurance that they would be actively involved in their learning and would be able to apply what they were learning to the real world. For the professional accreditation body, the principle indicates the intention of the course to prepare students effectively for the teaching profession; integrating theoretical understandings with the skills and knowledge required in authentic workplaces. Importantly, for teaching staff it encouraged a move away from a traditional pedagogical approach to one that reflected a more student-centred, authentic and applied approach to real-life contexts.

There were minor changes to the articulation of the principle and enhancement to the way it was enacted over the three iterations of the study. The wording of the principle changed after the first iteration. It was originally *Provide authentic contexts and applied learning activities that connect theory and practice* but after the first iteration it became *Provide learning activities that connect theory and application in authentic settings*. This change was in response to feedback from teaching staff that the first articulation seemed to suggest that they were responsible for actually providing the authentic context. With a cohort that included both current VET teachers and pre-service teachers, this was obviously problematic. Reworded, it provided teaching staff with the mandate to create learning activities that would involve students connecting theory with application, in settings that were authentic. Given the need for the course to prepare students for teaching in online environments as well, it was recognised that scenarios that placed students in the role of teacher within MyLO would also be authentic and, as such, valuable to their professional development.

This chapter aims to respond to three aspects: the enactment of the principle, the findings related to the participant experience of its enactment, and identification of what has been learnt that can contribute to educational practice and theory. To begin with, however, the method of data analysis will be briefly reviewed, with particular reference to this first principle.

**Method of analysis**
A wide range of data were analysed in order to inform how participants experienced the enactment of this principle. As described in Chapter 4, qualitative data (from surveys,
focus groups, interviews and documents) were uploaded into *NVivo* for analysis. The data were explored using the constant comparative method (Glaser & Strauss, 1967), which involved an iterative process of reviewing, sorting, assembling and coding the data to enable themes to emerge and theory to be ‘grounded’ in the data. The coding utilised a combination of *a priori* and *inductive* codes (Johnson & Christensen, 2004), with the a priori codes being closely connected to the design principles, their theoretical underpinnings and the research questions developed for the study, while the inductive codes were responsive to new or unexpected data that emerged. For example, one inductive code that was created for this principle concerned the *challenges* that participants described or experienced in making meaningful connections between a theoretical concept and a real-world practice.

The analysis for this theme began an examination of the descriptive analysis from the eSurvey. The analysis then turned to the data collected from MyLO, considering three particular learning activities and participants’ contributions within those activities. For this theme, therefore, extracts from MyLO including participant blogs and discussion posts were particularly valuable as they captured the experiences of the participants as they were occurring, rather than on later reflection through other methods. Various screen shots were taken from a number of activities, and examined for evidence of theory being connected to application through the activities that the participant was immersed in. This initial analysis informed the subsequent focus groups and interviews that deepened the investigation into the participant experience of the enactment of this principle.

**Findings**

**Overview**

To begin with, the findings were informed by the analysis of the eSurveys. Participants had completed an eSurvey during the first iteration (IT1) of the study, and after the third and final iteration (IT3) of the study. In both surveys, respondents were asked to indicate their level of agreement (from Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree or Strongly Agree) with a number of statements (see Appendix E for the eSurvey instruments). The findings from both eSurveys revealed strong agreement (IT1: 89% \((n=41)\), IT3: 86% \((n=38)\) that the activities in their units of study felt authentic, relevant to the required teacher competencies, and helped them to understand the theoretical concepts in those units. A similarly high percentage (over 90% for both IT1 and IT3) of
participants agreed that they were better able to describe the theoretical underpinnings of their teachings as a result of what they had learnt in their units of study.

In the final eSurvey, participants who were currently employed as VET teachers were asked if they had already changed aspects of teaching practice as a result of what they had learned in their units. Of the 34 respondents, 31(88%) either agreed or strongly agreed that this was true, indicating that the aims of the principle were being achieved.

In order to better understand the experiences of the students, and the ways in which particular activities had helped them to connect theory with practice and integrate their learning into their roles as teachers, a number of enactments of the principle were examined. These findings are considered below.

**Enactment of the principle and findings**
Three learning activities were selected for analysis. The chosen activities represent diverse enactment of the principle and a preliminary analysis indicated noteworthy variability in relation to the student experience in those activities. The findings begin with a consideration of two activities within a second year unit, EAL201 Facilitating Engaging Learning.

**EAL201 Facilitating Engaging Learning**
The purpose of this second-year unit was to increase understanding of the theoretical underpinnings of learner and teacher engagement in a range of contexts, including face-to-face and online, and develop the ability of students to facilitate groups of learners effectively. In particular, this unit aimed to encourage students to reflect on the role of the teacher, and develop strategies that would encourage a more student-led approach in the classroom. The first three weeks of the unit introduced the concept of student (and teacher) engagement and students began a number of activities, supported by a range of resources such as recordings, notes, readings and videos.

**Activity 1 – Connecting theory with practice**
One of the first activities was a relatively simple strategy in which the lecturer encouraged a connection between the work of several theorists and their practical application in educational settings. This activity also served to connect students with their earlier work in a first year unit focussed on educational theories of learning and teaching. After accessing a number of readings and other resources relating to Russian psychologist Lev Vygotsky, students were asked to contribute to a discussion forum by providing an example from their own teaching area or discipline that would reflect a
Vygotskian concept in action. The lecturer provided an example to start students thinking, describing a recent visit to a hospitality college where the concept of a ‘more knowledgeable other’ was clearly evident in the manner in which the teacher and the more experienced students guided the newer ones as they served customers in the training restaurant.

This activity aimed to respond to the first design principle in a relatively simple way, and recognised that pre-service students should also be able to identify an example by drawing upon their experiences as a student, or simply a member of the public, similarly to the example provided by the lecturer. Despite this, it appears that this activity did not engage the students to any great extent. Data collected by the MyLO learner analytics was capable of revealing that all participants accessed the lecturer’s notes, but not whether further links (such as the video or readings) were followed. In the associated discussion topic, only five out of the 21 students (24%) posted a response that offered an example from their own teaching area, or discipline, of a strategy that would reflect a Vygotskian concept in action, and only two students made comments on those examples. The examples provided by students were considered by the lecturer to be appropriate and useful examples. One example, below, is typical of the student posts:

I sort of use a Vygotskian approach in my MDT classes…Vygotsky’s ZPD is on display as I see the more knowledgeable students advise the weaker ones on how to overcome a problem. Vygotsky seems to me to be closely related to differentiation although Vygotsky offers a clearer process to follow as it factors in maturity, intellectual ability and other social variations that I have only started to wonder about. (Bill, IT2, DBP)

This posting, by a Materials Design and Technology (MDT) teacher, began with what could indicate a lack of confidence: “I sort of use…” but continued to provide several quite detailed and appropriate examples. Towards the end of his posting he mentioned the use of differentiation in his teaching approach and linked this to Vygotsky, which is not something the lecturer had mentioned in her notes or in other resources associated with the topic. This posting suggests the participant was able to synthesise his new knowledge meaningfully with existing theoretical understandings, in this case of differentiation in teaching approaches which had been part of other units of study within the course.

The lecturer replied to each example, and to the comments made by other students. Including those who posted, a total of 14 (67%) students viewed some or all of the posts, while seven (33%) students did not participate in the discussion at all. The participation
rate in the discussion topic was below what was expected by the lecturer, despite most students accessing the associated learning content. When the researcher asked participants why they did not engage in this activity, a number of reasons were offered. One participant suggested that the online forum just could not replicate an authentic discussion:

> I love being able to sit down and talk to somebody face-to-face. To me, that’s just more real and you can go off on a tangent, you can explore something in depth, and it’s hard to do that in writing. (Emma, IT1, IN)

Other participants indicated that they felt did not feel confident enough of their theoretical understanding to offer an example:

> When the first example went up, I thought ‘I can’t match that!’, so I just read the posts but didn’t respond. (Diane, IT1, IN).

Other participants reflected that the examples were similar to what they would have posted, so there was no need to add to the discussion:

> So, often you think you know what you’re going to write up there, but then you’ll see that someone has actually done it already, so what’s the point? (Kate, IT2, FG)

Several other participants, who had not accessed the discussion forum at all, explained that they were comfortable with their understanding of the theoretical concepts and their application, and chose not to spend any more time on that activity. Overall, it seemed that there was limited engagement in this activity which, while only a minor activity by comparison with others, does reflect a common approach in the online learning environment and brings into question the potential for similar strategies to successfully link theory and practice, as intended by the first design principle.

**Activity 2: Moderating an online discussion forum**

In this activity, students switched roles in the learning environment, to become the facilitator/moderator of their own discussion topic. Students chose one topic from a list of theoretical concepts related to engagement, and then led an online discussion about that topic with their peers for the next three weeks. In the previous week, the students had been exploring the growth of online learning and the need for teaching staff to be comfortable in the role of an online moderator/facilitator. It was expected that this could be the first time for many of the students that they would be placed in such a role, and consequently, they were not assessed on how well or otherwise they performed in this task, rather, they were assessed on the quality of their subsequent reflection on their experience in that role. The activity was purposefully designed to be completed after students had spent some weeks studying the concept of online engagement, but before
the class moved on to considering the concept of facilitation and the associated literature related to that concept. This activity was designed to allow the students to experience being a facilitator, in order to have a fresh experience to reflect upon when they subsequently studied the concept (Kolb, 2004).

There were 25 students enrolled in the unit. For this learning activity the students were divided into four groups, with three of those groups having six members and one group of seven. Generally, students began by posing a question to their peers about their chosen topic then continued to lead the online forum, responding and deepening the discussion over the three weeks. Each student was also a participant in their peers’ discussion topics over that period of time. Figure 11, below, depicts a screen shot of one of the groups’ discussion forums, detailing the number of responses to each moderator’s topic. The image shows that some discussion topics were much more active than others, with the number of posts in the students’ discussions ranging from four (Factor 3) to 63 (Factor 4).
Participants found leading a discussion forum very challenging. Even those who were confident, regular contributors as a student found leading a discussion a very different experience. Participants’ reflections on the learning activity indicated that the activity had been meaningful to them and had achieved its aim of connecting theory with application in an authentic context. Doris, whose discussion topic contained only four postings, reflected insightfully and critically:

My own motivation and engagement has been tested…I was tasked with facilitating on online discussion group, something I was not looking forward to…. I have identified myself as having low level of self-efficacy in the facilitation of online learning…It is only now as I write this paper that I realise that my motivation and interest, whilst initially lacking, has now been aroused. Surprisingly, I have enjoyed reading the literature and making connections with my teaching and the students I teach. (Doris, IT1, DB)

Doris went on to integrate highly appropriate literature with her reflections and this provided strong evidence that, for her, the learning activity was meaningful and a catalyst for significant learning despite her apparent lack of participation. This draws attention to need to think holistically about the way such activities are assessed; that is, not necessarily on participation, but rather the quality and depth of subsequent reflection.

Another participant, Rachael, who was a confident, active participant in discussion forums and a high achiever academically, also found facilitating her own discussion topic very challenging. Her first question to her online group was long and convoluted, with a total of six questions for the members to consider, all within the one post. Her post began:

Gibbs and Poskitt (2010) suggest that while motivation and engagement are often considered the same, motivation is more aptly one of the factors that contribute to engagement. They add that since motivation is internal, it is difficult to determine, usually inferred by outwardly demonstrated demeanour (affect) or behaviour (engagement). In a VET context:
1. How important is motivation to engagement in VET?
2. Do we need to improve student interest in learning for them to be engaged?
3. … (Rachael, IT1, DBP)

This first post continued with another four questions for her group members to consider. Rachael received only two responses to her first discussion post, to which she in turn replied (4 posts in total). She then realised that she had overwhelmed her peers with a multi-barrelled and demanding first question and reflected insightfully in the class discussion forum:

I kept a reflective journal throughout the discussion posts, when I revisit these reflections I feel disappointed with my obvious lack of consideration. I didn’t
consider the engagement framework until after the first couple of posts, I just leapt in there….The exercise has been so beneficial for me, as the context is new…I have not facilitated online; it is a medium which can fool the unexperienced person like myself into thinking that everyone on the other end is in the same moment and place as me – how wrong that idea is! (Rachael, IT1, DPB)

For Rachael, who could always reflect a sound grasp of theoretical concepts in her written work, this activity was particularly enlightening because she realised that understanding theory did not guarantee the capacity to apply it. Rachael recognised the implications of this activity, not just for her own learning, but also in her role as a VET teacher where she would also be attempting to help her students connect theory to application.

This learning activity appeared to fulfil its aim to encourage students to connect theory with application in an authentic context. The students were authentic to themselves, and this is reflected in the diverse ways they managed the task. When reflecting on what happened, many were able to make sense of what had happened and related their own responses to the theoretical concepts that they had been exploring. Importantly, participants reflected critically on the early discussion forums, considering what triggered their participation or reluctance to do so, and identified implications for their own engagement as a student and an (online) teacher. There appeared to be a much stronger emotional response to this activity; it triggered reactions that surprised the students themselves and appeared to make them more curious about how their peers experienced the activity as well. The associated discussion forum, where students reflected on their role as a moderator, continued to attract new posts and extended dialogue for the rest of the semester despite the class moving on to other activities shortly afterwards.

The next activity to be considered was connected to the practicum placements that students completed as part of the course, and in particular, their blogs that are associated with these placements.

**Activity 3: Student Professional Experience blogs:**

As described in Chapter 5, all students in the course were required to successfully complete 80 days of supervised Professional Experience (PE) before graduation. The PE component is embedded within five units of the course (see Appendix I for the Course structure). Most of the participants participated in PE over the course of the study, with 85% of participants completing one PE placement, and 62% number of participants
completing two PE placements. This represents an average of 24 days per participant. The PE placements were in a range of contexts, including public and private schools, TAFE colleges, private RTOs and community education providers (such as migrant education).

A significant requirement within the PE component was the creation of an online blog, with regular posts describing and critically reflecting on their experiences while on placement. Their observations and reflections were cognisant of the lens that was the focus of the particular unit (e.g., applied learning, inclusive education, literacy strategies or professional standards). Students were supported in learning how to create a blog and discussed ways to ensure professional standards were maintained in respect to images of children, names or any other identifying content. They were encouraged to take ownership of how their blog looked; some included many images while others adopted a more narrative approach (see Chapter 5 for screen-shots of several blogs). The primary purpose of the blog was to help students capture what they were observing, doing and feeling and to think deeply about the links, tensions, or associations they could make with theoretical concepts. Students shared their blogs with their peers and teaching staff, and made regular postings. The activity in blogs often continued long after their placement ended, as discussions continued between individuals.

The creation and maintenance of a blog sought to enact the first principle by inviting students to connect theory and application by:

1. Introducing theoretical concepts;
2. Requiring students to undertake placements in authentic educational settings, such as schools; and,
3. Requiring students to reflect on the experience and relate that experience to the theoretical concepts.

The students’ blogs were integral to the enactment of the first principle. The aim of the blog was to reinforce Dewey’s passive (or cognitive) phase of the experience of being on a practical placement. Most participants (86 %) in the focus reported the blog as useful to their learning, and spent considerable time and effort posting on a regular basis. Particularly for the pre-service teachers, the first PE placement can be an intense experience and perhaps the blog provided a channel to share their reactions to being on placement. Typical reflections include:

   My first week of placement has been an incredibly enlightening experience, and has provided me with an insight into the practical side of teaching. (Nick, IT2, eP)
And from another pre-service teacher:

The first week has really shown me the whole picture of teaching, and I have been able to see some of our theory in practice….the week has been really busy, but very rewarding. (Emma, IT2, eP)

Another participant, Jess, who was an experienced VET teacher, found the blog to be very significant to her learning:

It crystallised my thoughts as I went along. So much was going on every day. The discipline of recording, reflecting and linking to big picture questions really gave the experience a focus and clear outcomes. (Jess, IT2, FG)

For others, however, the requirement to make regular posts raised the study load beyond what they considered a reasonable expectation:

They were good to do, but I felt that I was doing thousands and thousands and thousands of words. It was like I was doing two units in one. (Diane, IT2, FG)

This was an interesting comment, as there were no actual word requirements, rather, that regular blog postings were made. For Diane, blogging did indeed became a major activity and her blog grew to be very content-heavy compared to her peers. Diane felt that she wanted and needed to do what was, essentially, extra work because it helped her to capture, reflect upon and consolidate her learning from the PE placement.

The web-based platform hosting the blogs allowed participants to share their posts with teaching staff, peers, colleague-teachers (CTs) from their placements and even colleagues from their workplace who were not part of the course (see screen shot in Chapter 5). Often a posting would trigger a vibrant discussion that involved a number of contributors and fostered significant engagement in both theoretical and practical aspects of teaching and learning. One CT (from a school context) posted the following comment on a participant’s blog:

This blog is a great outlet for sharing ideas and for communication between students etc. I’m really enjoying being involved! (CT, Blog posting, IT2)

Analysing the blogs revealed that participants regularly connected their reflections to the theory that they had been exposed to with the associated unit of study. As noted by one participant, who was an experienced VET teacher:

I can observe the teaching in a school setting, reflect on this and link this to what I have learnt thus far in my studies. (Louise, IT2, FG)

Another participant, Steve, who was a pre-service student, noted after his second professional placement:
Actually, it’s when you do your blog every day you can go, ‘I didn’t think about that at the time but this is what this is.’ I’ve definitely made those connections over and over. (Steve, IT2, IN)

Steve’s comment highlights the potential for the actual process of blogging to enable a connection that might otherwise not be made. In a similar way, the participation of the colleague-teacher enabled deeper conversations that might otherwise not have taken place, in the busyness of the school classroom context.

The authentic context of the placement and the scaffolded nature of school placements ensured that participants were engaging in real activities in environments that were unfamiliar to them and genuinely representative of future workplaces. This was accompanied by regular, structured blogging of their experiences, which supported the passive aspect of the experience (Dewey, 1938) to occur. It appears connections had sometimes already been made between theory and application or were consolidated by either writing about it or re-visiting a post done previously. In particular, the collegial interactions on the blogs appeared to spark further reflection and facilitate meaningful learning.

One of the participant’s blogs was titled Views (see Chapter 5, Figure 10 for a screen shot of this blog). Her posting is an effective representation of the broadly perceived value of the PE blogs. In this post, the participant noted how she now looked at each class differently and the more she looked, the more diverse the view was:

I see many views and now I’m starting to look at my view in a bit more detail. By view, I really mean the view I see when I walk into a bunch of learners… I am looking forward to discovering that view and I know that tomorrow I will look at that same view and it will be different. (Katie, IT2, eP)

This posting was made at the end of the participant’s second PE placement, within the unit focussing on inclusive education. The participant was an experienced VET teacher, yet her PE and subsequent blogging seems to have broadened her perspective (her views) when she now looked at a group of learners. Significantly, perhaps, she noted that the view she saw “today” would not be the view she sees “tomorrow”, indicating an appreciation of her developing ability to understand her learners and know how best to respond to them.

Participants did express some negative aspects of this activity, however, that could potentially hinder the enactment of this principle. Firstly, the data reveals that some participants were challenged by the technology involved in building their blogs. One participant noted that “technology doubles the workload for the task and increases the
stress levels” (Ellen, IT1, eS), while another student complained that: “the technology, at times, limited deeper level discussions (Emma, IT2, eS). Other participants did not see how the blogging helped make connections:

I just don’t get the whole Pebblepad concept of creating thoughts, reflections, experiences etc. I don’t feel it adds to my learning on the topic, and I know it definitely adds to my levels of frustration in completing the task. (Ellen, IT2, FG)

Aside from the technology, there were several factors that impacted on the potential for learning while on placement. Most significantly was the colleague-teacher (CT), both in terms of their own experience and expertise as a teacher and also in terms of their willingness to support the participant on placement. As participants read each other’s blogs or contributed to discussions in MyLO, it became apparent that some CTs enabled a far more valuable placement than others. The characteristics of CTs mentioned by participants that enabled more effective learning included: enthusiastic, patient, knowledgeable (and willing to share that knowledge), supportive and encouraging.

In summary, this learning activity aimed to use blogging to help students to link what they were experiencing on their professional experience placements to the theory that was being examined in the unit associated with that placement. It appears that for the majority of students it was an engaging and useful strategy to connect theory with application, and it was completed within an authentic context. Challenges to this activity being effective included the placement itself (in relation to the CT being willing and able to support the student), and the level of comfort and value the student felt in creating and sharing a blog.

Changes to the enactment of the principle
The enactment of the principle over the three iterations saw an increasing number of learning activities that were sustained over a greater period of time and more closely integrated with real-life problems currently facing students their role as VET teachers or volunteers in schools. This was considered by teaching staff to deepen student engagement and facilitate more meaningful connections. For example, after the first iteration, the period of time that students actively contributed to their blogs increased from just being the period of placement to a semester-long blog, allowing students to develop a more meaningful blog and engage in prolonged discussions before, during and after their placement.
Discussion
The examples provided in this chapter illustrate three ways that this principle was enacted within the course. As noted by Prince (2004), it can be challenging to identify the factors that make a critical difference to the effectiveness of a strategy, because monitoring student behaviour (e.g., active or inactive in the discussion forums) does not always indicate the extent of the learning, and hence the value, of a particular strategy. Overall, however, the findings suggest that the activities were effective in facilitating a connection between theory and application in authentic context, but a number of factors influenced the extent of that effectiveness.

Firstly, it appears that participants were likely to assess the potential benefit of any activity before committing to engage in that activity. In the first activity analysed, for example, the unexpectedly low level of activity appeared to be linked to a general feeling that the activity was not particularly useful to their learning, while the opposite was true in the online facilitation activity. Secondly, technical challenges appeared to quickly discourage some participants from engaging in activities, but once mastered, the affordances of technologies enabled rich connections between participants and teaching staff. Thirdly, those strategies that were maintained over a longer period of time and included reflective tasks appeared to be most valued by students. Overall, the most successful strategies were those that placed the participant in an authentic role and valued evidence of personal and professional growth over a period of time. Participants were most active and satisfied with those strategies that were conducted over three or more weeks and included opportunities to self-examine, adjust behaviour and monitor the consequences of those changes. Importantly too, was the opportunity to engage with others, including peers and teaching staff, throughout those activities.

The study brought greater clarity to what characteristics of a learning activity will lead to it becoming a valuable experience for students. Dewey (1944) proposed that an experience has two phases: a physical action and a passive (cognitive) reaction, and that the nature of the connection of those two phases will measure the value of the experience. The results of this study have highlighted the different ways that each of these phases can take place, and the critical importance of the connection that is made by students. The ‘active’ phase was shown to occur in a number of different ways, some more obvious than others. For example, the active stage could be participating in a school placement, watching a video, or reading a discussion forum posting. Similarly, the passive (or cognitive) reaction could be triggered by the response of learners in a
school placement, peer feedback in the online environment, or by writing about the active phase.

Particularly in an online environment, where students are engaging in different ways and times, the role of the lecturer is to ensure that the activity will indeed prompt an action from the student, and then a passive (or cognitive) reaction. In other words, any activity needs to include strategies to evoke a reaction from the students—an action without a reaction will not result in a meaningful experience. The connection between the two phases is at the heart of the learning activity. For some participants, the connection is immediately obvious and meaningful, but for others it took a longer period of time or needed teacher support at a critical moment (Herrington et al., 2010) to bring the fruitfulness of that experience into focus.

The findings reinforce the manner in which participation of colleague teachers, teacher-educators and student peers can encourage meaningful engagement and reflection. The blog, for example, allows a longer period of reflection and consolidation and enables valuable peer-to-peer, or student-to-teacher interaction. Together with the blog entries, these conversations form a significant source of not only what happened while on placement, but the understanding that has come from those experiences. The perceived value of the blog supports Darling-Hammond’s (2006) call for stronger connections between the school placements and the course-work—for it is in those pedagogical connections that students can make meaning of what happened while on placement, and connect theory with application.

As described in Chapter 3, an applied learning approach offers students “opportunities to connect theory with practice, to learn in unfamiliar contexts, to interact with others unlike themselves and to practice using knowledge and skills” (Ash & Clayton, 2009, p. 25). Hence, this principle lies at the very heart of applied learning. This principle has three main components: a learning activity, the connection of theory and application, and authentic contexts. Behind each of these components lies a significant body of literature supporting their value in educational practice. In particular, this principle draws upon Herrington et al.’s (2010) authentic learning framework, Korthagen’s (2001) Realistic Teacher Education model, and Darling-Hammond’s (2006) model for more effective integration between school placement and course work in universities.

While it is beyond the scope of this study to consider how improvements might be made to the structure of the Professional Experience component of teacher-education, the
findings suggest that students will benefit greatly from a tighter connection between their experiences in the schools and their coursework at the university. In particular, there should be strategies that encourage students to link their experiences on placement to their university studies in a structured, supported manner, and through collegial interactions. As Korthagen (2001) notes, it is through facilitating professional learning through three levels (gestalt, schema and theory) that maximum learning will be assured. The findings confirmed that the VET teachers were indeed changing their practices in their workplaces as a result of their studies, which was an encouraging sign that the university experience was not being ‘washed out’ (Zeichner & Tabachnick, 1981) by the influence of current work-place practices within educational settings.

Herrington et al. (2010) advocate the use of authentic contexts in the learning design, reflecting the way the knowledge will be used in real life. Similarly to Herrington (1997), the findings of this study found that when participants were placed in a scenario role (in this case, of being a facilitator of an online discussion) they became immersed in that role and experienced a genuine range of emotions similar to what might be expected in a real situation. This was particularly interesting because in this strategy students were not assessed on how well or otherwise they performed in this task; rather, they were assessed on the quality of their subsequent reflection on their experience in that role. Regardless of whether the participants managed the moderation role effectively or with only limited success, the beauty of the assessed reflection meant that it would allow exploration of why they performed the role in the way that they did, the impact their approach to moderation had on the success or otherwise of their discussion and implications for their future professional practice. It is interesting to consider the depth of thinking that the activity triggered, essentially by placing participants in an authentic activity and ensuring that adequate time and support was given for considered reflection. This applies also to the blogs maintained well after the practicum experiences were completed; the meaningfulness of an activity was significantly increased by supported, prolonged reflection.

**Conclusion**

The findings on the enactment of this principle align with the body of literature that underpins the principle. Some greater clarity has been achieved in relation to the way students may engage in a learning activity, and the role teaching staff have to support students as they make meaning from those experiences. In particular, the potential for technology-supported environments to facilitate a much stronger connection between
professional placements and the university coursework was revealed through the richness of the blogs created by participants. Additionally, strategies that use the online environment to mediate an experience (such as discussion forums) can help facilitate the meaning-making that comes through connecting the active phase of an experience with the passive stage. And finally, the enactment of this principle in the form of an online scenario found that participants were able to authentically adopt another role and reflect at a deep and critical level as a result of their responses to that role.

Overall, the findings revealed that participants were changing their teaching practices as a result of their studies and felt more confident to explain the theoretical underpinnings of their practice, which is perhaps the strongest evidence that the learning activities were effective in helping students connect theory with application.

The next chapter will consider the findings related to the second design principle: *Incorporate the lived experience of students*, and will examine what was learnt during over the course of this study that can, in particular, assist practitioners as they prepare for a steadily growing cohort of non-traditional students in higher education.
CHAPTER 7

Incorporating the lived experience of students

The resource of highest value in adult education is the learner’s experience. If education is life, then life is also education (Lindeman, 1926, p. 9).

This chapter considers the element ‘Incorporating the lived experience of students’ and how it was enacted through the second design principle guiding the course. The theme encompassed several concepts. Firstly, and most importantly, it aimed to openly acknowledge that each student’s lived experience was considered valuable, regardless of whether that experience had come about through previous study, careers or other personal experiences. Secondly, the theme reflected a public recognition that many, if not all, students were engaged in multiple roles, including as parents, care-givers, partners and employees. Course staff recognised these as legitimate reasons why study patterns might be unpredictable or interrupted. Accordingly, learning activities and assessment tasks were designed in a way that recognised the other demands in students’ lives without departing from the desired learning outcomes sought or lowering the academic rigour of the course. Finally, this principle responded to the essentiality of experience, as well as reflection on that experience, to the learning process. Learning activities were structured, therefore, to encourage students to reflect on their experiences both during and after the course.

This chapter will consider how this principle was enacted, the challenges that arose, and what has been learnt that can contribute to teacher-education practice and theory. Table 13 shows the second design principle, guidelines for teaching staff and the ways in which it was manifested in the learning environment.
Design Principle 2: Recognise and incorporate the lived experience of the students

Table 13: Design Principle 2, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment</th>
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| Recognise the lived experience of students. | - Gain an understanding and appreciation of the students’ work-roles and responsibilities.  
- Consider how learning tasks can encourage students to interrogate their existing beliefs and consider new perspectives that they are exposed to.  
- Focus on the desired learning outcomes and recognise that there may be multiple ways for students to gain and evidence their learning through integration with other, concurrent, workplace roles and responsibilities. | - 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.  
- Engaged 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. |

Method of analysis

In addition to the method of analysis detailed in Chapter 4, a brief outline of the analysis for this particular design principle will be provided. The analysis for this theme began with data gathered from the focus groups conducted each iteration. The initial data analysis informed the guiding questions for the interviews that followed, which in turn often led to further email exchanges as the researcher and participants continued to explore particular aspects of their experience. Additional interviews were conducted following a disruptive experience for several participants in a unit not associated with the study but which affected their engagement and appeared to be relevant to this theme. All data were recorded, transcribed and analysed using the NVivo application, with coding utilising a combination of *a priori* and *inductive* codes (Johnson & Christensen, 2004).

For this theme, the analysis sought to better understand the ways in which the participants’ lived experience influenced their affective experience in the course, with a specific interest in how particular activities or teaching styles or approaches impacted on their engagement and confidence levels. Over the three iterations, the wording of this design principle did not change but the value of its instantiation into the course became
increasingly clear and course developers therefore dedicated more time to considering ways to best respond to this principle.

**Enactment of the principle in the course**

There were two primary ways in which this principle was instantiated in the course. Firstly, it was enacted through the way each student was considered and treated by staff: as a respected, valued adult learner. As James, a lecturer in the program noted:

> The students come into the course with a substantial amount of life experience, and many are experienced teachers already. By respecting them, I expect that they respect me, and my teaching experience and knowledge. We come together as teachers, not as superior academic and incapable student. (James, IT2, IN)

The positioning of students as respected, experienced professionals encouraged a culture of collegiality and openness with and between students and staff. For example, the teaching staff ensured that they shared their own lived experience of teaching-about-teaching, in order to give the students access to the pedagogical reasoning that underpinned their practice (Loughran, 2006) and create an environment where it felt safe to talk openly about one’s own teaching practice. Importantly, teaching staff were willing to be challenged by students on their pedagogical approach, with the aim to reconceptualise how the teacher was perceived and to model the type of practice that could then be considered by the students in their own teaching practice. Essentially then, teaching staff were seen as learners too, still building and refining their own perspectives, beliefs and values. An excerpt from a staff discussion reflects Janet’s views:

> We are an academic faculty, but we’re also a professional faculty. We’re teaching teachers. If we’re teaching teachers, every day that we do anything about teaching, we are modelling teaching practice. If we want to change the agenda of teaching in Tasmania, then we need to model the best practice that those students will then take out to their own contexts. (Janet, IT1, SD)

The principle was also enacted explicitly into the learning and assessment activities. For example, discussion forums actively sought students’ perspectives on concepts, inviting them to draw upon their own lived experience to critically evaluate the worth of a particular theoretical concept or writings of a scholar. Debate and challenging the views of others, including the lecturer or the author of a paper was encouraged, as James reflected in an interview:

> Yeah, and if they turn around and say, “I don’t agree with you”, then it’s a case of allowing the capacity for that discussion to happen between you and them and the other students and saying, “Okay. What is there that causes you to disagree?” And it might come up with a new perspective for me as well. (James, IT1, SD)
In assessment activities, students were encouraged to apply what they were learning to current or future projects in their workplaces, to synthesis previous understandings with new perspectives, or to re-examine meanings taken from previous experiences. Such examinations often included reflecting on their childhood experiences at school, as it appeared these often remained a strong influence many years later. For example, some participants recounted experiences at school where they had been told that they were not very bright, or unlikely to ever succeed in academic pursuits, and this had strongly influenced their personal and professional aspirations. Activities that reflected the enactment of this principle encouraged participants to consider alternative interpretations of such events, particularly in light of subsequent experiences and achievements in their adult years.

Turning to another aspect of the ‘lived experience’, this principle was also enacted in the assessment regime. For example, Faculty policy relating to requests for extensions to assessment submission deadlines explicitly ruled out work commitments as a valid reason. Yet if the lived experience of students was truly going to be recognised, then it needed to be reflected in the approach to assessment as well. Therefore, unexpected work (or personal) commitments were recognised as an acceptable basis for renegotiation of a submission date, provided reasonable notice was given. The teaching staff acted on the assumption that the students were mature, responsible adults who would only ask for an extension when absolutely necessary. The responsibility of students shifted from putting study as the first priority to expecting students to prioritise in a logical manner, and communicate effectively and professionally.

Findings
It seems appropriate to explore this principle through the experience of the participants. This chapter will focus on three particular participants: Rick, Rosie and Steve, and examine their journey over the three iterations and focussing on changes that were observed by themselves and/or the researcher. These participants were chosen as they represented the diversity of the cohort well, and reported particular experiences that were relevant to the investigation into the instantiation of this principle. Corroborating or contrasting evidence from other participants will be woven into the findings when relevant, to help build a comprehensive picture of the student and lecturer experience of this principle. This chapter will include frequent quotes from these three participants as it is their voices that best illuminate the findings of the investigation into the enactment of this principle.
Rick’s story

Rick, a 59 year old male, had completed 6 units of study (averaging a Credit grade) by the conclusion of the study. He left school at the end of Grade 10, aged 16, and became a carpenter’s apprentice, leading to a long career in that trade. Rick had been employed at the local TAFE institution since 2005, when he began teaching apprentices in the trade of carpentry. Between 2008 and 2011, Rick taught pre-employment students before he was transferred to a teaching role at the local prison, where inmates were able to enrol in a certificate level qualification in carpentry. He had been studying the Bachelor of Education (Applied Learning) since its inception in the second semester of 2011. Rick typically enrolled in only one unit of study each semester, as he worked full time and had a small farm to manage as well. He had adult children and lived with his wife on his farm.

Rick had several of the characteristics associated with non-traditional students (Munro, 2011). He was mature-aged, left formal schooling early and was the first in his family to attend university. In the eSurvey conducted during the first iteration of the study, he was asked to rank the reasons why he chose to enrol in the course. Rick’s responses were in contrast to the majority of participants, who mostly identified career advancement and gaining eligibility for teacher registration as the leading motivators to enrol in the course. For Rick, his motivation came from the personal satisfaction that he believed would come from engaging in higher education. Figure 12 shows Rick’s response in the survey in the first iteration of the study.

Figure 12: Rick’s ranking of motivating factors to undertake the course

After completing Grade 10, Rick began a book-keeping course but soon decided to become a carpenter’s apprentice when an opportunity arose:

I got a job working with my father-in-law, who’s a carpenter. My trade experience is all experience; I never did a formal trade qualification. (Rick, IT1, IN)
Nearly forty years after he began his apprenticeship as a carpenter, Rick was one of the first students to accept their offer into the course. As he noted in an interview, his enrolment was partly due to curiosity:

Why did I choose this course? Because it was offered and I thought ‘university has always been that mystical thing that has always been for the really intelligent, knowledgeable people to do. I wonder if I could do it?’ That was basically it. (Rick, IT1, IN)

Rick came into the course somewhat opportunistically – he wanted to know if he was capable of succeeding in a context which he had never expected to be part of. He had significant doubt about his ability to achieve in an academic environment, and he traced this to his experiences as a high school student:

I was the quiet, shy person who sat at the back of the classroom. I was driven to that, I suppose, because the teachers… they always said: “This is the answer we’re looking for”. But I’d give an answer on the basis of my understanding of what the question was. They’d say, “No, no, you’re wrong, you’re wrong. That’s wrong.” So I thought ‘I’ll not bother answering anymore. I’ll just sit in the back of the classroom and let everyone else talk, because I’m not going to get put down again.’ (Rick, IT1, IN)

Other participants in this study shared similar stories of not fully engaging with school. Many only felt comfortable in more applied subjects such as woodwork, metalwork and cooking, which may account for the decision to seek a career in those vocations. Rick described a life-long characteristic of needing to understand how ‘things work’ and in his second career as a VET teacher this characteristic appeared to be a motivator for his enrolment in the course:

I was one of those kids that liked to pull things apart to know how they work. When I did my trade, I wanted to know how things worked. I got to the point where I was a foreman because as the foreman, you have to know how everything went together. Now, I’m teaching and I want to know how it works. It’s the same thing, the same principle. (Rick, IT1, IN)

Rick was describing an intrinsic and lifelong need to understand, to learn and to progress, yet he did not consider university as a young adult, quite possibly because of his experience at school. In this regard Rick represented many of the participants who were successful in their first vocation and who often transitioned into teaching on the basis of that success but who did not consider themselves to be capable of going to university. Similarly to Rick, other participants also recounted experiences with their school teachers where they felt judged to be academically inferior and who, as a result, did not want to continue their schooling longer than necessary. When participants recounted such events, it was not described with a sense of anger or resentment; rather the descriptions of the events often appeared to fit with their familial environment, where
schooling was considered as no more than an unavoidable part of life that had to be gone through before being able to move into a trade of some sort.

In his early units, Rick felt concerned at what he considered was an over-emphasis on particular academic skills, such as referencing correctly, and he was unable to see how this would help him become a better teacher. He also interpreted it as indicating that staff “don’t look at the person; they just look at the words on the page” (IT1, IN). Rick had a suggestion for the course in this regard:

Could we just do one unit on that [referencing] and then say, ‘Okay, you passed that. You’re quite good at referencing, so don’t worry about it anymore’? (Rick, IT1, IN)

Rick’s response indicated that he was approaching his studies in a similar way to how he might have done at school, seeing each subject or skill as a hurdle to be cleared. It prompted teaching staff to consider how the value of the literature (and the resultant referencing) could be considered to be an integral aspect of their teaching lives, rather than an ‘academic’ skill with little connection to their professional lives.

Rick was initially a reluctant participant in discussion forums, revealing a degree of scepticism over the motivation of his peers in the nature of their participation:

Sometimes when I’m reading posts I’m thinking ‘Is that what you’re really thinking or is that what you think the lecturer would like to hear?’ That’s something I look at quite a lot, especially with people that I know who have been teaching a long time. (Rick, IT1, IN)

Comments such as these reflect that, for Rick at least, the online interactions were not always perceived to be authentic and were, therefore, of limited value. It was clear that Rick judged the value of each activity on the extent to which it was able to help him understand and improve his teaching, and this is consistent with his declared motivation to enrol in the course. In the first eSurvey, Rick agreed that the learning activities were helping him to understand the theoretical concepts but he disagreed that the activities felt authentic to what was required in his teaching role. He was not, at that point, seeing value in what he was studying. As he was not engaging in the discussion forums to any great extent, he was largely a silent student in the online community. Rick also felt that much of the course content was irrelevant to his particular teaching context within the local prison:

So, a lot of the theory that I read, I think ‘Yeah, that’s really good for conforming students that will sit there and listen to that, but what do you do with students that don’t want to do that? How do you deal with those sorts of people?’ So that’s
where I feel sometimes a little bit disconnected from the theory that we’re undertaking, because it doesn’t really apply to me. (Rick, IT1, IN)

Rick’s statement shows that he wanted to learn more about how to manage his own students more effectively but that he was not finding his studies useful towards that goal. He elaborated what he was really hoping to find in the course:

And it’d be interesting to share, like you do in a real life situation at lunch time and morning tea, when you’ve got a difficult student, you sit around and you talk about it. What approach do you use? What works? What doesn’t work? Those sorts of things. (Rick, IT1, IN)

There are (at least) two possible reasons for Rick’s dissatisfaction. Firstly, it could mean that the course was missing components that were genuinely in need of inclusion. Alternatively, it could mean that, at this point, Rick was not able to appreciate the connections between theory and its application. This gave teaching staff reason to carefully consider both options and the researcher arranged to meet again with Rick at the end of the second iteration.

The analysis of data collected after the second iteration of the study indicated that Rick was beginning to make a connection between his studies and his teaching, particularly when teaching at the prison. When participants were asked at a focus group for examples where they felt their studies were helping them at work, Rick offered the following:

….particularly in the last unit I did with James, where we had to develop an action-plan about a dilemma we faced, I used what I do at the prison. I would never have had the time to sit down and write down and analyse what I do out there. As I was doing it, I was thinking, ‘Isn’t this great that I can actually analyse what I’m doing in my own workplace and come up with ideas of how to address it and get someone who’s got all that knowledge to look at it and say, yes or no, maybe…” (Rick, IT2, IN)

Rick was indicating a growing confidence that his studies was starting to be beneficial in his work. Secondly, he indicated that he had great faith in his teachers to offer useful, constructive feedback. And perhaps most significantly, he was displaying a greater confidence in himself as a teacher to critically analyse and improve his teaching practice.

The approach to assessment tasks was specifically designed to link closely to the students’ teaching roles, and this was acknowledged by Rick, who noted his appreciation of the flexibility that teaching staff were allowing him as he engaged in learning and assessment tasks. The flexibility was purposefully designed to enable students to be able to more purposefully and constructively link their studies to their workplace. Rick described how he felt after receiving a particular assessment task back from the teacher:

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I was actually quite chuffed on my last assessment that I got the mark that I did because I thought I went way outside of what was in the description because I wanted to address it in a specific way. And I felt Janet respected that. That’s what I’m saying ... when I saw that mark, I thought, they’re actually doing that. They’re respecting me. I appreciate it, yeah. (Rick, IT2, IN)

Rick’s comment reflects a growing confidence to be authentic to the way he approached tasks, believing that the lecturer would respect his experience and ability to make appropriate connections. This stood in stark contrast to his recollections of his schooling days, where he believed that he could not depart from ‘what the teacher wanted’. Rick was not the only student feeling like this. Bob, another VET teacher noted in a focus group:

My mindset has changed from the beginning; in the very first unit I approached, I thought, ‘Hmm, what do they want me to say?’ Which I think is probably relatively common, and then as I read more and as more conversation, email-wise etcetera, takes place, I started to think, ‘Hmm, they keep asking, “what do I think? Use some of your life experiences.” I kept thinking, ‘Hmm, how much should I let out?’ And as I get to the next unit, I’m thinking, ‘Hmm, this is repetitive, different person, but the same approach’, and I’m thinking, ‘Maybe they really do want us to have an opinion!’ (Bob, IT2, FG)

Like Rick, Bob was reflecting a growing confidence to express his own thoughts and opinions, knowing that these were valued by staff. This might include, as Bob mentioned, the confidence to argue against a concept that might be suggested by a particular paper or perhaps the lecturer. This manner of engagement in the course, connecting his previous experience and associated beliefs with new information, was considered by teaching staff to be an important first step in the learning process.

By the end of the third iteration it became obvious that Rick was not only seeing the value in his studies but was implementing some of the strategies he had experienced as a student into his own teaching. At the final focus group (Rick was one of the keenest participants in the study and always volunteered to attend), he gave an example of this to the group:

In a similar way to what Janet has done with us, I now do with my students because they’ve given me flexibility and I now give that flexibility to my students. So that instead of saying, ‘This is the assessment task,’ I’ll say, ‘What do you want to do?’ And they say, ‘Can I build this?’ ‘Yeah, you can build that, great.’ That’s instead of me saying, ‘We’re all going build this little thing here. It’s all going to look exactly the same’. Now they can build what they want to build and just say, ‘This is what I’ve done!’ [laughs] (Rick, IT3, FG)

Given that Rick taught at the local prison, it appeared to be a particularly significant change to his teaching and one that would likely to be welcomed by his own learners.
Another participant, Nick, described a similar change in his teaching, to one that recognised the value in recognising and responding to the diverse experiences held within his cohort of learners:

I don’t tend to stick to the script anymore because I think that people’s stories can have different ways of explaining things and people can take different meanings from those experiences. Once when one person starts to share, and it’s usually the teacher, it leads to another one and then someone else feels a bit more comfortable and, to coin a phrase, it becomes a community of learning. (Nick, IT3, IN)

Another interesting observation from Rick was his perception that the teaching staff had developed as well, as teaching the course informed their own practices:

I think they’ve also realized that they needed to be a bit more flexible as well; they’ve also changed, I think, quite a lot. I’ve noticed a change in the way they deliver from when they first started to now… we’ve both grown. (Rick, IT3, FG)

Rick appears to recognise not only how staff had influenced him and helped him to grow, but also how he had influenced teaching staff and helped them to grow as well. This appears to be quite a new and welcome experience for Rick, and in sharp contrast to his memories of school.

Rick progressed well in his studies, and even mastered the once dreaded skill of referencing. He did, in fact, show a growing appreciation for the literature introduced in the unit. In the first iteration of the study, participants were asked to rank the value (from least important to most important) of a number of activities and resources in terms of helping to build their understanding. Rick placed the most importance on his personal experience (which he nominated in the space for ‘other’ as it was not a listed option). After ‘personal experience’ he ranked, in order of importance (most to least): online discussions with peers and teaching staff, ePortfolio activities, web conferences, lectures and notes from teaching staff, and finally, scholarly papers.

After the third iteration, participants repeated this exercise. Comparing Rick’s rankings in the two surveys was interesting, because while he retained ‘personal experience’ as his most useful source/activity in learning, scholarly papers and lecturer’s notes had moved up to second and third position. When asked about why the value he placed on scholarly papers and the lecturer had increased significantly, he offered the following reflection:

If I go back to when I first started at Uni, I found scholarly articles quite difficult to read and almost not from the real world. However, the more I have read and researched myself and the connections I have made, such as Brown and Duguid, Lave and Wenger, Hobbs, and Wheelahan to mention just a few, has opened my eyes to a shared experience. We’ve had similar experiences and made similar
conclusions; that was when things began to click, we’ve really had similar experiences. (Rick, IT3, IN)

Rick is indicating that he has grown in confidence, not just to engage intellectually with a broad range of perspectives but to assimilate others’ perspectives with his own. He appears to have developed significantly as a student and also, from his earlier descriptions, as a teacher. The value he placed on his own experience had not changed, perhaps because it was recognised by staff as a valid and important asset. To summarise Rick’s progression and changing beliefs about the course, he offered this at the last focus group:

I’ve changed my teaching practice. I know that for sure, and it’s been through the course that I’ve changed it. When I first started teaching, it was very much...well, because I always use to worked in construction and I was a foreman on the site, so I approached it as a foreman teaching apprentices, same sort of thing. (Rick, IT3, FG)

Acknowledging the changes he has made, Rick continued:

I found new ways to do things through this course, and I’m actually probably 180 degrees from where I was when I first started, the way I teach now to when I started. And that’s from the course, from learning stuff through the course, the interaction online with other people and picking up what other people are saying, ‘Oh, that’s a good idea.’ But that’s how we learn, isn’t it? Like a bower bird, just take that little bit here, take a little bit there, you put it all into your own practice. (Rick, IT3, FG)

The analogy Rick provides, of a bower bird, is significant as it indicates that there was not one particular moment when he had a sudden realisation that he was learning, changing and developing. For him, it was a progressive, but significant transformation of not only how he perceived himself as a teacher, but also as a learner.

Rosie’s story
Rosie was female, 51 years old, and by the third iteration had completed 10 units in the course with an average grade of a High Distinction. Rosie began the course full of excitement and enthusiasm. For her, attending university was a dream that she had always clung to after family and work became a priority after leaving school. With her children now independent, she considered that this was her opportunity to pursue that dream. Her memories of school were positive and she was a high achiever. After leaving Grade 10, Rosie completed a Diploma level qualification while working for a telecommunications company.

Rosie quickly established herself as an active participant in the online discussion forum and as a capable and willing support for other students. She quickly demonstrated a
desire and ability to grasp the theoretical concepts in the course and apply what she was learning, as this post to a discussion forum illustrates:

I know I am what Haggis (2004) would refer to as intrinsically motivated, and I am interested in learning. I’m less motivated by the external expectations of others (Wolfgang & Dowling, 1981). Having said that, I do also enjoy the collegial, professional relationships we have been developing throughout the course. (Rosie, IT1, DBP)

For Rosie, the online learning environment suited her well and she looked forward to logging in to MyLO in the evenings:

It’s fantastic, I can work late at night (my ideal) and I am able to review audios and reread when I need clarification of written docs. With technology such as Skype and Facebook I am able to be connected to peers for support. (Rosie, IT1, DBP)

Even the challenges of learning how to create and maintain an ePortfolio did not concern Rosie. Rather, she saw it as a useful medium to help her learn:

I love e-portfolio stuff. I think it’s really valuable. I love putting up presentations and trying to do things like that. That’s just my thing really. I like the process of having to find evidence. I find that it gets me thinking about what I’m doing and applying it to my own context. (Rosie, IT1, FG)

Rosie recognised how the manner in which she was engaging in her studies was different to her school days. While she was motivated by high marks at school, in her present study she wanted to be able to improve her understanding of teaching and learning and be part of a learning community. Relevance to her present context was very important to her:

There’s so much to do in such a short time, and adult learners like myself don’t really want to just ‘do the reading’. I can remember when I was young all I wanted to do was get there as quickly as possible. When I was doing English, for example, I would just take home books and I’d fudge it. That was different. Now when I’m doing the readings, I want the readings to be applicable to me and what we’re doing. (Rosie, IT1, FG)

Rosie’s grades reflected her enthusiasm and academic ability. She was consistently awarded High Distinctions in her first year units. Other students would contact her for help and she was always willing to provide feedback on draft assignments or to meet in a face-to-face context if peers needed help.

In the second iteration, Rosie enrolled in a number of units that fell outside of the Applied Learning specialisation but which were still core units in the course. These units, referred to as the EDU units by students (the prefix of the unit code, whereas the Applied Learning units began with EAL) were not guided by the same set of design principles that are the focus of this study and therefore had the potential to be a different
experience for the student. The student cohort in the EDU units was mainly pre-service teachers who had started university directly after completing college. Rachael found that the approach in some EDU units was in sharp contrast to the EAL units:

The EDU units are taught using ‘old school’ methodology that included being spoken to like children. There is a lack of respect for students as individuals who actually have valid opinions and thoughts. In one unit we were called ‘big girls and boys’ while in another one were called ‘cherubs’ and told we were ‘lazy people’. (Rosie, IT2, IN)

Rosie was not alone in having a very different experience in the EDU units compared to the EAL units. Although it was not an intention of the study to comparatively assess the student experience, it appeared that it helped the participants to express (and the researcher to understand) how different teaching approaches were experienced and the implications of those approaches. Another participant, Susie, offered an insightful comment about her experience in an EDU unit that relates closely to this principle:

I think our experience [as VET teachers] isn’t necessarily valued by some of these other teachers and they just don’t see that we do have some of this knowledge and experience already. Not just that, but we’ve got things to bring to the table sometimes that they might not have even thought of. (Susie, IT2, IN)

In the particular EDU unit that Susie was describing, a face-to-face meeting was requested by the lecturer of that unit, because she believed that Susie was exhibiting challenging behaviour that needed remediation. A lecturer from the EAL units, James, attended the meeting as well and reflected afterwards:

I was looking at this [EDU] lecturer who, I felt, was actually quite unsure of her position and her understanding of what she was teaching and what she was actually looking for. So she was building the unit but didn’t have the whole big picture, having it all, sort of, fully defined in her mind what she was looking for. So it was a case of almost moving along quietly because ‘I don’t know where I’m going next’. And then, you’ve got this person [Susie] sort of saying, ‘Oh, what about this and what about that and what about the other’ and I think, you know, it was getting to a point where it destabilised the lecturer’s positioning as the expert . . . (James, IT2, IN)

For participants like Susie and Rosie, teaching approaches that made them feel like they were being treated like children had a significant and negative impact. They wanted to feel respected by the lecturer and invited to share their considerable experience, even if that experience might challenge the lecturer by proposing alternative perspectives. For them, engaging in critical debate was a highlight of their university experience. One particular EDU unit caused Rosie a significant amount of stress, to the point that she was considering withdrawing completely from her studies. In an interview to explore this more, Rosie explained:
I was angry that such a poor lecturer could remain employed, it made me feel as though the institution does not really value what it is supposed to be promoting—great teaching! I am probably just a little too fragile at the moment to consider this rationally, but the impact has been great – I’m even thinking of pulling out. (Rosie, IT2, IN)

As an experienced teacher herself, Rosie recognised that her negative experience was due to poor teaching, yet she remained vulnerable to losing her own confidence as a result. When asked to reflect on why she had lost confidence so quickly after such a strong performance before that particular unit, Rosie suggested:

I think it’s because we already have what we think is a fairly solid sense of self; both esteem and efficacy. When that gets questioned by something which we have chosen to bring into our lives, it rattles us and makes us question our competence. We do put so much of ourselves into our learning. (Rosie, IT2, IN)

Rosie’s explanation reflects considerable thought about how she, as a mature-aged student, brought both strengths and vulnerabilities to the university context. She was aware that the more she invested (personally) in her study, the greater the potential for feeling either discouraged or disrupted by a teaching approach that did not encourage critical and collegial interrogation.

James (EAL teacher) described his perception of the situation:

If you like, our students are like mine canaries, right? They’re telling those [EDU] teachers something—that their teaching isn’t working. It’s like behaviour problems in a classroom. So a lot of the times, the behaviour problems are basically the kid telling the teacher, ‘Your teaching isn’t working.’ Well in this case, our people, because they are slightly different, are saying, ‘This teaching is not working for me.’ And what’s happening is they’re being told, ‘No, sit down, shut up. This is what you will do’. (James, IT2, IN)

From James’ perspective, enforcing compliance would either cause disengagement or withdrawal from studies, and certainly did not model the teaching approach espoused in the EAL units. James was, however, identifying the challenges that lecturers face when the student cohort will include adults with considerable life experience and well-established perspectives. In this increasingly common scenario, James was suggesting that teaching staff need to have the confidence to engage with those perspectives, even when particular stances could create some conflict. James believed that it took a significant level of confidence for lecturers to reconceptualise their role:

What happens is that with us [in the EAL units], we create the structure but then, within it, we’re open to that sudden alternate change in direction, or the unexpected, or the going in a different direction…. And you think, ‘Oh my God, there’s something different happening here, and I’m going to roll with it because I can adjust. I’m sufficiently confident in what I want to get out of the unit,’ so that when that tangential thing happens, you can take it and run with it. (James, IT3, IN)
Over the three iterations of this study, Rosie’s experience in the course was highly variable. Within the units where this principle was enacted, her experience was positive as she felt respected and valued. She felt encouraged to share what she brought to the learning environment and gained pleasure from being an active, contributing student. In the units that were not underpinned by the principles, however, Rosie’s lived experience caused difficulties, as it was not acknowledged as valuable or integrated into the learning environment and hence became at odds with her preferred way of engaging in study. Her negative experiences in some units threatened her self-esteem, and her confidence that she would succeed at university.

**Steven’s story**

Steven, aged 43, left school at Grade 10 and had completed eight units in the degree, averaging a Credit grade by the end of this study. Steven came from a family of timber-workers and farmers and was the first member of his family to attend university. Married, with three children, Steven was employed as a teacher-aide in a TAFE college where he supported students who were new arrivals to Australia. He commenced his degree in 2013 and studied part-time, enrolling in one or two units each semester. Steven came to the attention of teaching staff and fellow students when, in a discussion forum, he declared his struggle to engage meaningfully in the online environment:

> Life lately seems to be overflowing with learning and different learning environments… I feel that the online environment throws up many obstacles to my learning which may ultimately prove overwhelming. On-campus I am shown what is to be learned and I am able to set about learning it. The paths are clear, efficient and not hidden behind e-portfolios, Wikis and blogs. When I click on my [online] units I am confronted by all three. I must first climb these mountains in order to get to the actual subject matter. (Steven, IT2, DB)

His posting triggered a vibrant and engaging discussion between Steven, his peers and the lecturer. The discussion was even more poignant because the unit itself was focussed on theories of learning and teaching so the relevance and value was obvious to all. In a follow-up posting, Steven disclosed that he was autistic and believed this to be the reason for his struggle.

The challenges Steven described were in stark contrast to the intentions of the design principles and the reported experience of the majority of students. As Steven was a participant in the study, the researcher contacted him and asked if he would like to part of a deeper investigation into his lived experience in order to better understand how the design principles underpinning the course might possibly be challenging his ability to
fully engage in his studies. Steven readily agreed to be a part of additional activities in the study.

Over a number of months, interviews and email exchanges with Steven focussed on particular aspects of his experience and explored these in greater depth. Both the participant and the researcher were actively involved in the data collection, with both individuals noting that it felt like a journey towards greater understanding. There is broad acknowledgement that more research is needed to investigate the impact of autism on participation in higher education (Elzouki, Guest, & Adams, 2012) because of the increasing number of affected students. In the United Kingdom, for example, there has been a 408% increase in students with autism entering university between 2003 and 2008 (MacLeod, 2010).

Steven’s first assessment submission revealed confusion with what was required. This task required students to reflect on various activities earlier in the semester, and draw together their initial thoughts in relation to their developing philosophy of learning and teaching, based on their understanding of foundational and contemporary learning theories. It was, purposefully, a task that allowed some freedom in how and what the students produced, the first step towards a more comprehensive philosophy statement in the major assessment task for the unit. While most students seemed to enjoy both the range of activities and reflecting on what they had learnt about their developing philosophy, Steven’s submission was largely a collection of the reasons why he could not do the assessment task. He noted in his submission:

I absolutely cannot cope with vague concepts or blurry guidelines. This is a limiting factor to my learning ability which many other learners do not share, as they often relish the freedom. (Steven, IT2, AT)

An analysis of Steven’s time spent in the online learning environment confirmed that he had accessed all resources, spent significant time engaging with the course content and had read every posting in the discussion forums. After a phone call between Steven and the lecturer an alternative assessment strategy was negotiated, opting for a more traditional assessment task of a comparative analysis of a number of learning theories. The provision of an alternative assessment task aligned with the principles underlying the course; in particular, of recognising and incorporating the lived experience of students, in this case, a life with autism. Steven’s resubmitted assessment submission was of an excellent standard, which assured both Steven and the lecturer that it was
possible to flex the way he would engage with the unit and still be assured of meaningful learning and achievement of the unit’s intended learning outcomes.

In the ensuing discussions with Steven, it became clear that as an adult with high functioning autism, he had an overwhelming need for clarity and detail in the learning environment (and in life generally). Steven struggled with any ambiguity in relation to what he should be doing at any one time. This was in contrast to the desired characteristics of the authentic learning environment, including ill-defined problems to engage with, complex tasks completed collaboratively over time and flexibility in which students engaged in those activities. For Steven, this array of roles, tasks and activities was simply too confusing. He recognised that his needs were different to his peers:

From the very beginning, it’s got to be crystal clear and not too many possibilities. And I thought everyone was like that. But people have instincts, and mine are overridden by this logical process of elimination. (Steven, IT2, IN)

Steven explained that making choices was very difficult for him, as he would be unsure how to judge the value of each option. For example, in each unit there was always a large range of resources and activities that students could engage in, and it was not expected that they all be completed or accessed in any particular order. For Steven, knowing what to do engage in, and what to leave, was an impossible situation. Rather, he would prefer to engage in all options and he would not be disturbed at all by the extra time required to do so. The critical requisite was the provision of a logical structure and sufficient detail for all activities and resources so that he felt he could move confidently through the unit.

In an on-campus mode of learning, student uncertainty is more likely to be noticed and responded to. In the online environment both noticing and responding appropriately may be more challenging, simply because of the fewer modes of communication. During the interview, Steven described the ways in which he engaged with the resources, such as recorded lectures. These included narrated PowerPoint recordings that were approximately 25 minutes long and accompanied weekly notes or described activities and assessment tasks in more detail. Steven revealed in an interview that he listened to each recording exactly 20 times. When asked why he felt compelled to do that, Steven offered an explanation:

I have to listen to the lectures a large number of times for the same reason that I would count the pegs when putting the washing on the line. I don’t think I need to do it to improve learning as much as I think I need to do it so I don’t worry that I have missed something. I am only emotionally ‘satisfied’ after a certain number of
‘listenings’. I will listen to a lecture many times in order to build a mind map of the information. (Steven, IT2, IN)

This is was not at all stressful for Steven though, as he revealed:

As strange as it might seem, I actually find lectures to be incredibly soothing. I use science documentaries (TV on a timer) every night to sleep, and that is every single night without fail. I have been doing this for 25 years or more. I have learned more about the secret life of plants and string theory than any normal person should! (Steven, IT2, IN)

Adding to the significant time Steven committed to engaging with online resources, he was also easily distracted while studying. This is not distraction in the usual sense (Facebook, online chats, and such like) but rather as a result of him finding errors or omissions in other people’s work. For example, spelling mistakes, ambiguous instructions, conflicting dates and such like would cause his focus to slip completely, at the expense of his learning:

If any of those issues were to arise...that is a distraction. I stop listening and then begin calculating through the possible meanings ... I can stare and stare at a spelling mistake for 15 minutes and then bang, I’ve just missed 15 minutes worth of whatever it was that is being said. I know I’m doing it and I try so hard not to do it but ... I even stop breathing. (Steven, IT2, IN)

One of the biggest challenges Steven experienced in an online environment occurred when he was expected to collaborate with other students. These activities typically aimed to help students connect with the theoretical aspects of the unit, by comparing and contrasting the theory with their practical experiences as mature-aged students. It might include posting responses to discussion forums, attending web-conferences or contributing to group wikis. Often these collaborations resulted in a product that would be useful to all students, such as an annotated bibliography of all the unit readings. For Steven, it was not collaboration itself that was difficult. Rather, it was the distraction that he experienced when he tried to understand the way other students behaved. For example, a well-meaning peer gave advice to Steven on what they were required to contribute to a wiki in another unit. Steven described what occurred:

She looked the Wiki up and went, ‘this is all you have to do. I go there and then just write a bunch of drivel, blah blah blah, blah blah blah. Some party line, catchy little quote, put your initials after it, click on done’. I thought, um, I’m sorry? I don’t understand why you just did that, what possible benefit there could be for doing this? Why? Why? Why? (Steven, IT2, IN)

Steven’s words reflected his desire for logic, both in how the learning environment was structured and also in how others behaved in that environment. Seeking advice from a fellow student who took a particularly casual approach to a collaborative activity threw
him completely. The more unpredictable the environment was, the more likely he would encounter what he described as a ‘roadblock’, severely impacting his learning. Steven managed to contribute to another collaborative activity, however, and publicly acknowledged the potential for personal growth in a posting to the unit’s discussion forum:

I am albeit gradually re-tuning my brain to think in a way which may help me to understand a situation which could prove extremely challenging to a purely logic oriented thinker. By forcing me to think outside the box I am flexing, sometimes painfully, brain muscles which I have never viewed as useful. (Steven, IT2, DBP)

Steven’s experiences triggered a careful reconsideration of the online design of all the units to ensure that the resources and activities were clearly described, including the purpose of each one and the role each student would have in each activity. Such modifications were considered by staff to improve the experience for all students, not just Steven. By the third iteration of the study, Steven was feeling much more confident that he would succeed at university. He recognised that university offers him a place where he could feel very comfortable largely because of intellectual engagement with teaching staff and peers. This came as somewhat of a revelation to him:

I have always found that interactions [with other people] cause considerable stress. The safe environment of the university has provided an opportunity to practice on people. I have always experienced difficulty communicating with the general public because I have had to pretend to be interested in their subject matter, but in the university environment the people are, simply, extremely interesting and engaging. (Steven, IT3, IN)

Steven was an enthusiastic participant in the study. He noted that the interviews, email exchanges and phone calls over the three iterations of the study helped him to more clearly understand how his approach to learning differed from his peers, and through that understanding came increased confidence to try new approaches. Steven valued feeling safe to talk about his approach to learning and to know that the teaching team were willing to flex the ways students interacted and engaged in their studies. Steven had not disclosed his autism to the University as he did not, understandably, consider it a disability. Investigating the University’s web-site confirmed that there was no provision for current or intending students to register a condition such as high-functioning autism without it being classified as a disability, which raises questions of how such conditions might more appropriately be brought to the attention of teaching staff.
Discussion
The second design principle is to ‘recognise and incorporate the lived experience of the students’. The three participants above reflect vastly different ways that the principle needed to be enacted in order to fully and appropriately engage those participants. For each of them the way each principle was enacted made a critical difference to whether they felt confident and competent to continue in their studies or not. Rick considered his life experience as the most important resource in his future learning and he needed to see a direct connection between what he was learning and his future needs as a VET teacher. He recognised that he had transformed his approaches to learning and teaching over the eighteen months of the study, through a progressive appreciation of alternative perspectives including those he originally felt little connection with. In order to do this though, he needed to be allowed to retain his own authenticity in the way he expressed himself, his manner of engagement in activities and the paths he chose to explore. His lived experience needed to be recognised as a valid resource by teaching staff, in order to reflect critically and to provide a base for a reimagined future.

Rosie’s experience over the three iterations provided an example of the challenges faced by non-traditional students in a university context. Her lived experience was embraced by some teaching staff and considered a threat by others. When Rosie felt her experience was not valued by staff, it caused self-doubt and loss of motivation. Despite her considerable ability and enthusiasm, she was vulnerable to environments that did not recognise or respond to what she brought to, and sought from, the learning environment.

Finally, Steven needed to have his lived experience recognised and responded to for quite different reasons. His approach to learning meant that the very authenticity sought by staff could turn the online learning environment into a confusing and distressing place. He needed a structure that would acknowledge and support his preferred way of engaging, while at the same time encouraging and facilitating a greater confidence in developing alternative approaches.

The findings support the work of Lindeman (1926), Knowles, et al. (2011) and Rogers (2002) with respect to the influence that previous experience has on the process of learning. The lived experience of participants created their established perspectives and beliefs, and any new experience in the learning environment needed a structure that would facilitate the process of assimilation. This had the potential for some disorientating moments that could be the catalyst for further growth, as long as the
process and the environment were supportive. The findings of this study suggest that teaching staff ignore their students’ previous experience at their peril, as it has the potential to disengage students and lead to withdrawal as a threat to self-identity emerges.

Given that the findings support an approach that recognises the importance of the students’ experience, discussion needs to focus on how this can be done. Malcolm and Zukas (2001) contend that the higher education sector needs only to look to the adult and community education sector in order to better understand how to respond appropriately to the growing number of non-traditional students. Rick, Rosie and Steven are all lifelong learners, engaging through their work, their family roles and their previous educational experiences. Their stories align with Billett’s (2010) proposition that (lifelong) education should be “premised upon consideration of individuals’ learning, in all its complexities, contributing factors, individual differences, etc., including the circumstances associated with how that learning progresses” (p. 411).

For educational institutions, this flags a reconceptualisation of how the learner is to be considered and in doing so, a reconceptualisation of the role and responsibilities of the lecturer as well. The findings reiterate the importance of having the lived experience legitimatised, and recognising that this legitimacy can be gained in various ways. It could be, as was the case with Rick and Rosie, legitimate knowledge gained through work experience (Billett, 2010; Marsick & Watkins, 1990). It could also be legitimate through an authenticity to self, as Steven’s experience demonstrated. In all three cases, the participants needed to be assured that their knowledge, borne through experience, was valid and able to be drawn upon in the university context. As Knowles et al. (2011) and Rogers (2002) contend, it is the role of the lecturer to facilitate an environment where students feel secure enough to interrogate those existing perspectives in light of new experiences borne through their learning activities, and perhaps arrive at new and powerful understandings during that process.

As the findings reflect, for Rick the acceptance and valuing of his experience encouraged a reconceptualisation of self that was positively transformative (Mezirow, 1981) and occurred in a similar manner to Nohl’s (2015) investigation – slowly but significantly. For teaching staff, legitimising the students’ lived experience may open up the possibility of a somewhat unpredictable or challenging environment, as was the case in this study. Students may well find their studies disorientating, as they struggle to
reconcile new experiences with old, and the consequences could be unsettling for themselves, their peers and teaching staff. Thus, non-traditional students may well be likely to question, challenge and seek confirmation of particular views. As the literature suggests, such behaviour could threaten the ‘culture of academia’ and be taken as a criticism of self by the lecturer (Bamber & Tett, 2000).

While Lindeman, Knowles and others may rightfully claim that encouraging critical discourse amongst adults is a fair and just process, Bitterman (2014) acknowledges the difficult terrain that such an approach encounters when she recalls the challenges of gatherings of diverse adults in educational settings. It may well not be an easy process for students or their teachers. The findings indicate that, while experienced and confident teachers may be able to embrace an alternative role in the teaching and learning process, for others it may be a leap too far away from a role they feel comfortable in. While the literature largely considers transformational learning in terms of students (Mezirow, 1981), it may well be a potentially transformational process for lecturers to, essentially, move from one paradigm of teaching to another.

There will be challenges for teaching staff in the implications that arise from inviting the lived experience into the learning environment. As this study revealed with Steven, recognition led to the need for individual response, in this case differentiation in the assessment approach. In times of greater student to teacher ratios and increased pressure on academics, differentiation may be difficult to provide. Yet a core responsibility, both ethically and legally, is to provide an equal opportunity for all students to participate fully in university life, so teaching staff should feel justified to seek the resources they require to provide all students with an appropriate and equitable learning environment.

Conclusion
From the perspective of the participants in this study, the most critical aspect is one of design. In the learning activities, the assessment tasks, and in the philosophical approach modelled by the teacher, it is critical that students see that their lived experience is considered a worthy, indeed critical, component in their learning environment. Such lived experience becomes just one of the many learning resources, adding to what else the teaching staff may bring to the learning environment. Students need to be assured that their own experience is as legitimate as scholarly papers or the lectures in the unit. It is important too for the students to know that their lecturers value those experiences and respect them as knowledgeable individuals. Just as the scholarly items must stand up to
the rigours of critical examination, however, so too should their lived experience in order to arrive at new understandings and perspectives. As the adult and community education sector already know, this should be done in a supportive manner, ensuring that time and space is given to those processes.

This chapter presented the findings of the instantiation of the second design principle: *Recognise and incorporate the lived experience of the student*. Aligned with the principle itself, the findings were presented largely through the experiences of three participants. All three participants had diverse experiences before and during the study and each needed an environment that respected, and then responded to, those differences. The findings of this chapter reinforce the value of explicitly recognising the lived experience of students, and designing activities and strategies where those experiences are considered valid, valuable and relevant to ongoing learning. As the number of non-traditional students entering universities continues to rise, the learning environment needs to respond positively to the more diverse, and experienced, cohort.

The next chapter considers the findings of the enactment of the third principle, which relates to the somewhat vexing issue of student collaboration in online learning environments.
CHAPTER 8

Collaboration in the learning community

Design a classroom environment where the students will engage in the kind of reflective, collaborative, intellectual and emotional activities, which, if successful, will lead them to construct understandings and to ask questions that were not in your lesson plans or in your unit design (Shulman, 2004, p. 496-497).

This chapter considers the theme ‘Collaboration in the learning community’ and how it was enacted through the third design principle guiding the course. This theme responds to the literature that supports the value of students collaborating in learning activities and rehearsing the skills that will be required in their future workplace or community. Within technology-supported environments, for example, geographically diverse students can meet and work together on tasks, or subject experts can attend web-conferences and introduce students to new networks and communities.

However, the literature suggests that in a fully online environment, in particular, the process of collaboration can be challenging for students and can threaten to hinder, rather than encourage, learning. The investigation of the enactment of this principle sought to better understand how collaborative activities can be structured to best support student learning.

This chapter will consider how this principle was enacted, the challenges that were experienced, and what has been learnt that can contribute to teacher-education practice and theory. Table 14 presents the third principle, with guidelines for teaching staff and examples of its manifestation in the learning environment.
Design Principle 3: Provide meaningful opportunities for collaborative construction of knowledge within the learning community

Table 14: Design Principle 3, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment. Students are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide meaningful opportunities for collaborative construction of knowledge within the learning community.</td>
<td>• Design learning activities that invite students to work together in order to achieve mutual goals. • Encourage students to contribute altruistically to the learning community, recognising that many students will bring considerable experience and knowledge to the community and be willing to share that with others. • Integrate opportunities for students to peer-review each other’s draft assignments, recognising this collaboration will build skills that will be valued during and after university study.</td>
<td>• Supported to work collaboratively in each unit within the course. Activities such as collaboratively created wikis, blogs, group journals and online discussion forums will be included to ensure that all students have regular opportunities to engage and learn with and from each other. • Encouraged to be actively involved in the student community in areas where they feel comfortable and competent, drawing upon their previous experiences in teaching or learning environments.</td>
</tr>
</tbody>
</table>

Method of analysis
In addition to the method of analysis detailed in Chapter 4, a brief outline of the processes undertaken for this particular design principle is provided. The analysis for this theme began with data from eSurvey, which indicated a general level of concern about collaborating with peers, particularly if related to tasks that would be assessed. This data correlated with the initial consultations with prospective students who knew that their study patterns would be unpredictable given their multiple roles and responsibilities external to the course. These concerns existed alongside contrasting data indicating that students valued the prospect of working together within their own campus (if they were VET teachers) or in the online environment with other peers.

Accordingly, the analysis concentrated on the data from focus groups and follow-up interviews, which sought to gain a better understanding of the challenges and potential value from collaborating in a number of different ways within the learning environment. Additional interviews were conducted after the analysis of learner activity within MyLO showed particularly high levels of collaborative activity from several participants, all of whom offered to help the researcher understand their motivation for being so active.
Those interviews were conducted via email, and facilitated a deeper level of analysis being completed.

Over the three iterations, the manner in which this design principle was enacted was refined, as the findings and subsequent discussion will reveal. The articulation of the design principle itself, however, remained unchanged over the research period.

This chapter considers the principle through the student perspective of collaboration. It is acknowledged that attention on the student perspective raises a potential for judgement to be based on the initial reaction of students rather than a deeper perspective that they might develop at a later time as the meaningfulness of the activity becomes more apparent to them. Given the work of researchers and writers concerned with the characteristics of adult learners, however, and the evidence that motivation, engagement and retention are highly contingent on an immediate sense of value and meaning (cf., Brookfield, 1986; Kahu, 2013; Knowles, et al., 2011; Munro, 2011; Tough, 1971) it seems valid to investigate this principle through the student perspective. A number of student perspectives on collaborative learning are examined in this chapter. Each ‘student viewpoint’ presented is either a direct quote from a participant or authentically represents the cohort’s view gathered through the data collection process. The discussion section following the findings will then consider implications for the design principle and its enactment.

**Enactment into the course**

Examples of the ways in which this principle was enacted into the course are briefly described in Table 15, and the effect of these activities is analysed in the subsequent ‘student viewpoints’ section. Note that activities such as the discussion forums are considered to be collaborative activities, embracing the view of Roschelle and Teasley (1995) that such activities involve a “negotiated and shared conceptual space, constructed through the external mediational framework of shared language, situation and activity” and are not conducted “merely inside the cognitive contents of each individual’s head” (p. 70-71, italics in original).
Table 15: Examples of the enactment of Design Principle 3

<table>
<thead>
<tr>
<th>Unit level</th>
<th>Nature of collaboration</th>
<th>Purpose: To strengthen -</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| Year 1: EAL110 | Students collaborate to build a wiki that provides an overview of a number of theorists associated with foundational psychological perspectives on learning. | - Research skills  
- Knowledge  
- Information literacy  
- Affordances of technology in education  
- Sense of online community | Formative assessment only, and informs the students' first assessment task. |
| Year 1 (EAL102) | Students participate in a peer-review of a draft 'strength analysis' that becomes part of their individual ePortfolios. | - Communication skills  
- Knowledge  
- Information literacy  
- Sense of online community  
- Skills required in the workplace | Formative assessment only, and informs the students' third assessment task. |
| Year 1-4: EAL112 EAL211 EAL323 EAL334 | Students are encouraged to view and make comments on their peers' Professional Experience Blogs, which entails 80 days of placement in a range of settings over the four year course. | - Collegial relations  
- Knowledge of different educational contexts  
- Reflective practice  
- Familiarity with Professional standards for Teachers  
- Professional communication | Formative assessment only, and contributes towards assessment tasks. |
| Year 1-4 (all units) | Students are invited and encouraged to be active participants in the discussion forum that is part of each unit of study. | - Communication skills  
- Knowledge  
- Information literacy  
- Sense of online community | Not assessed |
| Year 3 (EAL310) | Students share and peer-review their designs for an eLearning strategy. Feedback informs the final design, before starting to work on the development of that eLearning strategy. | - Knowledge  
- Affordances of technology in education  
- Information literacy  
- Skills required in the workplace | Formative assessment only, and informs the students' first assessment task. |

Student viewpoint #1:  
“I don’t want collaborative assessment tasks!”

Participants completed a survey during the first iteration of the study. This survey was distributed electronically, and completion of the survey indicated consent to participate in that particular research method. In one of the questions, respondents were asked to indicate which of the following statements most closely aligned with their view on collaborative assessment tasks (described as being 3-5 students working together and making a joint submission with equal marks awarded to each member):

- I would not like collaborative assessment tasks
- I am not sure whether I would like collaborative assessment tasks or not
- I would like collaborative assessment tasks (eSurvey, IT1)
The initial eSurvey revealed that only 27% \((n=11)\) of the respondents indicated that they would like to have collaborative assessment tasks, with the remainder of the respondents split equally between not wanting, or not being sure if they would like, collaborative assessment tasks. The next question invited respondents to provide any explanatory comments. The responses offered for why collaborative assessment tasks were not wanted fell into two categories. The primary reason was the ‘busy-ness’ of their lives and a consequential reluctance to either depend on peers or be depended upon. The other reason offered was a concern about task allocation and resultant grades. One comment volunteered in the eSurvey represented the views well:

I would not enjoy collaborative assessment tasks as it would require 3-5 busy people with busy lives, who study at unorthodox times to work together. I believe that adding study to the mix of life, work, children etc. is stressful enough without having to wait on others to do their part of the workload, for a joint submission, for which I will receive a joint mark. I have worked hard for good results (to date!) and am responsible for that. I would not like to risk group work where this could not be achieved. (IT1, eS)

Conversely, other participants recognised the authenticity of collaborative tasks, in terms of preparing them for their workplace and also in terms of learning through other, more experienced peers:

Community of practice, shared knowledge, it is how we work in the real world! (IT1, eS)

Responding to those participants who had expressed a desire to have collaborative assessment tasks, unit coordinators invited students to work together on assessment tasks in units if they would like to. Only a small number of students (8) have taken this opportunity over the period of the study, and in each case the students were physically located in the same area and were workplace colleagues. The students who chose that option indicated that it had been a rewarding and enjoyable process, and their grades were usually above the average grade allocated for that particular task. For example, six students who worked in the same TAFE campus chose to redesign a particular unit within their course as a collaborative assessment task. The students noted that the task provided a reason to organise a collegial gathering and that the newer teachers benefitted greatly from working with their more experienced peers. This was reflected in the high grade awarded for the task.

In the eSurvey completed after the third iteration, in response to the same question, the respondents (50% of whom had also completed the first survey) indicated a strengthened view against collaborative assessment. Of the 38 respondents, 15% were in favour, 40%
were unsure, and 45% did not want collaborative assessment. Similar explanations were provided but, perhaps offering a reason for the increase, some respondents noted that they had been required to participate in assessed collaborative activities in units outside of those under the umbrella of the applied learning design principles and had found that their fears had been realised in respect to peer-availability and unequal workloads. One participant added an interesting perspective that had not been previously identified:

I encourage collaborative processes in my job at [name of campus] nearly every day, I also do this at home with my family and friends and, for me personally, studying solo is a really nice space to be in. (Ellen, IT1, FG)

The data from other sources, such as interviews and focus groups, supported the findings of the eSurveys. There was general agreement that any form of dependence on peers as part of a summative assessment was not desirable. Participants recognised the pedagogical potential of a collaborative process but the reality of their lives as non-traditional students meant that it was just not perceived as a viable option for them. However, as described in the next ‘student viewpoint’, working collaboratively in learning activities (as opposed to collaboratively creating products for assessment) was considered useful on a number of levels. Importantly, being assessed on, for example, a critical reflection on the process of collaborating with peers in learning activities was considered to be highly appropriate as it facilitated a greater understanding of the benefits and challenges of such interaction, while retaining individual responsibility for the awarded mark.

**Student Viewpoint #2**

“Collaborating with my peers in learning activities has been enormously valuable”.

Participants reported that collaboration with peers in learning activities was a positive aspect of their study. In the first eSurvey, in response to a Likert-type question that sought their level of agreement with a number of statements, 80% \((n=32)\) of participants agreed or strongly agreed that working collaboratively with their peers had helped their learning. Interestingly, a smaller percentage \((60\%) \ (n=24)\) agreed/strongly agreed that they *liked* doing collaborative learning activities, which may indicate that for some respondents it was a useful, but not necessarily enjoyable aspect of their study (note that 27% \((n=16)\) were unsure if they liked it or not). In the eSurvey at the conclusion of the third iteration, in response to the same question, the results were similar, with 79% \((n=17)\) of participants believing it helped their learning and 66% \((n=14)\) agreeing that they like doing collaborative activities. The percentage of students who reported liking
the collaborative process had risen slightly, reflecting that perhaps tasks had become better suited to a collaboration, or alternatively that participants had become more comfortable being part of collaborative activities.

The interviews and focus groups then investigated the participants’ perceptions of collaborating in learning activities in more detail. The analysis of relevant data reflects a number of themes emerging for both the positive and negative aspects of collaboration. On the positive side, collaboration was reported to have led to greater participation and understanding, as well as stronger social connections and feelings of engagement. Participants indicated how much they had gained from simple collaborative tasks, such as the online forums:

So for me the way the discussions boards are set up for online learning is similar to the staff room. The place where we respond and are able to get a sense of each other’s fields and approaches to learning and teaching. I enjoy this level of collaboration because you can take your time, gather your thoughts and it’s really up to you as to how much you want to engage, but as the lecturers constantly reiterate, the more you involve yourself the richer the experience. (Ellen, IT3, IN)

Participants gave examples of valuable peer-to-peer online interactions and these ranged from providing feedback on draft versions of assessment tasks to empathising when children were ill. Relating to the time-challenged nature of their lives, several participants noted their appreciation when teaching staff organised the discussion forum in a way that kept social postings separate to those of an academic nature, in order to reduce the need to ‘wade’ through large numbers of posts. It appears that while the social chatter provided a valued element of community, it could also be an unwanted distraction. Nonetheless, the data consistently reflected a strong desire to contribute meaningfully to their online community, whether that be through providing extra resources, responding to specific questions about content or assessment tasks, or arranging to meet face-to-face with peers who were in the same geographical location.

In the eSurveys conducted after the first and third iteration of the study, respondents were asked to rank a list of activities (1 being the most valuable, to 6 being the least valuable) that most helped to build their reflective skills.

For the first iteration, the ranking as a group was as follows:

1. Online discussions with peers and teaching staff
2. Lectures and notes from the teaching staff
3. ePortfolio activities (such as blogs and journals)
4. Reading scholarly articles
5. Web-conferences with peers and teaching staff
6. Other (listed here were feedback on assessments, personal discussions with teaching staff, study groups, their own students, and experienced colleagues at their place of employment).

Interestingly, in the eSurvey after the third iteration, the respondents who were newer in the group (with either one or two semesters of completed study) ranked the lectures and notes from teaching staff higher (in the first position) than the online discussions with peers and teaching staff (in the second position) but the more experienced students gave the same ranking as in the first eSurvey, with online interactions remaining as the most highly valued activity. These results indicate that students gain a greater appreciation of this activity over time, presumably as they became more aware of the benefits to their learning.

Another application that encouraged collaborative interactions with and between students was the web-conference tool (Blackboard Collaborate). Web-conferences were held regularly (every few weeks) in most units, usually between 8 and 9 pm in the evening, to discuss concepts and theoretical perspectives, check on progress and clarify task requirements, and also to facilitate some social banter at the conclusion of the conference. Web-conferences were recorded, and all students received an email with a link to the recording shortly after it ended. Participants appeared to find the web-conferences a useful way to consolidate learning from other activities through asking questions and hearing other views on particular topics:

I get many of my ‘ah ha!’ moments from Webinars, it really consolidates my thinking, I get to hear from others, have a conversation, test ideas and instant feedback… collaborating to help each other’s learning. (Diane, IT2, FG)

Diane is identifying the value of synchronous feedback from her peers and teaching staff, and how that form of collaboration enabled a crystallisation of understanding. Diane’s observation aligns well with the Wenger’s (1999) concept of a learning community, in which all members learn from the interactions, not just the newer or less experienced members.

An older participant, Lionel, who was a pre-service student arriving in the program directly from the hospitality industry, noted how he felt part of a community of learners during collaborative strategies, where his peers supported and extended his learning through a number of activities:

I’ve been extended to a point where I’ve got to the edge of what I know, and then I’ve been prompted to go that little step further, but not in too big a jump that it
alienates me. And that, I think, is an amazing skill, and it’s something that I hope one day I’ll be able to emulate. (Lionel, IT2, IN)

Lionel’s description is indicative of Lave and Wenger’s (1991) notion of participants moving from the periphery towards a more active role in the centre, with his aspiration of emulating his more experienced peers in the future. Another participant connected her experience of collaboration with what she had been learning in her studies, in particular Vygotsky’s (1978) concept of a More Knowledgeable Other (MKO). This participant also indicated how it was changing her own teaching practice:

I think in all units we have been encouraged to share our tasks for constructive feedback from our peers. I at first was a bit held back from doing this (confidence factor) and offering my comments 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 from my MKO that I can now exercise that within my classes. (Diane, IT1, DB)

Interestingly too, this participant noted that she recognised that in her previous student experiences collaborating with assessment tasks had not been encouraged, nor in her present teaching context where she suggested that sharing draft assessments would be considered “cheating, wouldn’t it?”

One third year unit appeared to engender a particularly high degree of collaboration, with the peer-review process actively engaging all students. In this unit, students were required to design and develop a pedagogically sound eLearning strategy. At the draft design stage students were invited to share their product for collegial review. It appeared that the peer-review was particularly valuable in this unit because students were genuinely in need of feedback, as most were not confident with their first draft design. The designs themselves were very diverse, and participants noted that seeing their peers’ work ‘opened their eyes’ to new perspectives and possibilities. Participants described how one student, who had moved ahead and started developing her eLearning strategy, offered to share her strategy with peers in a web-conference:

Katie, she went into Fronter [eLearning platform], developed hers, did a web conference on it and everyone just loved it. That’s collaboration! The assessment design needs to be one in which people really value and look for help and support and sharing. (Ellen, IT3, FG)

Katie, who offered to share her design in a web-conference, found sharing her own eLearning strategy an exciting and rewarding experience. For her, the significance lay in the fact that she had initially doubted her own ability to create an eLearning strategy, so once conquered it was extremely rewarding to share what she had learnt with others. She recalls:
I suddenly had this experience where I knew I could do it and I was really excited about it and I really wanted to... it sounds a little bit, you know, but I really wanted to say to other people, to go, ‘You know what? You can do it. It’s actually not that hard. Just have a look at it.’ I like the idea of being able to share. People said to me, ‘Oh, it was really great because I actually felt afterwards that I could do it too.’ I mean, that was so off the cuff. We just did it that day. But I think that was really valuable for a lot of people. (Katie, IT3, IN)

As Katie noted, it was not a planned component of the web-conference. The affordances of the web application, however, enabled the lecturer to give Katie moderator rights and web-share her eLearning strategy (which was hosted in her own institution’s Learning Management System) at the time it was suggested in the web-conference. All students could then see what their peer had created, ask questions about it, and deepen their understanding of how to move from the design to the development stage. For the lecturer, Janet, it was an exciting moment to see such a high degree of collaboration, as her reflection diary noted:

I had that wonderful moment where the momentum shifts; the students were running the show and my role was just to support the process. Not only was it rewarding for Katie to share what she had done, but it was invaluable for her peers. (Janet, IT3, SD)

It was interesting to discover that the recording of this web-conference was viewed more times than any other web-conference in the unit. This is perhaps due to the nature of Katie’s presentation, in that it considered both the design aspect (the first assessment task) and the development of the product (the second assessment product). Additionally, as many of the participants were building their eLearning strategy using the same platform as Katie, the authenticity and relevance of her presentation was highly valued.

**Student viewpoint #3**

“Just what was the point of that collaborative activity? I didn’t learn anything.”

The benefits of collaborative activities, however, were balanced by reports of the challenges and limitations in doing so. Most commonly mentioned was the difficulty of finding time when it was required; many participants described a study pattern that could see them away from the online learning environment for up to a week and then they would ‘catch-up’ with an intensive period of study. If a collaborative activity, such as a peer-review of draft assessment tasks, was in progress while they were absent it led to feelings of guilt and isolation.

Collaboration through technology-supported environments also presented a potential barrier to the message being communicated. While the nature of the participants (being
primarily employed VET teachers) meant that some could meet in their own workplace
to collaborate on a particular task, others needed to rely on the written word and this
seemed to limit the perceived potential for meaningful interactions:

I just find by the time the words come from here [points to head] to the fingers it
loses its emotion and its meaning and its context and then you’re trying to make it
sound good rather than just being real. (Diane, IT1, IN)

This participant raised an issue that others noted as well – the nature of providing written
feedback seemed to increase the level of concern participants held about possible
misinterpretation. Fears of causing offence, or not providing well-constructed feedback
were significant, as this comment in the first eSurvey reveals:

In my first year, first couple of units, I didn’t contribute to peer-review. I was too
scared. People use big long words and beautifully constructed sentences and
maybe they sat at home in tears trying to get the perfect sentence together, I don’t
know. But when it got online it was like, ‘Oh, I can’t do that.’ (IT1, eS)

And from another participant:

I enjoyed 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. (Cassie,
IT1, FG)

The fear of making contributions that might be considered inadequate appeared to lower
the quality of the collaboration in terms of depth of thinking or criticality of evaluation.
For example, in first year units at least, peer-critique often appeared to focus on structure
and presentation of the draft products at the expense of more meaningful, constructive
feedback. The restricted modes of communication, the public nature of the feedback, and
a lack of familiarity with peers were suggested as reasons for this:

People are really nice, you know? They don’t actually want to be critical. I’ve
had assignments I’ve given to people where they’ve corrected my spelling and
grammar, but nothing about the content. (Ellen, IT1, FG)

It appears in the instances where students genuinely needed multiple perspectives and
new insights, such as in the earlier example of Katie’s presentation in a web-conference,
the barriers to communication or fears about disclosure in the online environment were
overcome. In these instances, collaboration appeared to be a highly valued and
meaningful experience. Web-conferences offer synchronicity, removing the inherent fear
of possible misinterpretation of the written word in other forums such as discussion
forums. Conversely, though, discussion forums provide participants time to consider
their entries carefully before posting them, so perhaps each activity has its advantages
and disadvantages in that regard.
Wikis offered another potential way for students to collaborate. Using a platform that enabled all students to join and contribute easily, several units included an activity where students created a shared product that would help develop understanding of theoretical concepts or be a useful ongoing resource in their roles as teachers. In one unit students collaboratively created an annotated bibliography of all the set readings in the unit, and this activity was well received by students and they continued to visit the wiki well after the unit concluded.

In other wiki activities, neither participation nor perceived value was particularly high. For example, a wiki site that was collaboratively constructed by students and designed to result in an overview of foundational theorists in educational psychology did not engage the students to any significant degree. Less than half the students made entries to the wiki (unfortunately, it is not possible to say what percentage of students viewed but did not contribute to the wiki). The lecturer’s intention was for the students to develop their evaluative skills (of the mass of information available on the web) by co-creating a concise, interesting and useful overview to the major foundational theorists in educational psychology. The task was completed but the quality was lower than expected and largely consisted of a compilation of web-links and embedded videos. The contributing students appeared to have adopted a compliance approach, completing the task as invited but not investing intellectual or academic engagement with it. One participant described her experience of the wiki exercise:

I and someone else continued with the pages but there were quite a few other people in the group that I don’t think even logged on to the wiki itself. I think it would have been a very good learning tool…but I didn’t get the contribution from the other people to get their wisdom and knowledge on how that’s going to help me. (Rosie, IT2, IN)

The participant appears to be indicating that she most valued the lived experience of her peers, rather than the propositional knowledge that the wiki was primarily designed to collect. This is a logical response, and highlights the difference between what the lecturer considered would be useful and the student’s perspective. Her view was supported by several of her peers, who noted that despite contributing to the wiki activity, they had not re-visited it. The lecturer, Janet, reflected on her feelings about the activity:

I found it a really stressful experience, mainly because of the variation in how students were participating. Some were putting so much effort in, while others were basically ‘copying and pasting’ content in from other web-sites, and the remainder were completely absent. What I planned as a great way to evaluate,
Janet’s reflections support Brookfield’s (1995, p.1) proposition that “one of the hardest things teachers have to learn is that the sincerity of their intentions does not guarantee the purity of their practice”. In this case, students did not appear to see the value of the activity, and thus participation appeared to largely reflect a surface-approach and minimal effort. Notably, participation in the task was not assessed, so it is difficult to know if it was the task design or the lack of associated assessment, or perhaps both, that contributed towards the students’ lack of engagement.

**Student viewpoint #4**

*I love helping other people, and being active in the discussion board!*

The discussion forum is an activity included in every unit in the course, with teaching staff creating ‘topics’ and posing initial questions for students to respond to. All students were able to start a new discussion thread within a particular topic, respond to a peer’s message, or just reading the postings. Throughout the three iterations of the study, it was apparent that some students were consistently more active in the discussion forums than their peers, despite participation not forming part of the assessment regime in any unit. In order to understand the reasons why participants might choose to be so active, a unit from the first iteration was chosen for a deeper analysis. To begin with, the number of threads (discussions started), the number of replies and also the total number of read messages was collected, and the three most active participants were identified. The results of this analysis are reflected in Table 16, below.
<table>
<thead>
<tr>
<th></th>
<th>Number of: New threads created</th>
<th>Replies to others’ messages</th>
<th>Total number of postings</th>
<th>Total contribution to the discussion forum as a percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachael</td>
<td>31</td>
<td>284</td>
<td>315</td>
<td>21.4%</td>
</tr>
<tr>
<td>Jess</td>
<td>47</td>
<td>177</td>
<td>224</td>
<td>15.2%</td>
</tr>
<tr>
<td>Sue</td>
<td>27</td>
<td>136</td>
<td>163</td>
<td>11.1%</td>
</tr>
<tr>
<td>Diane</td>
<td>28</td>
<td>79</td>
<td>107</td>
<td>7.3%</td>
</tr>
<tr>
<td>Paula</td>
<td>32</td>
<td>55</td>
<td>87</td>
<td>5.9%</td>
</tr>
<tr>
<td>Melissa</td>
<td>12</td>
<td>68</td>
<td>80</td>
<td>5.4%</td>
</tr>
<tr>
<td>Geoff</td>
<td>8</td>
<td>45</td>
<td>53</td>
<td>3.6%</td>
</tr>
<tr>
<td>Caro</td>
<td>19</td>
<td>32</td>
<td>51</td>
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</tr>
<tr>
<td>Douglas</td>
<td>24</td>
<td>21</td>
<td>45</td>
<td>3.1%</td>
</tr>
<tr>
<td>Jayne</td>
<td>11</td>
<td>32</td>
<td>43</td>
<td>2.9%</td>
</tr>
<tr>
<td>Peter</td>
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<td>33</td>
<td>41</td>
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</tr>
<tr>
<td>Rick</td>
<td>10</td>
<td>29</td>
<td>39</td>
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</tr>
<tr>
<td>Doris</td>
<td>6</td>
<td>31</td>
<td>37</td>
<td>2.5%</td>
</tr>
<tr>
<td>Josie</td>
<td>4</td>
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</tr>
<tr>
<td>Mary</td>
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</tr>
<tr>
<td>Cliff</td>
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</tr>
<tr>
<td>Jock</td>
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<tr>
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<tr>
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<tr>
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</tr>
<tr>
<td>Zeena</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>0.7%</td>
</tr>
<tr>
<td>Vera</td>
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<td>0</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total student contributions</strong></td>
<td><strong>310</strong></td>
<td><strong>1163</strong></td>
<td><strong>1473</strong></td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td>14</td>
<td>230</td>
<td>244</td>
<td>14.2%</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
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<td>1393</td>
<td>1717</td>
<td></td>
</tr>
<tr>
<td><strong>Contribution of the 3 top participants</strong></td>
<td></td>
<td></td>
<td></td>
<td>42.9%</td>
</tr>
</tbody>
</table>

These three participants: Jess, Rachael and Sue were invited, via email, to share their thoughts in relation to why they were significantly more active than their peers.

**Jess:**
For Jess, participating in discussion forums was intellectually stimulating. She described how discussions where peers and/or the lecturer enabled her to move to a higher level of thinking, which she found that very satisfying. An example from one unit can be seen below, and illustrates Jess’ progression of thought as she reflected on a web-conference. The guest speaker in this web-conference had spoken about her role as an international
facilitator. A discussion ensued after the web-conference, and illustrated how Jess, with the help of her peers, moved from identifying alternative options, to reflecting critically on those options (see Figure 13, below). It is significant to note how Jess is very aware of how her actions may be perceived by her peers, and modifies her responses according to her perception of the message-poster.

Figure 13: Threaded discussion forum

Jess was also motivated to participate in discussion forums because she wanted to help her peers. She wanted to provide more than friendly support, as she describes:
I noticed that some students were reflecting on a very superficial basis so I would go in and ask questions like ‘why do you think that?’ and ‘what underlying assumptions does that reflect?’ In some cases, however, I hold back on help as I don’t want it to come across as patronising. (Jess, IT2, IN)

Jess believed that her activity in the discussion forums was driven by a sense of reciprocity between the more capable peers and herself, as well as altruistically for those peers who might not be operating at a high level of thinking. She described the pleasure she gained from both forms of activity and was not concerned that she was contributing more than other students. In fact, Jess was not in favour of compulsory participation (through summative assessment) in discussion boards as she believed that it only encouraged menial responses and ‘cluttered up’ the online collaborative space.

**Sue**

Sue believed her higher level of motivation was due to her interest in the subject and desire to learn more. Receiving responses to her posts gave her great satisfaction and increased her self-confidence and belief that she would succeed academically. Sue particularly enjoyed being asked further questions in response to her posts; she believed this helped deepen her understanding. Similarly to Jess, Sue acted with a sense of reciprocity for those who replied to her posts and with altruistic motives for those peers who were not as academically confident as she was. Sue found it very motivating when teaching staff replied promptly to her posts and probed her responses with further questions. As an online teacher herself, Sue felt that her own experiences as an online student had improved her practice and she felt a greater sense of empathy for her own learners.

From the researcher’s perspective, it was interesting to meet Sue in a face-to-face focus group. Aware that Sue was very active in the online environment, it was somewhat of a surprise to discover that she was very quiet in the focus group, to the extent that she sent an apologetic email afterwards for her lack of contribution. Upon further probing and through sharing an academic paper that proposed that ‘reflectors’ are online extraverts (Downing & Chim, 2010), Sue suggested via email that she “sits on the fence” between introversion and extraversion. This correlates with her observation that being active in the discussion forums boosted her confidence, increased her sense of self-efficacy and allowed her to develop the skills she sought in her teaching role as well.
**Rachael**

Rachael was very active in the discussion forums, rarely missing a day of making posts. Her postings accounted for over 20% of the total number of messages, which had 24 other members. In an email interview, Rachel responded to a number of questions from the researcher who wanted to learn more about what motivated her to be so active. Rachael replied:

> My motivation is determined by several factors; interest in the subject, enthusiasm and demonstrated interest and support by the lecturer, interest in peer input and, desire to learn from others and an interested lecturer. (Rachael, IT2, IN)

When asked what rewards she either sought, or received, from being so active, Rachael offered a number of interesting perspectives:

> I feel as though I am demonstrating my interest. I like to receive responses to my thoughts so I try to offer the same to peers. I feel strongly that we should walk the talk, practice what we preach, so to speak. If I want engaged students I should be role modelling engagement, even when not being directly observed. (Rachael, IT2, IN)

Rachael’s response highlights the range of motivations: demonstrating her engagement, helping others, modelling good practice. None of these were assessed, yet she was rewarded by the positive feelings experienced by doing so. Rachael also pointed out that the discussion forum helped her own learning:

> I am exposed to alternative ways of thinking, and doing! I am able to either integrate the new information or decide, with a more informed view, not to use the information. It has also been a great way to network as well as being the building block for a valuable, informal Community of Practice. (Rachael, IT2, IN)

In this response, Rachael is indicating the higher order thinking skills she is using when engaging with the discussion forum. This is obviously a sought-after characteristic of discussion forums, to replicate or improve on the kind of discussions that might occur in a face-to-face tutorial or even a participatory lecture. Rachael was doing this in an activity that was not compulsory or assessed. It highlights, however, the potential impact of relative inactivity of her peers, who were not engaging to the extent that she was. It is the challenge of online education to know the extent to which other students might have been engaging, in other ways, at such a high level of thinking. Whether assessing the discussion forum (and therefore ensuring participation) would have helped others to achieve the same level of thinking is a matter of some debate in the literature but the experience of the teaching staff in this program would not support that particular approach.
Rachael added one more comment to the email interview, which points to the role teaching staff hold in online forums:

> While many of the motivating aspects seem to be intrinsically derived, I feel that the lecturers play a huge part in motivation (as literature and Hattie in particular espouse). I have noticed where the lecturer is boring, uninterested or non-responsive to students, that I become less likely to be engaged. In other words the lecturer acts as a magnifier for motivation (emphasis in original). (Rachael, IT2, IN)

Jess, Rachael and Sue all described the enjoyment and satisfaction they experienced from being active members of the discussion forum, and collegially collaborating to facilitate their own, and others, learning. They all described their feelings of friendship with their peers, particularly those who they engaged with frequently, even though they may never have met in a face-to-face environment. None were particularly concerned over their less active peers, suggesting that they just did what suited them, and they were happy for others to do the same.

**Discussion**

The findings of this study provide a number of different perspectives on collaboration in the online learning environment. Contrasting the views of Johnson and Johnson (1998) and also Oliver, Herrington, Herrington and Reeves (2007), the findings do not support the proposition that collaboration is best achieved through interactions that are interdependent. Instead, participants consistently expressed a belief that they were more engaged and satisfied when not feeling dependent on others. Participants repeatedly identified a fear of their own and their peers’ ability to contribute equally due to their unpredictable patterns of study. This is consistent with the nature of non-traditional students, juggling multiple roles and responsibilities (Munro, 2011). Additionally, as mature-aged students they are likely to have a more developed sense of community expectation, which would create or increase tensions in an environment of co-dependence (Knowles, et al., 2011). It is also worth considering that these participants were engaging in fully online study rather than a blended model, where being on-campus together might better facilitate interdependent activities.

The findings of this study did reveal, however, a strong desire to work collaboratively in order to help participants develop their own and peers’ understanding. This is consistent with Garrison, Anderson and Archer’s (2000) claim that a sense of social presence is valued by students, and helps to build mutual respect and a feeling of community. In later work, Vaughan, Cleveland-Innes and Garrison (2013) proposed that a Community
of Inquiry is characterised by “sharing personal meaning and the validation of understanding through discourse” (p. 99). The desire to collaborate extended to a willingness to altruistically help others, particularly those who might be struggling. This supports the findings of Cheng (2014) and Zembylas (2008) who found that students in online environments were willing to help others unconditionally, as well as the earlier work of Batson et al. (1981) who identified that altruistic behaviour is particularly likely to occur when empathy is felt for the other party. Also consistent with Cheng (2014), the findings indicate that altruistic emotions strengthened over time, as participants felt increasingly like they had something useful to offer their peers. This is important to note, as it shows that the provision of opportunities to behave altruistically in the learning environment may lift the confidence levels of non-traditional learners who are often vulnerable to feelings of self-doubt and withdrawal. This altruistic motivation of online students is not widely reported in the literature and further research is warranted to consider if it should form an explicit aspect of design. The findings also indicate that formally assessing the collaborative efforts of students could actually act as a de-motivator, as it removes the opportunity to gain satisfaction from altruistic acts.

A culture of reciprocity was described by participants in this study, and appeared to be particularly important to the more active students in collaborative activities. Similar to the findings of Aviv, Erlich and Ravid (2005), there does not appear to be a culture of only responding to those who are likely to respond back. Rather, the most active students appear likely to respond to a wide range of peers, from those who offer constructive feedback in return to those students who are considered most in need of support from their peers. Also concurring with the findings of Aviv et al. (2005), it appeared that the more active participants recognised that they had begun to create a recognisable role within the online learning environment, such as a technical expert (e.g., Kate in the eLearning design activity) or provocateur of deeper thinking (e.g., Jess in the discussion forum).

In relation to meaningfulness, the findings suggest that students consciously or subconsciously evaluate the degree of potential value of any collaborative activity and then moderate their contributing behaviour accordingly. The wiki that invited students to collaboratively create an abridged collage of the work of educational psychologists was intended to facilitate the development of propositional knowledge or, as Korthagen (2001) refers to, *episteme*—true and certain knowledge that stays consistent in multiple situations and can be thought of as theory with a capital ‘T’. The wiki collaborative
activity did not, however, engender significant student engagement. This indicates that the students either did not expect to value the resulting product or, alternatively, believed that they could more easily and effectively gain the propositional knowledge in other ways.

Participants assigned a much higher degree of value to collaborative activities that developed another type of knowledge, *phronesis*, or practical wisdom. Korthagen (2001, p. 24) describes phronesis as a type of knowledge that is concerned with the ability to decide how to achieve a certain objective as well as the ability to reflect upon actions with the aim of living well overall, or theory with a small ‘t’ (Korthagen, 2001, p. 24). In work-based contexts, Tennant (2001) also draws attention to the value of collaborative activities for the development of practical wisdom. Korthagen (2001) highlights the importance of this type of knowledge in the university experience:

> For teacher education, the development of phronesis, perceptual knowledge, is most important. As a consequence, the professional learning of teachers starts from concrete experiences and their subjective perceptions of practical situations. Teacher education should aim at making tacit knowledge explicit and not at the transmission of conceptual knowledge” (p. 31).

The findings have highlighted that students did indeed value the development of phronesis and appear to find collaborative activities as the most useful way to gain this type of knowledge. As Korthagen (2001) identifies, there is significant value in exploring the subjective perceptions of practical situations, and examples such as the sharing of Professional Experience blogs, web-conferences and the reflective discussion forum topics all lend themselves to that purpose. Significantly too, these types of activities are authentic to the profession of teaching and draw upon real life contexts, so are most likely to be considered meaningful by all students (Herrington et al., 2010).

The concept of a learning community was clearly found in the participants’ reporting of their experiences in collaborative activities. In particular, Wenger’s (2005) notion that learning communities are characterised by being a place where participants feel safe to share their experiences and new insights are discovered, was illustrated repeatedly. The potential for collaborative activities to extend and deepen the knowledge of a diverse range of participants was evident, with even the most academically minded participants reporting the benefits of supporting their peers. This type of behaviour reinforces Shulman’s (2004, p. 401) suggestion that teaching is the highest form of understanding, and explains the participants’ motivation to do so. Sue, for example, provided examples of how assisting others in the discussion forums helped build her own confidence.
The collaborative activities also appear to have given participants the opportunity to reflect on their own learning approach, and integrate theoretical concepts into the way they analysed their interactions with peers and teaching staff. Throughout the data collection period participants were describing their experiences with references to either educational theorists, or with pedagogical terms. Phrases such ‘scaffolding’, ‘communities of practice’, ‘MKO’ (More Knowledgeable Other), ‘ZPD’ (Zone of Proximal Development) were woven into the descriptions of their experience. This direct connection between what they were learning about and their own experience as a learner resonates strongly with the concept of meta-learning, described by Loughran and Berry (2005, p. 194), as “learning beyond the immediate and uncovering learning about the learning and teaching being experienced”. It seems that the collaborative activities were particularly effective in this regard, as they were not only designed to help students learn but also to help them become more aware of the ways in which those activities achieved their aims. As Loughran and Berry (2005, p. 194) describe, in teacher-education there is a “need to offer our students access to the pedagogical reasoning, feelings, thoughts and actions that accompany our practice”, and teaching staff in the program would outline the pedagogical aims of various activities, and ask students to reflect on the effectiveness of those approaches, from both a personal and a professional perspective.

The characteristics that Shulman (2001) associates with a learning community are evident in the findings. Firstly, the learning was generative, extending beyond the immediate unit and considering broader contexts and future learning needs. As VET teachers, many of the participants were motivated by how their practice would continue to develop on the basis of what they had learned. Secondly, the students (and the teaching staff) were active in their learning. True to the characteristics of a community, the type of activity was diverse. Over the three iterations, participants became increasingly aware of the roles they had developed within the community, such as technical helper, social capital builder, provocateur, and so on. The discussion forums enabled students to participate to whatever degree felt comfortable and useful to their learning and, while teaching staff monitored student participation and encouraged activity, they also made it explicit to the cohort that like any community, members will contribute in different ways. Thirdly, the students were reflective; they became more aware of their own assumptions and recognised how and why they were enacting what they were learning in their own teaching practice. Their interactions with peers and teachers were at an increasingly high level over time, synthesising educational concepts.
with their everyday experiences and feeling confident enough to challenge existing beliefs. The *collaboration* with peers facilitated mutual growth, both in terms of confidence and understanding, while *passion* was evident in the continued and altruistic tendencies of students, encouraged by a belief that teaching staff respected and valued their contributions. Finally, the sense of *community* was increasingly apparent as students increasingly valued their fellow-travellers in their course and were willing to support and encourage all members, recognising the multiple roles and ways of contributing.

Encouraging a learning community does, as Shulman (2004, p. 496-497) observes, require confident teaching staff who are willing to let the students take a higher degree of control than otherwise might be the case. The web-conference where a student shared her own eLearning design with peers was a good example of this. For Janet, the lecturer, it was uncertain which direction the student would lead her peers and whether or not it would ultimately be a useful experience for the cohort. Yet it proved to be highly effective, as her student peers responded to her enthusiasm and delight at her progress and then felt more confident themselves. It would seem unlikely that teaching staff could engender such an emotional response from students, as it was a more authentic and meaningful experience for them to hear from a peer.

**Conclusion**

From the perspective of the participants, the types of collaborative activity that most appealed were the ones that enabled a number of different perspectives to be unveiled, such as recounting incidents in their own practice or their current perceptions of particular concepts or projects. Shared understandings or the introduction of new perspectives then seemed to lead to a perception that everyone had benefited from the interactions. So those activities that most closely resembled the type of ‘lunch-room’ conversations that might occur in the workplace were most highly valued and well subscribed. Particularly evident was a need to feel that the activity achieved something that could not be done alone and, the collaborative activities that appeared to be most effective were therefore those that gathered and utilised the tacit knowledge of the participants—the ‘I tried this and it worked – it might for you too’ type of knowledge. The collaborative activities that would lead to a team ‘product’ seemed most challenging to achieve, risked unequal participation and a sense of frustration.
The non-traditional nature of the participants in this study, with their multiple roles and responsibilities and unpredictable study patterns, meant that collaborative activities needed to complement, rather than complicate, their already busy lives. There was no doubt that participants wanted to collaborate; they recognised the skills and knowledge of their peers but they did not want to rely on, or be relied upon, for a particular product or process that formed part of their formal assessment regime. Rather, they wanted to be able to actively contribute to activities where meaning could be made from their interactions, with a particularly high value placed on those types of collaborations that enabled the sharing of practice. This appeared to help participants connect theory with practice, and develop new insights from the experiences of others.

This chapter contends that participants are willing to collaborate and help others unconditionally, and gain a great deal of satisfaction from doing so. For some teaching staff it could require a relaxation of control, as students may help each other in unpredictable ways. Yet, by doing so, it enables a vibrant and engaging community, where participants assume different roles, take responsibility for their own and others’ learning, and develop bonds with their peers that are significant and long-lasting. The willingness of students to collaborate in meaningful ways, regardless of any formal requirement to do so, appears to be an under-utilised characteristic of online learning environments in higher education and warrants further research.

The findings now turn to the fourth design principle, which aimed to help students to develop their sense of professional identity through their interactions with peers, teaching staff and others beyond the immediate learning environment.
CHAPTER 9

Professional identity through collegial interaction

As we encounter our effects on the world and develop our relations with others, these layers build upon each other to produce our identity as a very complex interweaving of participative experience and reificative projections (Wenger, 1999, p. 151).

Recognising the expectations of the University in terms of graduate attributes as well as the requirements of professional accreditation bodies, it was considered essential for teaching staff to model the professional identity that students were being encouraged to develop or refine. This aspiration was grounded in an environment of mutual respect and acknowledgement that everyone (staff and students) were on a continuum of development – a stance that was publicly articulated in a course philosophy statement.

The design principle derived from this theme aimed, therefore, to help build the confidence of graduates and enable them to take their place in the profession feeling well equipped with the knowledge and skills to do so. Table 17 presents the design principle with examples of its manifestation in the learning environment and guidelines for teaching staff.
Design Principle 4: Encourage the development of a reflective, professional identity through collegial interactions in a variety of settings

Table 17: Design Principle 4, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment: Students are:</th>
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</table>
| Encourage the development of a reflective, professional identity through collegial interactions in a variety of settings. | • Role model a professional identity in all communications with students.  
• Encourage students to see themselves as professionals, and communicate an expectation in activities such as discussion forums.  
• Design activities that require students to adopt leading roles in activities, while remaining in a supportive role.  
• Encourage students to investigate and consider membership in a variety of professional bodies and community groups.  
• Incorporate activities such as web-conferences and campus gatherings that include experts from related fields and enable students to develop their skills in professional communication. | • Encouraged to take on a variety of roles within the university learning community.  
• Actively involved in collegial discussions and negotiations, developing the attributes that are expected by graduation and form part of professional accreditation and membership in the teaching community.  
• Engaged in 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.  
• Through activities designed to require collaboration and cooperation, students will need to be able to explain their own stances on particular issues and contexts.  
• Invited to seek membership of communities beyond the university community.  
• Encouraged to 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. |

Method of analysis
The analysis of data for this theme focusses on the extent to which participants indicated that their professional identity was being developed, and the extent to which the behaviour of staff modelled what was being aspired to and assisted in the participants’ development. For that reason, data from interviews and focus groups were particularly relevant, with a number of additional themes emerging as a result of the data analysis process. Additional interviews were also arranged as a result of some negative learning experiences in particular units of study. These led to a deeper exploration of the role that lecturers had in relation to influencing the professional identity of participants, and the manner in which the design principle could be enacted in order to maximise effectiveness. In this way, the enactment of the principle was refined over the three iterations, though the wording of the principle remained unchanged.
Enacting the principle
The enactment of this principle began with the creation and public articulation of a course philosophy that would guide teaching and administrative staff. This was done within a public wiki, to allow for ongoing contributions and modifications over time, as well as sharing with students. An extract from the course philosophy reads:

*The Bachelor of Education (Applied Learning) is based on the principles of authentic and applied learning, informed by national professional standards for teaching and contemporary theoretical perspectives on education. It aims to be directly relevant to teacher daily practice through the construction of collaborative learning and reflection opportunities, and assessments that maximise both the development of student knowledge and the application of educational theory to improving teaching in the vocational education sector. We aim to model and encourage the development of a reflective, professional identity through collegial interactions in a variety of settings and increasing student ownership of learning and professional autonomy.*

(http://bedalphilosophy.wikispaces.com/Course+Philosophy)

This statement clearly articulates the desire for staff and students to work together towards the shared goals of professional and personal growth. Staff members discussed ways in which this principle would be modelled in units, and identified how other professionals could be included in units of study to broaden interactions with the educational community. From the lecturers’ perspective, the first step in enabling the students to build their professional identity was to consistently treat the students with respect and to communicate genuine confidence in their ability to succeed at higher education. This entailed more than a communication style; essentially it was about explicitly trusting the students to have, or be developing, the traits of a reflective, professional practitioner. For example, from the second year of study onwards, students would be able to ‘flex’ learning activities and assessment tasks to better meet particular interests or challenges within their workplace, provided they could demonstrate how the intended learning outcomes would be still achieved by their alternative approach. James (lecturer) described how he liked flexibility to be extended as students progressed through the course:

> Give them the objectives and resources and let them get on with the job as suits their own approach; allow people the opportunity to do things differently. (James, IT1, IN)

Not only did this approach align with the desire for the course to be applied and authentically connected with the students’ lives outside of university, but it also encouraged students to be taking more responsibility for their learning pathways. A mathematics-educator within the program, Brian, recognised the pedagogical
appropriateness of this approach both in terms of teacher-education and also modelling how the students could then teach mathematics themselves:

Particularly in mathematics, part of the traditional approach has been the teacher saying, ‘okay this is how you do it and I am expecting you to do it in this way and I’m assessing you on how well you do it this way and so any consideration of any other ways is thought to be wrong’. And that needs to change, even in mathematics, because there are perhaps lots of right ways of doing it. (Brian, IT2, IN)

Staff also encouraged students to collaborate on assessment tasks or peer-review each other’s projects before submission. While this approach led to concern from other teacher-educators about the potential of plagiarism, staff within the program believed that students would appreciate being considered as responsible and capable adults and respond appropriately to that expectation. Importantly too, this approach was considered to be an effective way to develop the consultative and collaborative skills required in the workplace and encourage consideration of a similar approach in their own teaching context.

Central to the enactment of this design principle, therefore, was building the students’ confidence to take a particular stance on something, defend their position or perhaps be willing to change their position in the light of contrasting evidence. Teaching staff aimed to model reflective practice within their role, openly discussing their pedagogical approach with students. Students were encouraged to take a reflective approach to their study and their teaching (for those VET teachers) and capture (via their ePortfolios) how their professional identities were developing over time. Assessment tasks regularly required reflection on their learning journey, and invited students to share if and how they were reviewing, refining or even transforming long held beliefs about learning, teaching or their identity as professional educators. Student ePortfolios, developed over the course of study, offered an effective way to capture their development as well as provide strong evidence of their achievements in the course (see Chapter 11 for a more detailed consideration of the ePortfolio).

Beyond the lecturers’ roles in encouraging the development of a professional identity, the course design aimed to develop a strong sense of community over time. Primarily, this would be the online community of students and staff, working together towards successful completion of the course but it would be augmented by the communities within TAFE colleges, as many of the students taught on the same campus as their peers. Adding to this, the course design aimed to introduce students to other educational
communities such as those in specialised teaching areas (e.g., migrant education, special education or indigenous education) and encourage students to broaden their participation in the wider educational sector. Lecturers collegially planned for how students would learn about particular concepts, such as Communities of Practice (Lave & Wenger, 1991) through examining their own participation in various communities, and then relating that to the literature and their own practice in the classroom.

The enactment of this principle initially utilised the discussion forum as an effective strategy to encourage interactions with and between students. Staff were concerned, however, with the inherent ‘teacher-led’ design of this tool, with only those assigned ‘lecturer’ or ‘tutor’ roles able to create discussion topics and pose the initial questions for students to respond to. As the literature review revealed, discussion forums can easily become ‘progress checks’ where students are invited (or often required) to respond to specific questions—the answers to which would assure the lecturer that particular readings or lectures had been accessed and understood (Rovai, 2007). Formally assessing such ‘discussions’ then assures the lecturer that everyone is complying with the scheduled progression through the unit content.

To meaningfully enact this principle, a different approach was therefore required in the discussion forums. To begin with, teaching staff decided that contributions to online discussion forums would not be assessed, although regular participation would be strongly encouraged. If students did not participate in the discussions, then the assumption would be that the students were exercising their right to spend their time more usefully elsewhere, and hence provide staff with an opportunity for some reflection on their teaching approach. As James noted in an early discussion with the researcher:

This has always been a challenge, you and I, all the years we’ve worked together, you know, how do we get them into the discussion board and do we assess the discussion? And when you say you will assess the discussion then they end up putting anything in to maximise the volume. And so we’ve gone away from that and in fact, it’s the teacher presence which we rely on now to actually encourage them to get in. (James, IT1, IN)

For the staff in this program, teacher presence had several aspects. Firstly, it meant promptly responding to students’ postings or other forms of communication (such as emails). Most often, students received a response within a few hours of posting, even on weekends and evenings. Also, teacher presence meant that the lecturers’ role in the discussion forums was to encourage and facilitate learning by setting up discussions that invited student-to-student interactions, while remaining an active participant themselves.
Typically, questions might seek the perspectives of students, given their experience either as a teacher or as a student, and invite challenges or alternative views to those presented in readings or lectures. Students were encouraged to build on each other’s responses rather than repeat something similar to what a peer had already posted.

Without requiring perfectly articulated references, there was an expectation that claims would be supported with due acknowledgement of relevant literature or their own personal experience and, again, this was modelled by the lecturer. Students were, in other words, expected to be rehearsing and developing their professional communication skills while contributing to their own and their peers’ learning.

Staff also modelled this principle by way of engaging with other professionals in the learning environment. This ranged from inviting international experts to be guests in web-conferences, to recorded interviews with practitioners from areas such as disability support services, or employing tutors who were industry experts. The approach was structured in a way that role-modelled professional inquiry and networking. For example, in an inclusive education unit, specialist teachers were invited to join a web-conference where both the lecturer and the students asked questions and shared challenges that they had experienced in relation to the topic at hand. The aim was to demonstrate that all teachers, including the lecturers, were on a continuum of development, and that engaging with other professionals was an effective way to progress. This activity was supplemented by a series of recorded interviews with specialists in different types of learning difficulties, followed by discussion forums that reflected on and evaluated those interviews. In another unit, web-conferences were held with international consultants from the USA, Europe and Asia, with both students and teaching staff engaging in robust discussions about contemporary issues in adult and vocational education.

Findings
The findings will be presented through a number of perspectives, beginning with a consideration of how the interactions between teaching staff and students were a key aspect of the enactment of this principle.

Interactions between teaching staff and students
Appropriately for a teacher-education course, many participants appeared to be keenly observing their lecturers’ behaviour and were doing so in the light of what they were learning about. Many of the participants were currently employed as VET teachers themselves and their observations would have been made through that prism. Teaching
about teaching is an interesting phenomenon, as Loughran (2006) points out and at the heart of this principle was a desire to model the type of practice that was being espoused in the course itself. During the data collection process, participants regularly identified actions of the lecturers that modelled the behaviour that they, as students, were being encouraged to exhibit. Most commonly mentioned was the strong teacher presence in the online learning environment, particularly in the discussion forums:

The lecturers in all the EAL units I’ve done, it’s like they’re always in the room, even though it’s online, they are there. (Rick, IT2, FG)

Participants acknowledged the willingness of teaching staff to respond quickly, even after normal working hours:

To their credit they must do an enormous amount of work because they... you get the impression they’re online the whole time. Sometimes I put up a comment in the evening and think I’ll get a reply tomorrow and then James has shot back a reply. I thought, ‘Gee, he made it today!’ (Bill, IT2, FG)

For staff, logging on and responding quickly to students quickly was a worthy investment. James, who taught entirely within the course, was passionate about modelling engagement and good teaching practices:

So, I don’t have a problem with logging on 11pm and 6am in the morning. I don’t have a problem with logging on the weekends. To me, they’re ‘in class’ at those times. If they have a problem or they can’t find something, or whatever, the ability to respond to them reasonably quickly creates incredibly positive vibes. And what that says to them is that ‘the teacher is interested in me, is interested in helping my learning, and is engaged with me’. (James, IT2, IN)

The activity in the discussion forum was also a way to gauge the students’ levels of confidence in themselves, either in respect to themselves as teachers or as students. In the first iteration, several participants revealed a reluctance to participate:

I’m not a big discussion board contributor and a lot of that is because of that initial feeling that perhaps what I write isn’t quite good enough. (Katie, IT1, FG)

Particularly for those participants, receiving a rapid, positive response from lecturers helped build their confidence and belief that they brought something of value to the cohort. As Nicole noted:

We trust that our answer isn’t going to be shot down in flames and be wrong. It might be constructively guided in a particular manner or, ‘You’ve said this, so now you need to go and think about that. Go and read this and tell me what you think’, but it’s never shot down. (Nicole, IT2, IN)

Once participants gained confidence in contributing to online forums, it became a rewarding experience for them:
My motivation level snowballs… the more discussion threads I post on, the more I keep an eye on the discussion board to see if there have been any replies. (Jess, IT2, FG)

This then led them to greater confidence to respond to other students when they posted questions or sought others’ opinions. One participant (Rick) noted that, after replying to a question posted by a peer, his lecturer (James) responded with:

‘Good on you mate, thanks for answering the question!’ (Rick, IT2, FG)

For Rick, who was not a regular contributor up to that point, the recognition and encouragement was highly motivating. Teaching staff also ensured that they expressed a variety of tones when responding; sometimes quite casually, as the example above illustrates, and other times in a more formal manner to suit the particular context. Again, the lecturers aimed to model what they wanted to see from their students. Participants also noted how their lecturers publicly acknowledged they too were learning from what the students brought to the discussion forums, and this helped to create a sense of equality in the learning environment:

I do think that when you’ve got a group of people that have got a lot of experience and incredibly diverse experience, then I think the lecturers probably gain from that as much as we do. (Kate, IT2, FG)

However, these positive experiences were contrasted by some participants who described concern over particular characteristics of the online interactions in the first iteration of the study:

Some weeks can feel a little dispiriting, and I very much feel like I am on my own—so I would like more discussion to take place so I can learn from other VET teacher students. My ‘aha’ moments are mainly coming from the extra reading I am doing. (Louise, IT1, eS)

In a ranking exercise in the eSurvey conducted at the end of the first and third iteration, the online discussions with peers and teaching staff were considered by the cohort as a whole to be the most valuable activity to build their reflective skills. Notably, though, the ranking of other activities changed between the first and third iteration. Table 18 shows the changing perception of the value of particular activities over time.
Table 18: Ranking of activities that participants believed most helped them to develop their reflective skills

<table>
<thead>
<tr>
<th>1st iteration: April 2013 (40 respondents)</th>
<th>3rd iteration: August 2014 (38 respondents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Online discussions with peers and teaching staff</td>
<td>1. Online discussions with peers and teaching staff</td>
</tr>
<tr>
<td>2. Lectures and notes from the teaching staff</td>
<td>2. ePortfolio activities (such as blogs and journals)</td>
</tr>
<tr>
<td>3. ePortfolio activities (such as blogs and journals)</td>
<td>3. Web-conferences with peers and teaching staff</td>
</tr>
<tr>
<td>4. Reading scholarly articles</td>
<td>4. Lectures and notes from the teaching staff</td>
</tr>
<tr>
<td>5. Web-conferences with peers and teaching staff</td>
<td>5. Reading scholarly articles</td>
</tr>
<tr>
<td>6. Other (listed here were: feedback on assessments, personal discussions with teaching staff, study groups, their own students, experienced colleagues at their place of employment).</td>
<td>6. Other (listed here were: life experience, having peers review work, face-to-face discussions with peers, and being on practicum).</td>
</tr>
</tbody>
</table>

Of particular interest is the improved ranking of ePortfolio activities and web-conferences in the final eSurvey, indicating that participants had a growing appreciation for the potential of collaborative activities with their peers to help build their reflective skills. Perhaps also contributing to this rise was the number of second year units which regularly held web-conferences with guest speakers. These web-conferences were always well received by students and acknowledged as a valued component of their studies.

In an environment where posts to the discussion forums were not assessed, participants noted that they became increasingly aware and welcoming of an online community where students adopted particular roles. Some were interested in leading the ‘social chat’ forum while others adopted more of a tutor role within the group, gaining satisfaction from helping both their peers and teaching staff by interacting on a regular basis with others. It appeared that participants were engaging in the discussions in different ways, and understood that taking different roles was all part of how an effective community operated.

Generally, participants were not concerned by the absence of some of their peers from the discussion forums. It is worth noting that while staff can access learner analytics and identify the extent to which each student is accessing and reading posts (but not posting), students were only aware of their peers’ activity through actual posts to the forums. Teaching staff would email or phone those students who were not contributing to the discussion forums, gently encouraging them to make a posting. Several participants mentioned that they understood that there could be many valid reasons why their peers did not contribute, perhaps because of family or work commitments or just that they recognised that it might not suit their approach to learning. One participant also
commented that, for some units, other web-applications were preferred to the discussion forum:

A lot of us use Facebook frequently and if you can chat about something on Facebook, why would you want to go on the discussion board and re-hash the conversation?” (Kate, IT1, FG)

Similarly, for some participants, informal study groups were meeting in workplaces and this reduced the need for online interaction. Lecturers would occasionally be asked to join these gatherings through applications such as Skype. Rather than direct students back to the online discussion forums, these alternative approaches were considered credible ways to build the graduate attributes sought by course designers.

In the third iteration, participants clearly indicated their preference for a high quality and reasonably active (replies with 24-48 hours) online discussion forum rather than one in which there was a greater participation rate but a lower quality of discussion. The more experienced students sought higher order responses that invited them to consider alternative perspectives, probed for further information or pointed them towards relevant literature. Jess, for example, demonstrated her ability to connect her experience in the online discussions to her well-established knowledge on reflective practice:

My thinking about certain topics is taken to a higher level. I would refer here to Blooms taxonomy here and also Schön’s theory about double-loop reflection. Initially my first reflection on a topic might be more centred around a lower order skill, such as understanding. Having a reply to my post will challenge me to go back and do a secondary reflection where higher order skills are drawn upon, such as analysing, and evaluating (Jenny, IT3, IN)

For lecturers, this development over time indicated that their roles needed to change as well. These changes included: fewer topics but deeper more protracted discussions, acceptance that students would engage in different ways and to varying extents, and ensuring that social banter was still encouraged but structurally assigned to a space where it did not ‘clutter’ the ongoing dialogue. The level of teacher presence remained high but the role changed somewhat as students took on more of a leadership role themselves in discussions and displayed greater confidence in asserting their views on particular topics. One participant, Bill, described how he felt after several units of successful study behind him:

I’m now gaining the confidence that’s being created by these lecturers, to really start to open up and say, “Alright, well, the reason I’ve challenged this is because of situations I was in, and this is why I have my own ideas on things.” So that’s what the course is doing, I’m gaining confidence and I feel like I’m more respected for my opinions. (Bill, IT3, FG)
Lecturers remained active in online discussions throughout the three iterations of the study, interacting regularly and constructively and acknowledging to students that they too were enjoying having their perspectives challenged, and often developed, by the forums.

The findings now turn to particular activities that specifically aimed to help students build their sense of a professional identity.

**Building a professional identity**

The first unit for all participants was EAL102 *Foundations of Professional Learning*. In this unit, students were introduced to the National Professional Teaching Standards and took the first steps in identifying their professional strengths as well as those attributes that they would like to develop over their course of study. Being the first unit of study, the activities were highly scaffolded and supported but also aimed to nurture an environment where students recognised that they were considered to be bringing something of value to the course as well. As James, who taught this unit explains:

> I am totally focused on responding to the students and ushering them in and making them feel comfortable and make them feel like they’ve got a valid point of view. What I’m doing is that I’m actually in there and engaging with them, and responding to them, and valuing their thoughts and saying, ‘Gosh, I hadn’t thought of this perspective’ which quite genuinely happens. (James, IT1, IN)

In the last few weeks of this unit, students anonymously shared a letter to a ‘critical friend’ in the discussion forum, describing how they were feeling after their first foray into higher education. Descriptive phrases from participants such as “a roller coaster ride”, “overwhelming”, “confronting”, “challenging”, “what a journey”, “out of my comfort zone” signalled the impact their study was having. Yet an awareness of their development was also obvious: “there is so much to gain from this experience”; “the way I am looking at my teaching is changing”, and “I feel that I have come a long way already” were consistently mentioned in this activity. Importantly, these results indicate that they valued what they were learning, and could see how their first unit of study was informing their future professional practice.

By the third iteration, participants were able to reflect on their growth over their last 18 months of study, and the extent to which they believed their identity was developing. Tom, who was a pre-service student who entered the degree after a career as a boilermaker and aspired to be a metal-work teacher in high schools, was asked how his university experience was impacting on him:
I feel like I somehow… it’s hard to understand. I feel like I’m just growing up. A whole lot of learning about yourself and how to make yourself work, I guess, and what makes you tick. I can apply all that to the rest of my life when I learn these things. (Tom, IT3, IN)

Another pre-service student’s blog entry during his first practicum in a school indicated that he was comfortable adopting a role that had been modelled by his lecturers:

It is quite easy to teach an area that I’m confident in, but at some stages in both computer graphics classes and house design I felt I was learning just as much as the students, but as Janet would say, that’s okay, hey? (Nick, IT3, IN)

Those participants who were VET teachers also noted how their own teaching practices were changing, and in particular, that they were becoming more reflective:

But I do so much more examination, and that’s what it tends to be, a bit of navel gazing when I’m in the classroom, I’m always examining. So being present and also mindful but examining what’s happening and then trying to action that— ‘So where is this represented in theory? How could I do this better?’ (Rosie, IT3, FG)

Linking back to the desire for the VET teachers to feel confident in their professional identity, one participant noted his increased confidence to defend his own pedagogical stance:

To me the best thing is trying to understand different approaches and realising that just because someone thinks a certain way doesn’t mean that they’re doing better or worse than you. (Paul, IN, IT3)

It appeared, therefore, that in relation to building their professional identity, the online learning environment offered the participants a suitable context to practice and develop the type of attributes associated with confident professionals; reaching out to peers, engaging in dialogue with experts during web-conferences and seeking advice from experienced colleagues in their campuses or beyond. For example, one participant expressed her excitement via email to her Unit Coordinator after she independently sought advice from an eLearning specialist as she began to tackle a major project in one of her own teaching units:

I spoke at long length today with [name] from eLearning in the Education Department and she was incredibly helpful and helped me set up my first course and told me to go and see her any time. Very encouraging... if I can do a good job I might even pass your Unit. I am feeling very positive tonight and excited with what I can develop. This is a screen shot of the first page on Fronter—am I on the right track do you think, just tell me once again? (Kate, IT3, EM)

This is a significant email as it represents boundary crossing by the student, an experienced VET teacher, from the TAFE sector to the school sector. The phrases within it, such as “very encouraging”, “feeling very positive”, “excited”, are juxtaposed with
ones that reveal the trepidation that remained: “if I can do a good job”, “might even pass”, questioning “am I on the right track”, and “just tell me once again?” Her words capture the emotional journey of taking the first steps into new communities and seeking reassurance from those she trusted.

**Challenges experienced in other units**

As described in Chapter 7, participants in this study engaged in a range of units, with any unit with the EAL prefix being under the influence of the applied learning design principles, while those units with the EDU prefix were not (see Appendix I). The EDU units were common to several teacher-education courses at the university and were largely dominated by pre-service teachers, many of whom were traditional students engaging in university immediately after completing college. Most of the staff in the EDU units had previously held positions as school teachers before moving into teacher education. All participants in the study experienced a number of EDU units over the three iterations of this study and, while it was not intended to be a comparative study, the participants naturally referred to those experienced during the data collection process.

**Participant experience in the EDU discussion forums**

Participants were often surprised by the level of teacher control in the EDU discussion forums, with several participants describing the different experiences in these units:

> In the EDU ones, there would be people asking questions [to the lecturer] and wouldn’t get a reply for many, many days, so some of us would reply but then we’d get a response from the lecturer saying we shouldn’t have answered someone’s question. (Paula. IT2, FG)

Being told that they should not have answered their peers’ questions was in direct contrast to the role asked of them in EAL units. It is unsurprising that participants found this somewhat disturbing:

> These two lecturers have rubbed me the wrong way, because they’re everything that you and James are teaching us not to be. And where you and James have this approach of mutual discussion and everybody’s opinion is valid because it comes from somewhere, these other particular lecturers don’t have that approach. (Rick, IT3, IN)

Rick raises a valid point here – that while his personal history and existing beliefs and values were considered valid and relevant in the EAL units, he was experiencing something quite different in the EDU units. As mentioned earlier, Rick was initially a reluctant participant in discussion forums but became far more active after public recognition and enjoyed sharing his ideas with his peers and staff. His experience in
EDU units, however, had a significant impact on his engagement levels. Other participants also perceived a difference between the EAL and the EDU units in relation to the positioning of the teacher:

   With you and James, you’ve got all this information, this knowledge, that you want to impart to us and you give it freely and it’s not a power struggle to get that information out of you, whereas other people, other lecturers tend to set themselves up quite high, basically saying that ‘you will listen and go forth and take what information I want to give you’. (Nicole, IT2, IN)

The high level of concern felt by participants was reflected in quite emotive language during interviews. Susie indicated that she didn’t feel ‘safe’ to post in her EDU unit:

   This unit is meant to be about challenging some of those [beliefs]. … but it really wasn’t a safe place to do so because people then saw me on the board being pulled up and reined in and so that was modelling to them, ‘Oh, we can’t challenge, we can’t put across an opposing view, so I’ll just pull my head in’. (Susie, IT3, IN)

Like Rick, Susie withdrew from participating on the discussion forum and adopted a more passive approach in the unit, focusing primarily on doing just what she needed to do to pass successfully. Other participants suggested that some EDU lecturers were simply not sure how to manage the mature-aged students:

   I think it’s really important that Janet [Course Coordinator] talks to these [EDU] unit coordinators to get them to understand where we’re coming from, so it’s not a shock when they see us in their unit. (Emma, IT2, FG)

Emma raises an important point, that for many of the teacher-educators it was a new experience to have mature-aged students who sought a more democratic and participatory environment. The participants recognised that as experienced teachers themselves, albeit without a university qualification (in most cases), they could appear to be quite threatening to a teacher-educator with a background in schools, rather than adult education. Additionally, within an online learning environment there was a risk for both teaching staff and students that messages could be judged as critical, rather than constructive, contributions.

Participants also described some positive experiences in EDU units. They offered examples where they felt that their presence was not only building their own capabilities and professional identity but also facilitating the development of the teaching staff and other students. Susie describes her experience with Andrew, an EDU lecturer:

   Andrew has been really responsive to us. Seeing how he’s taken that feedback and moved it on, I think he has changed quite a lot of his practice. So if anyone was looking for a bit of a model about changing EDU lecturers’ practice, it does seem to be happening. (Susie, IT3, IN)
Susie acknowledged and valued having her lecturer demonstrate reflective practice. Signalling a mutually beneficial environment, an EDU lecturer noted that he valued what the Applied Learning students brought to the environment:

I think that this group seem to engage in this course much more readily. They have, obviously, experience and that means that when we’re dealing with a particular topic they’re much more actively involved in seeing how this is going to benefit them and how is it going to be useful for them, as opposed to the BEds [Bachelor of Education students] who will be inclined to just accept things at face value and trust that it’s their job to take all this on and not question it. (Brian, IT2, IN)

Overall, it appears that some of the EDU lecturers felt that having mature-aged students who sought to participate on equal terms with the staff was, at times, threatening and undesirable. For others, however, it provided an opportunity to consider a different role for themselves, as all members of the learning community rehearsed and refined the skills of professionally engaging with others.

**Changing professional practice**

As described earlier, the enactment of this principle was considered to be very important in helping students to develop the habits of being reflective teaching professionals. In turn, it was hoped that the students who were VET teachers might instigate a similar approach with their own learners. After the third iteration of the study, participants were asked to share how, if at all, their teaching practice had changed as a result of their own development. An interview with Peter, who was a Materials Design and Technology teacher, revealed how he was encouraging his own students, who were largely young males who struggled at school, to create written reflections on what they were learning:

Depending on how our time-frames go, it could be at the end of the week, or the end of the fortnight, they have to go back and reflect on what they know they’ve learned, and what they think they’ve learned. You know, I would never even have thought of doing that, until I just did this degree, but now I see the value in it. (Peter, IT3, IN)

Not only is Peter describing how his growing confidence as a professional educator, he was now integrating the same pedagogical approach that he had experienced. His example reflects an increased level of flexibility in the way students approached the task (giving them ownership) and also an appreciation of the value of reflection on experience. Another VET teacher who taught at a detention centre for juvenile offenders described a similar strategy that he had instigated:

I said, “Boys, I’m doing this thing with Uni this term. Are you happy to be a part of it? They said, ‘Yeah, no worries.’”. As we progressed, what they’ve been
writing is what they’ve been doing, and it gives a sense of purpose. It’s not just reflecting on a book, because that’s what the English teacher wants. It’s reflecting on their learning. (Paul, IT3, IN)

It appears that participants who had personal experience of not feeling confident in their own academic ability were recognising that they have changed, and they could help others do the same. Paul went on to describe another example from his work with the juvenile offenders. To enable the story to be best told, the relevant interview transcript is provided:

12:46 Paul: He [a student] wrote the word, witch, W-I-T-C-H, and he meant to write W-H-I-C-H. And James had given me feedback that I’d spelled [in an assignment] ‘baton’ wrong, as in passing the baton. And he explained it was a homonym. That’s something from an English perspective, I’d never even dream of. Well, I took that feedback from James, and I applied it to this student, and then I suggested that he find more homonyms between when I was there and during his English, and he did.

13:22 Interviewer: Wow!

13:22 Paul: And he was so proud of it.

13:24 Interviewer: Oh, that’s a fantastic story.

13:25 Paul: Yeah. Look, it really was, for me, fantastic. And then, we went on to talk about...

13:31 Interviewer: Did you tell him, that you’d done the same thing?

13:33 Paul: Yeah, yeah. Look, and that’s my approach though, with my students – “I’m not the guru. I don’t know everything and I’m happy for you to challenge me on something I say.” But this guy also went on, and his English teacher was amazed. We were squaring up a building and trying to put these literacy strategies in. In the past I wouldn’t have done this either. We talked about parallelograms, trapezoids, and I can’t remember what the other was... Oh, a rhombus! (IT3, IN)

Paul was clearly appreciating not only what he had learnt but how he had learnt it, and integrating it into his own teaching approach. This provides significant evidence of the power of modelling the type of professional practice that students could then, in turn, model to their own learners. The phrases Paul used: “I don’t know everything”, “I’m happy for you to challenge me” reflect the language used by teaching staff and also, importantly, his increasingly confident professional identity, able to retain authority without a power differential between teacher and student.

Discussion

The findings reveal the potential benefit of this principle to enhance the student experience, with evidence of significant, positive development for many participants.
which appeared to extend further to their own learners. The findings also revealed, however, the negative effect for students when the environment appears to actively discourage those attributes. It highlighted the consequences for students when their experiences within different units, but the same course, are very diverse and highlights the need for practitioners to engage in regular discussions on their teaching approach and rationale (Loughran, 2006).

The findings support the assertion of Knowles, Holton and Swanson (2011) that adult learners have a strong desire to be treated with respect and to be given some responsibility for their own learning. This is particularly relevant given the lower levels of self-efficacy that characterise many non-traditional students in higher education (Munro, 2011) and the subsequent need to actively support the development of this attribute in an empathetic and constructive manner. Participants in this study appreciated and responded positively to an environment that valued their thoughts, experience and beliefs. Also corresponding to the work of Knowles et al. (2011), if participants perceived that they were being treated in a way that reminded them of their own school days, with the teacher positioned as ‘expert’ and themselves as ‘not-yet-knowing’, they were likely to adopt subservient behaviour and participate only to the minimum level required. The findings point to the need to be consistently sending the message to non-traditional students that they are capable, responsible and bring with them experience and skills that are genuinely valued by staff and will help them to succeed at university.

The intentional modelling of desired teacher behaviour in the units under the influence of this design principle appeared to be very effective, with participants recognising consistency between what they were learning and what was demonstrated by their lecturer. However, just as participants were able to clearly articulate the ways in which lecturers modelled desired behaviours, they were also able to describe contrasting behaviours in other units and the implications that they took from such behaviour. This suggests that the importance of teachers being explicit about their teaching practice in teacher education may not be as high as suggested by authors such as Loughran and Berry (2005). Perhaps the nature of the participants (largely VET teachers) made them more perceptive of the alignment or non-alignment of teacher behaviour with what was being espoused, but the pre-service participants in this study were also able to give examples of positive and negative examples of teacher behaviour and articulate their interpretation of those behaviours with confidence. The findings reiterate the importance of careful consideration of the assumptions that teachers make about students
(Brookfield, 1995), for it seems that students appear very capable of recognising the ‘do as I say, not as I do’ message and either internalise that as a reasonable behaviour for teachers (obviously an undesirable outcome) or lose respect for their teachers (equally undesirable).

There was strong evidence, particularly in the later iterations of the study as the participants completed more units, that the type of conversational framework proposed by Laurillard (2002) was an apt description of what was happening when this principle was successfully enacted. Laurillard’s (2002) model positions the students and the teachers as equally involved in an iterative process of adaptation, reflection and assimilation, which entails “an iterative dialogue between teachers and student(s), operating on two levels: (1) the discursive, theoretical, conceptual level and (2) the active, practical, experiential level” (p. 144). It offers a way for teaching staff to (re)consider their role in the learning environment, whether that be on-campus or online, and invites staff to model and foster a collegial sense of inquiry, engaging in collegial interactions and developing the habits of reflective practice. Her framework is particularly well suited to environments that aim to provide students with authentic learning activities (including assessment strategies), so the potential is there for students to engage on the theoretical, conceptual level as well as the practical, experiential level. For the teaching staff, the authenticity lies within the fact that they are engaging in actual and ongoing transactions with students and reflecting on that practice, so again the connection exists between the theoretical and the practical. Laurillard’s (2002) framework offers a way for universities to better prepare their graduates for the demands of the 21st Century workplace and, from the accounts of changes to the students’ teaching practice, it appears that this can be achieved in an effective, supportive learning environment.

In a similar manner, the value of community was identified by participants, firstly within the online learning environment and then later, as confidence grew, beyond that community. The distributed nature of knowledge across the community, as well as the diversity of roles that participants described, indicates that, as Shulman (2004) proposed, improved standards of practice can be achieved. Additionally, the participants reported a growing confidence in their membership of professional communities and a desire to contribute meaningfully to those communities.
Finally, the tensions that Kozminsky (2011) identified teachers may experience: knowing versus continuing to learn; educating versus teaching a content area; taking part in a democratic-participatory discourse versus hierarchical-managerial discourse; and, a culture of control versus a culture of empowerment, were clearly experienced by some of the teachers of the participants. At the same time some staff felt intimidated by a different type of student, who was older, experienced in teaching, motivated to engage and willing to challenge. When these tensions were encountered, it appeared that some staff were quick to move to a defensive position, asserting their right to a teacher-led culture of control, complete with hierarchical discourse. For the teachers within the applied learning program, the course philosophy statement clearly placed them in a position where they could legitimately and explicitly describe their identity as both teacher and learner, continuing to develop in response to the needs of their students and the demands of the teaching profession.

Grossman, Hammerness and McDonald (2009, p. 283) call for “pedagogies of enactment” or approximations of desired practices, starting with relatively safe activities and moving on to more challenging ones. This study supports their call, with the results highlighting the importance of a learning environment that incorporates an applied, authentic enactment of what is being espoused. Critically though, this applies as much to the teachers as the students. Whether their teaching approach is explicitly described to students, as recommended by Loughran (2006), or not, students quickly assess the “purity of their actions” (Brookfield, 1995, p. 1) making connections and, depending on what is modelled, changing their practice accordingly. When considering the concerns of the teacher-education experience being ‘washed-out’ (Zeichner, 1981; 2010) as graduates begin teaching, the obvious question to ask is: Is it the disconnection between the university study and the school practicum experience that is responsible for this, or is it that often the students are not experiencing the pedagogies of enactment that Grossman et al. (2009) recommend?

The analysis of the enactment of this principle supports what is already known about non-traditional students: their need for respect, trust and understanding as they engage in their studies. The value of this study is in the in-service nature of the participants; within the three iterations it was possible to see changes in the participants’ own teaching practice as a result of what they had seen modelled, and had studied. In addition to changes in teaching practices, the ability and confidence of the participants to incorporate scholarly concepts, such as reflective practice, into their everyday language
within the learning environment and beyond, augers well for a workplace that seeks active, critical discourse. Similarly, the confidence to extend their networks and make connections with other professionals is an important capability to be developed while at university, and this study showed that it is possible, particularly with the affordances offered in an online learning environment.

**Conclusion**

This chapter considered a number of ways that the professional identity of participants developed over the three iterations of this study. The findings indicate that the confidence and ability of teaching staff to model a professional identity themselves is of key importance to ensuring that students feel that they are able to safely develop those attributes within the online community and beyond it. The value of a guiding course philosophy appears to be significant in providing a foundation for the approach in each unit of study, and enacting the principle effectively. Particularly notable findings include evidence that the VET teachers were transferring their learning to their own teaching environment, and encouraging their own students to build their own sense of identity and confidence in collegially engaging with others.

The next chapter considers the fifth design principle and its enactment in the course.
Flexible, authentic assessment strategies

Assessment activities should not only address the immediate needs of certification or feedback to students on their current learning, but also contribute in some way to their prospective learning (Boud, 2006, p. 400).

Assessment looms large in the minds of students and teaching staff, often for different reasons. Students may be fearful of failure and concerned about the stress that has accompanied assessment in their previous education experiences (Meuleman, et al., 2014). They may also be worried about how they will perform in comparison to their peers or whether the benefits of successful completion are worth the time and effort required (Knowles et al., 2011). Teaching staff, on the other hand, may be concerned about ensuring alignment between the learning activities, the assessment tasks and the intended learning outcomes (Biggs, 2003). In an era of rising student-to-teacher ratios, there may also be concerns about the time required to support students, mark assessments and provide sufficient feedback in a timely manner.

Employers, on the other hand, are hoping that assessment tasks help to develop and evidence the type of attributes that they are seeking in graduates—problem solving, initiative, collaborative skills, and the discipline knowledge that will ensure that they are valued members of the workplace and able to contribute meaningfully to the organisation (Korthagen, 2001; Oliver, 2013). Students are also more likely to feel engaged when tasks are authentically connected to the actual workplace (Darling-Hammond, 2000; Herrington & Herrington, 2006). For non-traditional students, who are often employed in the discipline of their study, there is a far greater appreciation of assessment strategies that are more clearly relevant to their everyday challenges in the workplace and that will result in more useful products than, for example, a traditional essay (Lombardi, 2008). While an authentic approach to assessment practices has been widely accepted in a range of education sectors, it appears that a reliance on traditional approaches to assessment continues to prevail. Tasks such as written essays, reports and exams still appear to be a favoured way to provide summative evidence against the stated learning outcomes (Herrington & Herrington, 2006).
This design principle therefore aimed to ensure that teaching staff and students considered ways in which assessment tasks could be as applied and authentic as possible, with the potential to contribute meaningfully not only to the development of discipline knowledge, competencies and confidence, but also to real workplace contexts. In order for a particular task to be directly applied within a workplace, however, a more flexible approach from teaching staff was required, while still attending to the need for sufficient evidence of learning outcomes.

The principle, together with guidelines for staff and examples of its manifestation in the learning environment, is presented in Table 19.

Table 19: Design Principle 5, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment. Students are:</th>
</tr>
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| Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings. | • Consider the ways in which assessment tasks can be designed to allow students to integrate their own workplace contexts into the task requirements.  
• Be prepared to allow students to modify some aspects of the assessment tasks in order to maximise its value in real workplace contexts, while retaining the inherent requirements of the task.  
• Create assessment tasks that result in a product that students will see the value of beyond the marking process.  
• Incorporate opportunities for students to collaborate and/or peer-review, seeing such activities as valuable in developing the desired graduate attributes.  
• Be aware of current issues and challenges in authentic workplaces and consider how assessment tasks can help to address these challenges. | • Required to complete assessment tasks that draw upon the required skills and knowledge in their future workplaces, and which acknowledge the complexity and subjectiveness of such places.  
• Supported in creating practical products that will be meaningful for students in their daily teaching practices.  
• Required to collaborate with others as part of the assessment preparation process, recognising the context of the real working world.  
• Invited to integrate formative feedback from peers and teaching staff, with a view to develop valued graduate attributes such as problem solving, communication and independent thinking.  
• Required to 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 (in other words, the learning and assessment activities may be integrated). |

Method of analysis
The data for the analysis for this principle were drawn from a number of sources, including the surveys, focus groups, interviews, emails and assessment tasks themselves. Generally, survey findings informed the focus group questions. Emerging themes were then further investigated through interviews. As part of the second iteration, two additional focus groups were conducted with 14 teaching staff outside of the program, in
order to gain a deeper understanding about academics’ perceptions of authentic assessment practices.

For each iteration, the data were promptly uploaded into NVivo and inductively coded, in order for the emerging themes to be further investigated in other data collection methods in the same iteration. A number of a priori themes were common to all iterations. These included: the role of assessment, flexibility in assessment, authenticity to the workplace, workload implications (students and staff), peer and teacher feedback on assessments and the limitations/benefits of traditional assessment approaches.

**Enactment of the principle in the learning environment**

This principle relied on both a philosophical and a pragmatic enactment. To begin with, the teaching staff discussed the implications that emerged from the pre-course information sessions which clearly communicated a desire from prospective students for an assessment approach that responded to their characteristics of being primarily VET teachers and mature-aged, non-traditional students. The teaching staff had extensive prior experience teaching a cohort such as this and felt comfortable with adopting an authentic, flexible approach to assessment practices.

The next step was to consider how the enactment of this design principle might be considered by those outside the course, such as faculty leaders, unit coordinators in other programs, and the professional accreditation body for teacher-education. The teaching staff believed that clearly communicating the ways in which assessment tasks would be authentic, applied and flexible was the first important step in gaining and maintaining approval for such an approach. Because of this, the assessment task descriptions and associated criteria and rubrics clearly reflected a broader approach to assessment, particularly in relation to options for workplace projects rather than the set assessment tasks (see Appendix J for an example of an assessment task and associated criteria). Consistent with Faculty policy, all units were required to have criterion-referenced assessment tasks, and all units were then mapped to course learning outcomes and professional accreditation standards. This assured consistency and quality, monitored through regular peer and course review processes. A key aspect of the enactment of this principle was to ensure that academic rigour and the expected levels of outcomes for the associated qualification level would be maintained and evidenced appropriately.
Enacting for authenticity and flexibility

The enactment responded to several aspects of authenticity. Firstly, assessment tasks needed to be designed to ensure authenticity to ‘self’. In other words, the assessment tasks needed to encourage the students to create a product or an artefact that they felt genuine ownership over, rather than a creation that might be ‘what the teacher was looking for’ (Black & Wiliam, 1998). Next, the assessment process needed to clearly invite students to be authentic to the workplace by thinking and acting as a professional would in the real problem-solving context, while recognising the diversity that might exist. Finally, the assessment design needed to ensure that allowing contextualisation was not at the expense of preparing students adequately for other settings. In other words, assessment design needed to consider authenticity to the profession in a broader sense, by building the students’ confidence in transferring their knowledge and skills to a range of educational settings.

In relation to flexibility, the principle was designed to be enacted in a way that encouraged the development of desired graduate attributes such as problem solving and communication skills. Assessment tasks could be adapted in terms of what the student actually produced as long as any changes were mutually agreed upon. For example, students might identify how an adapted assessment task would result in a more useful product in their teaching role, and one that could be put to use straight away. Typically, negotiation for an adapted assessment task took place through email or phone communication early in the semester and sought to confirm that the modified assessment task would still meet expected learning outcomes for the unit.

In addition to flexible assessment approaches, units in the second and subsequent years of the course included a ‘workplace project’ option. The workplace project option was guided by the learning outcomes for the unit (these became the assessment criteria), and a timeline that included regular meetings with the unit coordinator and periodic reviews that continued until project completion. All students were invited to consider undertaking a workplace project option instead of the set assessment tasks, and approval was granted once a proposal and justification had been submitted and agreed upon.

The variety of approaches to assessment, both from the student and staff perspective, ensured richness in the data collected and subsequently analysed. A number of themes emerged over the three iterations, and the findings are presented through these themes, specifically: attitudes towards and perceptions of ‘authentic assessment’, approaches and
purpose of formative feedback, and challenges in adopting an authentic approach to assessment. The emergent themes are presented from two perspectives, the students and the teaching staff, in order to illuminate differences between the values, beliefs and practices in the assessment process. The findings are then discussed in light of the published literature, and implications for practice identified. To begin with, however, the findings that relate to the participants’ attitudes towards and perceptions of authentic assessment are presented.

Attitudes toward and perceptions of authentic assessment: Student perspective

The informal discussions with prospective students prior to the course had indicated some common concerns about assessment. Their concerns tended to fall into two areas: ability to meet the academic (particularly literacy) demands at university level, and a desire for a connection between the demands of the assessment task and their everyday roles as VET teachers. These concerns were reiterated and expanded upon in the first eSurvey, conducted during the first iteration of the study. At this stage, all participants had completed between one and four units of study. When asked in the eSurvey to comment about their preferred assessment type and approach, typical comments referred to their preference for assessments to be of a practical nature. The following was a representative comment:

Being a Bachelor of ‘Applied’, it makes sense to me to have on the job assessment, as you would with VET courses. More assessment on DOING rather than Think about Doing. (eS, IT1, emphasis in original)

As almost all the participants taught in the VET sector, this ‘doing’ form of assessment (typically, creation of products) would be very familiar to them as it resembled the typical approach in competency-based training. In a similar manner, another participant stressed the importance of an applied approach to assessment when reflecting on their experience so far in the course:

Make assessment tasks less about reflection and more about tactics for teaching the classroom. Focus on how to teach/engage students in the classroom rather than the theory behind teaching/engagement. (eS, IT1)

This is a revealing statement as, clearly, for this participant the connection between theory and practice was not occurring. The assessment topic was considered relevant but it was not being perceived as applicable to everyday practice. Another participant expressed his disappointment with what was perceived as an over-emphasis on grammatical correctness:
When I got my paper back, they’d concentrated more on how many full stops, and how I’d written this and how I’d written that. That just annoys me so much. (eS, IT1)

The participants’ views were teased out more in the focus groups that followed the initial eSurvey. Participants were asked to describe the characteristics of assessment tasks that they found most useful to their learning. These characteristics included opportunities to:

- Apply, critique or use the theoretical concepts, rather than ‘regurgitate’ them;
- Connect with a real context, students or current problems;
- Flex the word count or time allowed or context according to their needs; and,
- Work with their peers (student or colleague) as part of the task.

Several participants mentioned their need for precise descriptions of what was expected, accompanied by explicit rubrics. They wanted clarity but stressed that this was not to be confused with a tightly controlled task. The desire for a close connection with their teaching role was also emphasised but also for tasks that enabled the links between theory and practice to be strengthened. As one participant observed:

The ones I can directly relate to my students are the ones I like… The first year unit, going through different learning theories, I could actually apply those ideas to the way I was teaching. I was starting to understand that there’s actually all this history behind it that I had no idea about. The ones that I can directly relate to, I’m in for. (Nicole, IT1, FG)

For others, developing an evidence-based compilation of their capabilities was a high priority:

I like doing assignments that are not your traditional essay. I like it when we have to do something like portfolios and pulling pieces of evidence together, or we have to give a talk to our colleagues and write it up. (Jess, IT1, FG)

Several participants noted their satisfaction with assessment tasks that were completed over time and with a number of related stages:

I liked the assessment in [name of unit]: write a lesson plan, reflect, test it in class, obtain workplace feedback, then adjust, rewrite, change or add teacher input. This felt like a very authentic assessment and linked with literature and the Grad Teacher standards. (Rosie, IT1, FG)

As the study continued through two more iterations, the participants were by then completing second and third year units, where the option of workplace projects became available to those interested. This meant that they could design and undertake a project as an alternative to the assessment tasks associated with the unit. The notion of providing an option for a workplace project came about at the request of the students themselves. As Sue, a senior student, recalls:
It must have been last year, if not the year before, and we hadn’t really got into the very flexible assessments yet. I remember, I might have pushed that one a little bit. We had the assessment, and I just remember talking to James, going, ‘What I want to do is take these and move it to here and do this’. And he kind of went, ‘Okay, if you can still meet the criteria’. (Sue IN, IT3)

This evolved into becoming an option in all of the EAL units in second and subsequent years. While only a minority of students took the option to complete a workplace project, it tended to result in a quality product that attracted high marks and, perhaps more importantly, was considered valuable and with a purpose that outlived the unit of study:

If I had done just the assignments it would have still had some application, but because Janet allowed me [to do the project] it was really useful. It was not just that ‘jumping through the hoops’ kind of thing. (Cassie, IN, IT3)

Participants recognised the potential for a workplace project to be more interesting and potentially rewarding but also that it was likely to entail greater workload. There was no indication from any participant that the workplace project would be a ‘soft’ option. As Emma described in an interview:

There’s been times where I’ve gone ‘I know with work and everything else I’m just going to do the set tasks because I know I can do those with my eyes shut’ and there’s been other times I thought ‘No, I might try something a bit more challenging’. So I think having that choice is really good. It helps with the engagement. (Emma, IT3, IN)

Even for those students who chose not to do a workplace project, the flexibility that came with the prescribed assessment tasks was appreciated. The flexibility could relate to what they did, how they presented their completed task and even when it was submitted. The clear expectation of staff was that students would communicate effectively about what their plans were if they were considering an adaptation, or flexing, of the task. Typical examples of flexed assignments included:

- Different formats for submission, for example, audio recording instead of a written report;
- Working in pairs or small groups instead of alone;
- Submitting later than the due date; and,
- A different context being used for the assignment; for example, a work-based context rather than the context of their practicum placement.

An email from a participant to a lecturer reflects feelings typical of how students felt about this approach:

Thanks again for being flexible and understanding with time frames and deadlines. It makes this whole process doable. Having time to really think about
Flexibility, then, was appreciated by students and generally did not cause significant additional workload for staff. The affordances of the Learning Management System, where all assessment items were uploaded, meant that it was always clear when a submission had occurred, so it was an easy process to ensure that all tasks were submitted when they had been promised. The main task for lecturers was to ensure that any ‘flexing’ did not pose a risk that a student would not gain all the intended learning outcomes, so a degree of negotiation usually followed a student request, and agreement formed on what the task would entail. These negotiations were nearly always done through emails, and hence, were easily retrieved if required.

One third year unit provides a typical example of a flexed assignment. Students were involved in making an eLearning strategy for their current or intended teaching context, and the assessment task was done progressively over the semester, from the design stage to development, peer review and modifications before final submission. One student, Anne, described how she flexed the task to suit her current role while still being mindful of the desired learning outcomes for the unit:

At that stage I was coordinating trade-training centres, so I couldn’t actually produce an e-learning strategy for students that I didn’t have. So I created a learning platform that could be used by the Centre, by the students, the teachers and people accessing the site where they could get information. There were interactive quizzes, interactive maps. It was an authentic learning tool. (Anne, IT3, FG)

The option for workplace projects and flexed assessment tasks provided an opportunity for students and teaching staff within the program to consider the nature and purpose of assessment and the degree of application and authenticity associated with each task. This prompted teaching staff and the researcher to consider how authentic, applied assessment was considered more broadly by academics in teacher-education and, in turn, led to further activities with a broader range of staff, as described below.

**Attitudes toward and perceptions of authentic assessment: Staff perspective**

After the second iteration of the investigation, two focus groups were held to garner the perspectives towards authentic assessment from a wide range of teaching staff within the Faculty. This was done to explore the extent to which perceptions of authentic assessment varied across a larger number of teacher-educators. None of the academics in
these focus groups taught in the Bachelor of Education (Applied Learning) and, generally, their students tended to be standard-entry students who had progressed from Grade 12 into a pre-service teacher education degree.

To begin with, participants were asked to articulate some general views about assessment. Their immediate responses related to concerns about the current assessment process, including the tendency for students to want very specific details about what was required, which was felt by the attendees to potentially reduce the likelihood of creativity in assessment submissions. One participant, a senior lecturer, blamed the online learning environment for this, suggesting that it encouraged students to be confined to a single conversation about the assessment task and, as a result, gravitate towards a similar approach in the assessment task. She reflected:

When I was doing my undergraduate degree, the interpretation of it was part of the test of the assignment itself, so it was open to a lot more interpretation. If you interpreted it in a kind of creative way, that was given due credit. (Kate, IT2, FG2)

Other participants associated the lack of creativity with the advent of criterion-referenced assessment approaches and the associated rubrics. According to participants, criteria that encouraged creativity often resulted in students seeking more detail about what that creativity might look like. One participant, Louise, shared her belief that rubrics helped the less able students understand the minimum that was required in order to pass, while the more able students always wanted more detail in the rubric to ensure that they addressed everything required for a high grade. Students sought more detail on ‘creativity’ in order to specifically address it and, in doing so, justify their claim for a high grade. Traditional-entry students appeared to prefer a highly prescriptive task and just wanted to do whatever was necessary in order to progress through their studies smoothly, according to Brian, who believed the student perspective was overly fixated on ‘jumping through hoops’. Debbie shared her disappointment at this:

I think it’s really sad, because your tertiary education and university years of learning should be a combination of new information, new experiences and things you enjoy doing, rather than it being a drudge. (Debbie, IT2, FG2)

Craig, a young lecturer, could understand the students’ motivation though, as he noted:

I think it makes a lot of sense for the students, because what’s going to be written on their record that lasts is not whether they turned up and whether they enjoyed a class….it’ll be how they did on a particular assignment. (Craig, IT2, FG2)

The focus groups then turned to what was considered to make an assessment ‘authentic’. This uncovered some interesting interpretations, including:
• Feeling confident that the work submitted was actually produced by the student; that it was ‘authentically’ theirs: “It’s authentically demonstrating that individual’s capacity to do it, or whether they had additional help and support”. (Trish, IT2, FG1)

• That a task actually addresses the specific competencies that the professional accreditation body seeks: “Helping them become better teachers, the AITSL standards”. (Paul, IT2, FG1)

• That the task was set within a ‘real’ context; for example, developing a learning activity for children visiting a local museum, and then giving that resource to the local school: “So they’re not just ticking off another academic assignment…they feel as though they’re helping other teachers”. (Paul, IT2, FG1)

• Assessment that represents what a teacher does: “tasks that will allow them to practice what they’ll need to do once they’re out there”. (Colin, IT2, FG1)

The participants were surprised at the diversity of their responses. Trish, a senior lecturer, believed all perspectives were valid but that students were likely to only associate ‘authenticity’ with a direct linkage to the workplace:

They might not appreciate an essay, which doesn’t mean that we don’t give them essays…their perspective on authenticity would be very much related to practice and they might not see the value of other assessment that might not be directly useful. (Trish, IT2, FG1)

Paul agreed:

Students may have a relatively simplistic reading of authenticity, of a quick and easy, down and dirty, simple read across. But it’s not as simple as that. (Paul, IT2, FG1)

When asked to describe examples from their own practice that they believed were authentic assessments, their examples all related to real-life challenges faced by teachers or to the creation of a product that was directly applicable in the school context. At that point, Kate expressed her concern about assessment tasks like these:

We have this brief, as universities, to make sure it has strong theoretical foundations and they’re engaging in the theory:practice nexus. It can go too far into the vocational without considering testing their ability to really think critically about the foundational knowledge behind what they’re doing. (Kate, IT2, FG2)

It appeared that some participants felt challenged by designing tasks that would bring theory and practice together into an authentic assessment task. This led to a discussion concerning the additional time that these types of tasks might need in terms of scaffolding and supporting students. Kate believed more traditional assessment
approaches were simply more efficient and were the only option given the limited time available:

I’ve got 10 weeks. I have to get them ready for their first PE [Professional Experience]. My ideal assessment would be to get them to teach something, but it’s impossible. And how could I transfer that to online? I could get them to send in videos. And who’s going to have the time to sit down and watch videos? And how much content has to get sacrificed along the way to just have that? They say to me every year ‘why aren’t we teaching something as part of our assessment? Why are we doing an essay?’ And I have to say ‘it’s an expedient way to get you to show me that you’re reflective and you understand the power of reflection.

(Kate, IT2, FG2)

Kate’s comment highlights a tension between achieving authenticity and the demands of a packed curriculum. Craig reflected on the consequence of this situation:

So in reality that part of the assessment is left, really, to Professional Experience and it is an essential part of our assessment regime, if you like. (Craig, IT2, FG2)

The danger of this approach, however, was noted by Brian:

If you ask the question how many teachers in schools actually consider theory or try to reflect on practice from a theoretical perspective, I don’t know that it’s a large proportion… many teachers measure success in terms of behaviour management and work output and to a certain extent test scores. (Craig, IT2, FG2)

This discussion captures a significant concern held by teacher-educators—that much needs to be completed in a relatively short time and that there is reliance on practicum placements to address any gaps. Brian’s questioning of the likelihood that teachers in schools might not be modelling theoretically informed practice has been noted in the literature (Darling-Hammond, 2006; Loughran, 2009) and earlier by Lewin (1945) who suggested that it was time for leading practitioners in education to recognise that “a scientific level of understanding is needed, that the statement ‘nothing is as practical as a good theory’ holds also in the field of social management” (p. 129). The challenge, therefore, is dual-fold: to build authentic assessment tasks that require integration of theory into practice and to encourage colleague teachers in the schools to demonstrate that ability within their own teaching practice.

Several participants noted that if a course of units had a more integrated approach it might be possible to have a broader approach towards assessment that stretched across or integrated with a number of units. This, however, did not suit the part-time nature of many students, and the general expectations of the University that all units were stand-alone options for study.
Approaches, value and challenges of formative feedback: Student perspective

Throughout the study, in all iterations and through all forms of data collection methods, participants identified the importance of feedback to their learning. They identified a number of sources and types of feedback, including:

- Responses from teaching staff or student-peers to posts made on the discussion forum, prompting further consideration or expansion of ideas;
- Peer-review of draft assessment tasks, completed as part of the learning activities in units;
- Colleague teacher feedback whilst on practicum placements in schools;
- Individual and constructive feedback from teaching staff on assessment submissions; and,
- General feedback provided to unit cohorts on their progress.

Feedback was considered valuable in a number of ways. The primary reason was in relation to improving students’ learning within their units of study and, accordingly, their grades. But feedback was also valued for its potential to help with current challenges in their workplaces, and also on a personal level, to help build or maintain self-esteem. For participants with competing demands, such as those with young children, having peers ready to provide support and advice was also highly valued:

Knowing that there are other people very close to me that I can turn around and say ‘I have absolutely no idea what I’m doing. Point me in the right direction’...that support that ‘it’s okay, you will be all right’ makes all the difference. (Nicole, IT1, FG)

When students were required to participate in a peer-review activity, it also opened up the possibility of doing so in a face-to-face context, such as on a TAFE campus. For some participants, this softened the experience of being an online learner:

It gives me confidence when sharing ideas and theoretical concepts with others. I am a slow reader, but I like to ‘discuss verbally’ what I am learning. (eSurvey, IT1)

A peer-review process typically entailed students sharing their draft products and requesting feedback, on anything from an ePortfolio artefact, a lesson plan, a report, to a learning resource. This process was integrated into the learning activities during semester and usually two weeks was allowed for the peer-review to be completed. Generally, the feedback related to one particular undertaking within a larger assessment task. Participants suggested that the type of feedback that they received from peers was
different to what was received from lecturers—it tended to be considered to be more practical in nature and to help them to quickly see what they could do to improve their work. Providing feedback to peers also helped them to see where their own work could be improved:

I found it an incredibly useful exercise to swap assignments. I benefited as both the person receiving the feedback and the person giving the feedback. You can’t help but reflect on your own work as you’re viewing another’s. (Laura, IT1, AT)

Other participants had mixed feelings about the peer-review process, suggesting that the value was highly dependent on the choice of peer to conduct the review:

Some have told me that I am totally on the wrong track and left me feeling like I need to start again, very stressful with two days to deadline. Others have been too busy doing their own work to take the time to give my work more than a cursory glance, merely corrected my grammar and spelling only or been too nice/unsure/afraid to say anything constructive. (Ellen, IT1, FG)

Feedback from lecturers to students was usually, but not always, in written form and accompanied returned assessment submissions. Typically, approximately half a page of summary feedback was provided, along with specific comments at particular points in the submission and a copy of the rubric, with the appropriate grading highlighted for each criterion. Most participants reported a high degree of satisfaction with the appropriateness and usefulness of the feedback received. Several participants, however, reacted negatively to the feedback that they received, generally because they did not agree with the views of the assessor:

I had one experience back in my early days where I got an assignment back and received a pretty bad mark for it, and I read the feedback and went, ‘I did do that. They’re saying I didn’t do that, but I did do that.’ I couldn’t see it from the lecturer’s perspective and wasn’t confident as a learner at that point… it just totally rocked my confidence. So, maybe, I don’t know, a little footnote saying, ‘Please give me a ring and let’s chat about this?’ might be good? (Anne, IT3, FG)

Anne’s view was supported by Bill, an older, pre-service teacher, who described himself as having a tendency to take feedback “quite literally”, because he was from “a trade background, there’s not a lot of variation, you do it and it’s either all right or all wrong”:

We all know that to type anything, we don’t get the nuances or any other expression across. I would hope that if a lecturer was going to mark me down for something I’ve done wrong then I would at least have a call, a personal call, because there’s so much more you can get across in speech. (Bill, IT3, FG)

Participants consistently reiterated the importance of the feedback, not just to help them improve into the future but also as acknowledgement of what they had done well in the task and the time they had invested in their submission. It seemed that while the grade awarded was important, it was the feedback that they were particularly keen to read.
As Bill suggests above, written feedback, whether from a peer or a lecturer, always carried a risk of misinterpretation or confusion. While almost all feedback was provided in written form, either in MyLO or through comments on assessment submissions themselves, some units provided feedback through individual podcasts. This was well-received by participants who felt it was a more personal way to receive feedback:

It felt like I was in the room with her while she looked at my assignment…I wanted to respond to her while I listened – it was great. (Nicole, IT2, FG)

Other participants appreciated the greater level of detail included in a podcast:

There was a lot of info in the podcast but it seemed much easier to absorb in that format. (Steve, IT2, EM)

Recording the feedback at the same time as viewing or reading the submission seemed to add value:

You can get so much more in that little file. You can hear her [lecturer] ‘umming’ or ‘ahh-ing’ because she wasn’t sure about something... you can actually hear her and she’s talking to herself a bit as well. And she’s talking us through it, as she’s looking through the work. It was good. (Diane, IT3, FG)

Participants agreed that they sought both feedback, and feed-forward, from their lecturer. A critically important aspect for participants was to receive this in a timely manner although they acknowledged the logistical difficulties with this, particularly in large units. They wanted to know both their strengths and their weaknesses, and be given ideas for how to improve. One of the older students, Lionel, emailed his unit coordinator with his thoughts on receipt of his feedback:

Thank you for your comments and guidance, all useful and perceptive as usual. I have you pegged as the essay-meister, and take your feedback very seriously as the best advice on presenting assignment work I have. (Lionel, IT2, EM)

Even when the assessment task was the final one for the unit, participants still valued feedback and believed it would benefit them in the following semester. Participants particularly valued the feedback from the lecturers who they most respected for their teaching, regardless of whether that feedback was positive or negative, as the example from Lionel, above, reflects.

**Approaches, value and challenges of formative feedback: Staff perspective**

As with the student participants, teaching staff recognised the value of providing oral feedback, whether primary or supplement. Debbie described how she liked to phone her online students as a follow up to written feedback if there was a particularly important aspect she wanted them to attend to in future assessments:
So they had their assessment task there and I would know what I’d written, but I would talk them through it. And just the ah-ha moments of, ‘oh, is that what you meant by that!’ that makes it well worth the effort. (Debbie, IT3, FG2)

Janet, who provided podcasts for feedback in several units, agreed that an oral format appeared to be more effective at communicating a message:

Look, it’s only anecdotal, but it seems to me that students respond to specific feedback in a podcast more than they do in the written form. So, if I ask them to really take a bit more care with something like their references, it tends to be reflected to a greater extent in their next submission. Whether it’s because they don’t read the comments, or whether it’s hearing my pleading voice that makes a difference, I don’t know! (Janet, IT2, FG)

Janet had kept records of how long it took her to make and upload the podcasts compared to the written equivalent. It appeared that both methods took approximately the same time to complete, though more words were spoken than would have been written through the alternative form. Students, therefore, received more feedback through a podcast. For Kate, who taught across a range of undergraduate and post-graduate courses, taking the time to make the occasional phone call to students was also an effective way to demonstrate the value teaching staff placed on assessment submissions and that marking was not just a “heavy burden, this thing we have to get through.” Kate spoke with passion about this:

They’ve actually done something that they’re giving to us. And that whole notion of the gift and how we hold it is going to make a really big difference to the kind of feedback we give. And so it’s just that kind of modelling how we would like them to be with their students. (Kate, IT2, FG2)

Several other participants agreed that modelling effective feedback processes was an important aspect of teacher-education, and the first step in improving the manner in which assessment was conducted in the school context.

Both students and teaching staff recognised some significant challenges in an authentic approach to assessment. These findings are now presented, firstly considering the students’ perspective.

**Challenges in adopting an authentic approach to assessment: Student perspective**

There was general agreement that student participants wanted authentic assessments in order to encourage and maintain engagement, learn more effectively and experience direct benefits in their workplace (for those who were VET teachers) as a result of their learning and assessment activities. There was also a strong sense that authentic
approaches were a valid form of assessment, enabling more ways to develop and demonstrate the skills and knowledge required of a teacher.

Authentic approaches to assessment did, however, present some challenges to students and staff. A high proportion of participants in the study were VET teachers who were combining study with work, most often at a TAFE college, and this offered an authentic context within which to situate assessment tasks, for example, designing, delivering and evaluating a lesson that reflected a particular approach to learning within their normal teaching environment. Such tasks positively responded to their desire for an applied approach to their learning as well as the realities of their busy lives. Yet, over time, workplace-based assessment tasks situated within the same context could potentially restrict their exposure to a wider range of environments and therefore limit their learning. Requiring students to access other authentic contexts placed demands on employers that were considered unacceptable, given the staffing challenges that ensued as teachers requested time away from their normal duties. There was therefore tension between the pragmatic desires of the students, their employers and the pedagogical benefits of authentic experiences in diverse contexts.

On the other hand, for the pre-service teachers there was a concern about equity. It was a very different experience for them to complete assessment tasks within a scenario-type context or to be placed in an authentic context where they were essentially outsiders. All pre-service teachers were expected to volunteer at a school or TAFE college for least one day per week but this was difficult to enforce. While lecturers would try to ensure that everyone had access to a realistic, authentic context, pre-service students often believed that they were at a disadvantage. This was strongly expressed in the first eSurvey by one respondent:

There needs to be a more organised and specific way of dealing with the pre-service teachers such as myself. I feel that this unit is more suited to people who are currently teaching, particularly when reflective practice is called for. (Respondent, IT1, ES)

Being a pre-service teacher in a largely in-service cohort did have advantages though, they were learning from their more experienced peers and could often arrange their volunteer positions more easily. However, it did not remove feelings of uncertainty and a perception of being in a position of possible disadvantage:

While the lecturer will always suggest strategies to assist a pre-service approach to assignment content, the unit content can often be too heavily weighted towards the experience of in-service teachers. (Respondent, ES, IT1)
In the final eSurvey this concern was not raised, however, perhaps because by this time the participants had participated in one or two practicum placements, and had often settled into a regular volunteer position in a school. There had also been a concerted effort from teaching staff to ensure that all assessment tasks were structured in a way that gave students longer to organise an authentic context, if need be.

Another challenge experienced by students related to the time and effort that they wanted to give to those assessment tasks that, for them, felt particularly authentic. This was particularly true for those who chose to do a workplace project, and also in the assessment task in a third year eLearning unit where students created their own eLearning strategy. In these cases, students often became so engrossed in what they were creating that it threatened their engagement in other units. Although this supports the notion of authentic assessment, it does flag the implications for situations where all units might be offering a similar approach. A posting on the discussion forum by a participant reflects her engagement:

> Can you get excited about assignments? I think I am enjoying this assessment task! Haha….shhhh. (Sue, IT3, DB)

An email between lecturers illustrates the potential challenge for teaching staff:

> Hi Janet, just so you know, most of the students who are doing your eLearning unit have asked for extensions for their second task in my unit, because they’re putting all their time into their eLearning projects – Humph!!! (James, IT3, EM)

In fact, many of the students in the eLearning unit put far more time and effort into their project than was required but were excited about having a fully developed eLearning strategy to embed into their own courses the following year. The project moved from being an assessment task to something far bigger. Rick, a student who had originally been opposed to the idea of being an online student himself, was one of the students who became engrossed in the development of his own eLearning strategy:

> I did a whole, complete [eLearning] module that can be used now, it can actually be used! It’s something that I’ve always wanted to do, never had the time or skills to do it, but this gave me the time to do it, and the motivation as well. (Rick, IT3, FG)

As Rick pointed out, he was in a position to give his project all it needed to take it to fruition. Others noted the difficulties that arose through an enticing but demanding assessment task:

> I get frustrated by the fact I don’t get to spend as much time on it as I’d like, and with juggling everything else going on … we’ve all got lots of things going on in our life. (Paula, IT3, FG)
Kate, a hospitality teacher, developed an online module for health and safety in kitchens that was implemented into her own course shortly after. Her project required her to become familiar with her institution’s Learning Management System (Fronter) as well as develop the eLearning strategy itself. She described her feelings about the workload:

Yeah. I actually felt that unit could have been broken up into two, because you were actually designing then developing. My Fronter room was over 15,000 words, it was crazy, just unbelievable how much work went into it. (Kate, IT3, IN)

Another participant, who created an eLearning strategy that earned him a high distinction, commented, tongue-in-cheek, about how he felt during the project:

I was thinking why couldn’t you just give me what you want me to read, I’ll do some online stuff and talk in the forums and whatever and then you give me the rubric, that’s fantastic and I’ll just spit up a thousand words or whatever you want. (Nick, IT3, IN)

So it appears that while participants made the choice to thoroughly embrace this particular task, probably because of its strong sense of authenticity, they were aware of the consequences in terms of the time and effort required.

Another challenge faced by participants related to their experience when completing units in their degree course which fell outside those guided by the design principles. In these units, their experience was quite different, as the assessment approach tended to be much stricter than what they had become familiar with. For example, participants might ask to adapt the task to better fit with current workplace issues or to pursue a particular interest. Most often their requests were denied by the relevant Unit Coordinator, usually citing a lack of resources to mark diverse assignments and concerns over equity with other students. During an interview Susie, an experienced VET teacher, shared her concerns about this:

But if you don’t give people [students] options and treat them as capable, then you’re going to be limiting. You are actually limiting people in what they can do. What worries me is that it perpetuates. We’re talking about teacher education and then they go and they take that same practice into the classroom. Then they’re going to limit their own students by having expectations that are set down here, in their teacher-education course. (Susie, IT3, IN)

Susie’s concern reveals her belief that when students are considered to be capable of adapting assessment tasks effectively, the potential for learning is enhanced and that the reverse is also true. Also, and perhaps even more importantly, Susie is communicating a belief that teacher-education students will perpetuate the assessment approach of their
university lecturers, which in this case would mean adopting a position that flexibility in
assessment is problematic and should be avoided.

Challenges in adopting an authentic approach to assessment: Staff perspective
The participants at the first two (teaching staff) focus groups were all teachers in the
Faculty, but did not teach in the Bachelor of Education (Applied Learning). This section
will begin with the challenges perceived by these academics and will then consider the
challenges of those staff teaching within the units guided by the design principles.

Time constraints were clearly considered to be the main barrier to adopting a more
authentic approach to assessment, with concerns about equity being raised as well.
Despite this, their interest in moving away from traditional assessment approaches was
clearly evident. Craig, who co-ordinated a large unit (up to 400 students), described what
he would like to do in terms of assessment:

My preferred model of assessment would be to arrange an hour to sit down with
the student and ask them questions and we have a conversation: 'What do you
think about the disabilities discrimination act? What would you do for a student?
What underpins your practice and what values do you bring into the classroom in
inclusive education?' (Craig, IT2, FG2)

When asked why he could not enact this assessment regime, Craig immediately
identified a lack of time. In contrast, with one tutor for every 30 students and 40
minutes allocated for marking for each student, other participants suggested it could be
possible. A number of applications, such as Skype, Lync and web-conferencing were
suggested as being able to facilitate conversations with distance students. Participants
then identified equity issues that might arise due to the staggered nature of the interviews,
particularly in large cohorts that would require the assessment process to continue over a
number of weeks. Another challenge to equity was the diverse experience of teaching
staff in large units. Brian observed:

If I knew that everyone on my teaching team had the same standards, the same
understanding, we’re on the same stage and there would be very good
moderation processes, it would be possible. But that would be the challenge with
equity because some of them have got very limited experience in the field. (Brian,
IT2, FG2)

The general feeling of the focus groups, however, was that there was an over-reliance on
essays at the expense of more engaging tasks. Yet despite this, in an environment of
large cohorts, faculty policy (such as two assessment tasks per unit), accountability and
quality assurance policies, the traditional essay remained a fail-safe option, and one that
developed the strong literacy skills required by graduates:

We want teachers who can write. We want teachers who can spell. We want
teachers who can put together paragraphs… there should be no way a person can
get through a semester and not be able to write. (Craig, IT2, FG2)

Craig’s point was challenged by others who believed that it was not every unit
cooridnator’s role to develop academic literacy. In the robust discussion that ensued,
there were disparate views on what a ‘good essay’ actually looked like. In general,
though, it appeared that participants were concerned about taking risks in assessment
practices:

I would love to think about creating a really good assessment. But it’s really
risky to come up with new stuff unless you have that support of a colleague who
says ‘Yeah, let’s do it. Let’s just experiment with it and see how it goes.’ But you
can’t go and ask for help because that looks like you don’t know what you’re
doing. (Kate, IT2, FG2)

In summary, the focus groups for academics outside of the Bachelor of Education
(Applied Learning) did have concerns about an over-reliance on traditional, essay-like
submissions and recognised the potential for greater authenticity in the assessment
approach to improved engagement and learning outcomes. They considered that the
main barriers to adopting a more authentic approach to assessment lay in the challenges
of grading more complex submissions and equity issues that might arise through
different approaches.

For the teaching staff within the units guided by the design principles, an authentic,
applied approach to assessment also brought some challenges to the fore. These were
mainly related to the time required to support students as they tackled tasks that were
always multi-dimensional, complex and ill-defined. Sometimes this related to secondary
aspects of the task, such as mastering the technology involved, and this could include the
lecturer needing to learn the technology themselves in order to then support the students.
For example, in the eLearning unit, students were encouraged to build their eLearning
strategy within the LMS that was in place in their own institutions. This meant that the
lecturer needed to have at least a basic understanding of the LMS too, so that it was
possible to evaluate how well the strategy would perform. Another example related to
the ePortfolio application where students would often turn to the lecturer to seek help
with particular aspects, such as linking to artefacts or uploading multi-media files.
Although technical mastery was addressed to some extent in the learning activities, with
diverse approaches to assessment there was a greater range of technical competence
required by students and, in turn, lecturers. This situation was somewhat eased by one
staff-member’s willingness to create and upload a number of videos to a web-based
application for students and other staff to refer to when necessary. What became clear
early on in the study, even within the first iteration, was that an authentic approach to
assessment encouraged both students and staff to explicitly consider how learning
activities contributed towards the assessment task. Nick, a third year student, describes
this in an interview during the third iteration of the study. To enhance understanding, the
relevant transcript is provided:

Nick: It all sort-of pieces itself together. One of the things we spoke about last
year was that assessment fits seamlessly into the learning. And that’s probably
the best thing about the online stuff.

Interviewer: Tell me more about that. In what way does it fit?

Nick: Well, all the readings and the tasks …are all built around this assessment.
It makes it more interesting, and with more purpose. (Nick, IT3, IN)

Teaching staff observed that students appeared to put much more effort into tasks that
were perceived as being highly authentic, and this resulted in more complex and
comprehensive products than were expected or required. As Janet reflected, marking the
eLearning strategies in her unit became a major task, because she wanted to do them
justice:

It didn’t feel like I was marking – it felt like I was involved in a collegial-review
process. I wanted to give my opinion on the product itself, not just the students’
effort, because it was actually going to be utilised in their own context. But it
took a lot of time, up to two hours for each project. (Janet, IT3, SM)

As a result of their high engagement, staff had some concerns about the significant time
students that were investing in their assessment tasks, possibly at the expense of other
units that might not have been as engaging but still needed to be successfully completed.
Contrasting this, teaching staff recognised that for pre-service students it could be much
more challenging to engage in an authentic context, and this had the potential to limit the
learning potential from particular tasks. Even when helping students to find a suitable
context, or create a scenario-type of environment, students did not appear to be engaged
to nearly the same degree and this often, although not always, was reflected in their
results. An ongoing challenge remained to help pre-service students flex assessment
tasks in whatever ways made it possible to reflect the requirements of an authentic work
setting and facilitate a high degree of engagement and maximise learning.
Discussion
The first part of this discussion focuses on the findings from the broader investigation with teaching staff outside of the program that was under the guidance of the design principles. One of the surprising findings from this group of participants was the diversity of views held on what they considered authentic assessment to be. These views ranged from academic integrity (plagiarism), to adherence to curriculum intentions, to representation of typical workplace expectations and contexts. While, arguably, all views were valid, it highlighted the importance of staff consultation and discussion to ensuring mutual understanding and a consistent approach to authentic assessment practices.

From the teachers’ perspective, assessment fulfilled many roles. It helped them to understand where their students were doing well or struggling. It facilitated learning as well as providing evidence of achievement. The findings clearly reflected a staff focus on developing graduates who would be class-room ready. The importance of alignment (Biggs, 2003) was reiterated, more broadly than just that between desired learning outcomes, activities and assessment. Alignment is also required between: unit learning outcomes and course learning outcomes; between course learning outcomes and professional accreditation standards; and, finally, between professional accreditation standards and the required attributes in the workplace. Also lying within the course learning outcomes is the responsibility to develop the generic attributes expected of a university graduate, including life-long learning skills. Assessment has, as Boud (2000) identified, multiple roles to fulfil.

For staff at Unit Coordinator level, the responsibility lay primarily for the alignment between learning/assessment activities and unit learning outcomes, and ensuring that achievement was adequately evidenced. This responsibility sat within a broader environment of rising student-to-teacher ratios, large cohorts, diverse levels of staff experience, the challenges of fully online learning environments and expectations for equity, accountability and quality assurance. In this context it becomes easier to understand why traditional forms of assessment, such as essays, were still heavily relied upon. Similarly, participants indicated that, with limited time allocated to provide feedback, a teacher-led approach and a heavy reliance on summative assessment was simply a logical, pragmatic response.
It seems that Sadler’s (1989) concern over deficiencies in the instructional system remain valid, largely due to the pressure felt by academics to be as efficient as possible. The findings clearly indicated a degree of dissatisfaction with current assessment practices and an interest in alternative approaches to assessment but these were not perceived to be practical or feasible approaches in the current context. This is consistent with other research, such as Oliver (2013) and the Federal review of teacher-education programs (Department of Education & Training, 2014), that found limited uptake of authentic approaches to assessment. The findings from this study suggest that the current teaching and learning environment within universities, and in particular the pressure for increased efficiencies, may account to some extent for the limited uptake, and justify further consideration of how academics might be better supported in implementing a more authentic approach to assessment. Finding a balance between efficiency and effectiveness could be highly valuable in teacher-education assessment approaches, particularly in relation to large cohorts.

In contrast, academics teaching within the program guided by the design principles believed that an authentic assessment approach was appropriate and feasible, and achieved high levels of student engagement and excellent learning outcomes. However, the unit cohorts sizes within these units were relatively small (average unit enrolments were between 15-35 students) and therefore there was only one staff member and a commensurate smaller risk of inconsistency or inequity. Certainly, the provision of flexible, applied and authentic assessment tasks appeared to have captured the students’ attention and ensured a high degree of engagement. For staff members, allowing flexibility in relation to the type, angle and submission of assessments was extremely valuable because it resulted in higher quality submissions and more satisfied students. It did require confidence to let some control shift from the lecturer to the student but it reduced pressure to stringently monitor aspects such as the day and time of submission.

In an applied, authentic approach to assessment, the focus shifts away from enforcing compliance to a rigid task. Instead, the focus is on ensuring that learning outcomes are achieved in a professional, comprehensive manner. The increased focus on achieving and evidencing the stated learning outcomes, as opposed to a more simple focus on a response and submission of a standard task (Robinson & Udall, 2006) appears to be beneficial because it encourages the students to more carefully consider what they are learning and how they will evidence that learning. Moreover, when students are engaging with the desired learning outcomes and targeting their efforts accordingly, they
are likely to reflect more meaningfully on their progress and the ways in which it was facilitated, thereby fostering their metacognitive skills. In this study, the online learning environment was conducive to facilitating more diverse student activity and learning approaches because, as Hattie (1999) has previously pointed out, it offered a multitude of ways to communicate to either groups or individuals, and could effectively monitor student activity and progression.

An authentic, applied assessment approach does have some challenges, however. For some students, a more flexible, ill-defined assessment task can seem daunting, particularly in an era of criterion referenced assessment and marking rubrics where learners can become accustomed to tightly scaffolded and rigid expectations. As Boud (2006) reminds us, “Students have been trained by many years of schooling to read tasks carefully and take them literally if they are to do well” (p. xix). So it is important that the guidelines provided to students explicitly value aspects such as contextualisation and creativity while still reflecting clear alignment between the task and assessment (Herrington & Herrington, 2006). Also, with large cohorts and multiple tutors, there is an imperative for staff to gather and discuss the types of evidence that may be submitted, and the ways to support students in their efforts.

For pre-service students, assuring an authentic context was sometimes problematic, resulting in a (small) number of participants perceiving a lack of equity when engaging in assessment tasks. It is probable, however, that VET teachers have an advantage over their pre-service peers even with a traditional approach to assessment, given their existing experience. Perhaps it was just more obvious to the pre-service students, as an authentic workplace setting was part of many assessment tasks. In this respect, the importance of practicum is raised to a more explicit level, as Darling-Hammond and Snyder (2000) recommended and, when integrated more effectively with the theoretical aspects of study would improve the theory-to-practice nexus that was a key recommendation in the latest Australian review into initial teacher-education programs (Department of Education & Training, 2014).

Beyond teacher-education, many other discipline areas such as nursing, engineering and business also share a likelihood of having a cohort that includes a mixture of students who are already working within the industry and students who are yet to do so, so there will continue to be a significant and, most likely, growing demand for equitable learning environments for increasingly diverse cohorts. The results align with Patrick et al.’s
(2008) call for work-integrated-learning programs to have a bigger role in university courses, supported by industry as potential employers of graduates. If placement (either paid or voluntary) in a real workplace is not an option for students then an authentic context may, as suggested by Herrington and Herrington (2006), be created through the use of computer simulations and applications, or other scenario-based activities. From the findings of this study, however, the preference of the pre-service students was to find a real workplace in which to base their learning and assessment tasks, if possible.

The findings revealed the high level of engagement that many of the student-participants experienced when undertaking an assessment project that they found particularly applied and authentic. This was demonstrated by going well beyond the expectations of the task itself. For example, the third year eLearning unit required students to create an eLearning strategy that would take the learners 4-6 hours to complete, yet many students submitted strategies that were considerably more substantial. This was driven by their desire to implement the strategy within their own learning environment or, in the case of several pre-service students, purely reflecting their interest in the project. The assessment aspect of the task became a secondary consideration to the creation of the product itself. This indicates a much higher degree of ownership in the task and thus has implications for the ability to self-manage and monitor workload (this will be further discussed in the next chapter, when the findings for the sixth design principle are analysed). When students choose to go beyond the assessment task expectations there are also implications for teaching staff, whose role moves to one of support and a ‘guide on the side’, and includes, as just alluded to, ensuring students are able to make sensible decisions about a balanced approach to their study.

High student engagement in authentic, applied assessment tasks also has implications for curriculum design. Within units of study, it supports the notion of having the assessment task seamlessly integrated with the learning activities (Herrington & Herrington, 2006; Wiggins, 1998). In this way, assessment becomes ‘for learning’ and ‘as learning’ (Boud, 2006), and provides multiple opportunities for formative feedback, both peer and teacher, as students progress. Importantly, it will make complex, multi-dimensional tasks more feasible, as students will be working progressively on their assessed product, rather than at primarily at the end of a module or semester.

In a broader sense, such as a course-wide approach, the findings indicate that it may be more appropriate to have fewer, but more significant tasks for students to complete. For
example, students could embark on more significant projects that might address a combination of learning outcomes from a number of units at one time, capitalising on a high level of engagement and resulting in meaningful products that are highly valued. This raises tensions with the nature of many courses, however, where units are discrete in terms of their learning and assessment activities in order to enable a wide range of student enrolment patterns. Yet a more integrated approach towards learning and assessment tasks is likely to encourage and enable a more holistic development of the individual, and may well be more effective than the present system that must, by definition, optimistically assume that students can make such connections themselves.

The findings reflect the literature related to feedback, and particularly the value students associate with constructive, timely, feedback. Peer-feedback was considered useful, for both the giver and the receiver, as long as it was meaningful and constructive rather than a superficial commentary. The implications for course design are to explicitly value the process of peer-feedback and support the development of the skills necessary to participate purposefully and effectively in such activities. Building such skills in students will improve their learning outcomes and also respond to the problem identified by Sadler (1989) and Black (1986) that teaching staff are often the ‘assumed expert’ in judgement-making.

The findings also highlighted the value students placed on oral feedback, even in recorded form. This was within a context of criterion-referenced assessment and the provision of rubrics and written feedback (when not provided with oral feedback), which would normally be considered to be sufficiently comprehensive and effective. It appeared, though, that oral feedback felt more personal and specific, and enabled a deeper understanding of what could have been improved and what had been done well. Perhaps this just reflects a natural ability to interpret a voice more effectively than the written word, but possibly too, it offers a way to make a more personal connection between distance students and teaching staff, and offer students a model for their own future practice in teaching and assessment (Forbes, Khoo & Johnson, 2012).

**Conclusion**

There are a number of conclusions that can be formed from the findings and subsequent discussion. Firstly, it appears that applied, authentic assessments do offer an engaging, effective approach in online teacher-education. The frameworks offered by Darling-Hammond (2000) and Herrington and Herrington (2006) are both supported by the
findings of this study as being likely to engender the engagement and learning outcomes they are intended to achieve. Similarly, the high value of constructive, meaningful and personalised feedback was supported by this study. Peer feedback can be a useful learning activity and resource but it does need to be well scaffolded and supported. Ideally, such activities would become part of the overall assessment regime, so that students were actively building, reviewing, refining and modifying their tasks throughout a unit of study, with assessment being indistinguishable from the learning activities.

The study did find, however, that some aspects of authentic, applied learning tasks can be challenging for students and teaching staff. Firstly, the notion of authentic assessment appears to hold a wide range of interpretations by staff. It would be wise for providers to ensure that staff have a shared understanding of what it means to authentically assess, and to collegially plan for how such an approach will be developed and supported. Secondly, for tasks to be authentic and applied they may not fit neatly into the parameters of a discrete unit of study, so it would be worthwhile considering if or how it might be possible for particular units of study to combine to develop a smaller number of complex tasks that could holistically develop and assess the students’ learning across a broad range of outcomes. This approach could also help to overcome another challenge identified in this study, which was the potential for students to engage to a level that was more than expected or required, and even to the point of neglecting other study commitments. This also reflects the need to develop students’ ability to scope and manage their workloads when given more flexibility, which is in itself a critical aspect of authenticity. Authentic workplaces are diverse, and students will need to be able to flex tasks accordingly.

Authentic, applied assessment tasks appear to have the ability to serve a double, if not triple duty. Firstly, such tasks facilitate meaningful learning against specific learning outcomes. Secondly, they build the type of life-long skills sought after by industry, such as communication, problem solving and collaboration. And thirdly, the completed products developed by students who are already working within the discipline area of study, such as VET teachers, are able to integrate the outcomes of their study directly into their employee roles, which should result in greater employer and employee satisfaction and increased efficiency and effectiveness in the workplace. So it appears that authentic, applied assessment does have great potential in teacher-education, though for it to be successful it requires both teaching staff and students to reconceptualise their
roles, for each to see the other as professional, capable, and effective communicators, willing to put the time and effort into a more holistic view of development throughout their university learning experience.

Finally, we end with the thoughts of Boud (2006), who has contributed much to the improved focus on assessment in higher education: “The more we can engage students in assessment activities meaningful to them and which contribute to their learning, the more satisfying will be their experience of higher education” (p. xix). The results of this study indicated that authentic, applied assessment tasks can certainly contribute to achieving this aspiration.

The next chapter will consider the findings related to the instantiation of the sixth and final design principle guiding the applied learning approach in the course.
CHAPTER 11

Student ownership of learning

A fundamental purpose of education is assumed to be to develop in individuals the ability to make their own decisions about what they think and do (Boud, 1988, p. 18).

This chapter reports on the findings of the enactment of the sixth draft principle, which aimed to encourage students to take an increasing level of ownership over their learning as they progressed through their studies. Theoretically underpinned by the research that links a lack of ownership with lower levels of engagement (cf., Boud, 1988; Dudley-Marling & Seale, 1995; Kahu, 2013) the enactment of this principle aimed to foster the students’ confidence and capability to be autonomous learners, who felt comfortable exchanging ideas and opinions with others (including teaching staff), and who were developing life-long learning skills. This principle responded to the literature on adult learners, the graduate attributes sought by universities and employers, and the aspiration for teacher-education to model best practice in contemporary educational settings.

It is acknowledged that it is difficult to evaluate whether any increase in the perceived level of ownership over learning was due to course design or, alternatively, represents a natural and expected progression for undergraduate students, and further research in this area is warranted. Despite this limitation, a better understanding of how participants developed their sense of ownership over their course of study has been a valuable aspect of this research. Additionally, while all of the design principles have a degree of overlap between their purpose and enactment, this principle is also considered a desired outcome from Design Principle 2: *Recognise the lived experience of students*, Design Principle 4: *Encourage the development of a professional identity through collegial interactions in a variety of settings*, and Design Principle 5: *Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings*. However, its value as an explicit principle guiding the design and delivery of the course was considered to be too important for it to be subsumed into others, particularly as it appears to be an area under-represented in the published literature on teacher-education, particularly in an online environment. Table 20 presents the principle, guidelines for staff and examples of its manifestation.
Design Principle 6: Encourage an increasing level of student ownership of learning

Table 20: Design Principle 6, guidelines for implementation and manifestation in the learning environment.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Guidelines for implementation</th>
<th>Manifestation in the learning environment. Students are:</th>
</tr>
</thead>
</table>
| Encourage student ownership of learning. | • Consider ways in which students can take more control of their learning approaches as they progress in the course.  
• Design activities that encourage students to consider how they can integrate their studies with real challenges in their workplaces.  
• Continue to provide support to students while inviting students to take increased responsibility for their learning.  
• Communicate with students in ways that acknowledge and respond to the experience that they have gained in other contexts, and encourage them to have greater confidence in their ability to take ownership of learning. | • 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.  
• Invited 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.  
• Supported to take an 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.  
• Invited to take on a supportive role themselves, particularly with their less experienced peers. |

Method of analysis

The analysis of data for this principle focussed primarily on the extent to which the participants’ sense of ownership of learning changed over the three iterations of this study. In the first iteration, data (primarily from interviews and focus groups) were analysed with the intent of gauging the degree to which participants already felt a sense of ownership of learning. For example, transcripts were examined for any indications that participants felt like they could exercise some choice in how they approached tasks, or if they perceived a value in their work beyond the purpose of assessment.

Additionally, data were analysed to identify the challenges that participants experienced in the teaching approach adopted in the enactment of this design principle. Then, in subsequent iterations of the study, the data were compared to identify what changes may have taken place, and if so, what might have facilitated these changes. The focus groups were a particularly useful source of data for this design principle, as participants were often quite passionate about the benefits and the challenges of taking a greater responsibility for their learning.
**Findings**

The findings from the data analysis of the enactment of this principle are presented in chronological order, from the first iteration of the study to the third, and final, iteration. This logically reflects the natural progression of the participants (both students and teaching staff) as they developed over the eighteen months of data collection. Note that rather than revisit aspects such as a lack of confidence with technology, negative memories from school, or being first-in-family to attend university (all of which have been discussed in previous chapters), this chapter will focus more narrowly on data that relates most closely to *student ownership of learning*. For each iteration the findings related to the students, and then staff, will be presented.

**Iteration 1**

**Students**

When data collection began as part of the first iteration of the research project, participants would have, at that point, completed between one and four semesters of study. The first data collection was completed through an eSurvey, and a comparative analysis was conducted on the responses to selected questions to determine if those students who had completed several semesters held different views to those who had only completed one. One question was particularly relevant to the sixth principle, and asked participants to identify the importance of a number of factors to their university experience, through a Likert type of question with five degrees of importance. The comparative results are shown in Table 21, below.
Table 21: Ranking of factors of importance in the university experience, by first and third semester students

<table>
<thead>
<tr>
<th>First Semester Students (n=19)</th>
<th>Not at all important</th>
<th>Not very important</th>
<th>Unsure</th>
<th>Very important</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular interaction with teaching staff</td>
<td>0%</td>
<td>5%</td>
<td>5%</td>
<td>68%</td>
<td>22%</td>
</tr>
<tr>
<td>Regular interaction with my student peers</td>
<td>0%</td>
<td>16%</td>
<td>21%</td>
<td>42%</td>
<td>21%</td>
</tr>
<tr>
<td>Learning new skills I can use immediately</td>
<td>0%</td>
<td>5%</td>
<td>11%</td>
<td>54%</td>
<td>32%</td>
</tr>
<tr>
<td>Having an online environment that allows anytime/where access</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>27%</td>
<td>73%</td>
</tr>
<tr>
<td>Sharing my own experiences with peers and teaching staff</td>
<td>0%</td>
<td>11%</td>
<td>11%</td>
<td>73%</td>
<td>5%</td>
</tr>
<tr>
<td>Working collaboratively with peers</td>
<td>0%</td>
<td>21%</td>
<td>37%</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>Assessment tasks that reflect the way knowledge will be used in real world settings</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>Developing academic skills</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>63%</td>
<td>32%</td>
</tr>
<tr>
<td>Developing professional skills</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>68%</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester Students (n=21)</th>
<th>Not at all important</th>
<th>Not very important</th>
<th>Unsure</th>
<th>Very important</th>
<th>Extremely important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular interaction with teaching staff</td>
<td>0%</td>
<td>5%</td>
<td>10%</td>
<td>33%</td>
<td>52%</td>
</tr>
<tr>
<td>Regular interaction with my student peers</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Learning new skills I can use immediately</td>
<td>0%</td>
<td>5%</td>
<td>15%</td>
<td>33%</td>
<td>47%</td>
</tr>
<tr>
<td>Having an online environment that allows anytime/where access</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>29%</td>
<td>71%</td>
</tr>
<tr>
<td>Sharing my own experiences with peers and teaching staff</td>
<td>0%</td>
<td>5%</td>
<td>10%</td>
<td>72%</td>
<td>13%</td>
</tr>
<tr>
<td>Working collaboratively with peers</td>
<td>0%</td>
<td>5%</td>
<td>19%</td>
<td>57%</td>
<td>19%</td>
</tr>
<tr>
<td>Assessment tasks that reflect the way knowledge will be used in real world settings</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>29%</td>
<td>67%</td>
</tr>
<tr>
<td>Developing academic skills</td>
<td>4%</td>
<td>4%</td>
<td>10%</td>
<td>67%</td>
<td>14%</td>
</tr>
<tr>
<td>Developing professional skills</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>24%</td>
<td>76%</td>
</tr>
</tbody>
</table>

The table above shows that 73% ($n=14$) of first semester participants believed that having an online environment that allowed for anytime and anywhere access to study materials was the most important factor (extremely important) of the university experience. Similarly, 73% ($n=14$) of participants rated sharing experiences with peers and teaching staff as very important. 68% ($n=13$) considered that regular interaction with teaching staff and the development of professional skills was also very important. Other elements of the university experience perceived to be very important by a majority of first semester students include developing academic skills ($63%, n=12$), learning new skills that can be used immediately ($53%, n=10$), having assessment tasks that reflect real world scenarios ($53%$), and regular interactions with peers ($42%, n=8$).
76% ($n=16$) of third semester participants rated *developing professional skills as a teacher* as the most important factor of the university experience (extremely important). This was not surprising given that the third semester students are closer to being fully qualified in this type of teaching. Closely similar to the first semester students, 71% ($n=15$) rated having an *online environment that allows for anytime and anywhere access to study materials* to be an extremely important factor of the university experience. Unlike the first semester students, however, third semester students rated *having assessment tasks that reflect the way knowledge will be used in real world settings* as extremely important (67% for third semester students versus 47% for first semester students), as well as *regular interaction with teaching staff* (52% for third versus 21% for first) and *learning new skills that can be used immediately* (48% for third versus 32% for first). Similarly, *working collaboratively with peers* increased from 21% ($n=4$) of first semester students seeing it as very important to 57% ($n=11$) of third semester students seeing it this way. Interestingly, very few third semester students perceived any of the criteria as not at all important. *Developing academic skills* was the only criteria rated as not at all important, and then only by 5% ($n=1$) of the students.

These results indicate that the more experienced participants had become increasingly confident about identifying the factors that they considered most important in their experience at university. In particular, aspects such as having authentic assessment tasks had become increasingly important, which suggests that the participants’ perspectives may have changed, from perceiving assessment to being a ‘test’ to perceiving it more as a learning tool that would help them develop the skills and knowledge that they wanted in their current or future role in the workplace. Also significant was the greater appreciation of working collaboratively with their peers, perhaps indicating a broadening view of who the ‘experts’ were in the learning environment. In a similar way, the importance of regular interactions with peers increased markedly with the more experienced students, also indicating a greater appreciation of others aside from the teaching staff.

The eSurvey results indicated a growing confidence in the more experienced participants to articulate what they wanted from their university experience. When exploring this further in interviews and focus groups, the nuances could be teased out a little more. The following comment from a participant who had been studying for three semesters at the time of the first eSurvey offered this interesting comment:
I struggle to read all the texts, as I am more of a social/kinaesthetic type learner (can’t remember the academic term) so I look to peer discussion on interpretation of readings and assignments to help me. (Peter, IT1, FG)

This comment indicates that despite Peter still having a low level of confidence in his academic ability, he was developing his own strategies to help overcome the challenges. Notably, this was not a case of him looking to the lecturer for help but rather that he considered his peers worthy resources for his own learning. Another relatively experienced student, Mandy, posted the following in the discussion forum, in response to one of her peers:

Having read all your posts now, it seems you are really switched on and have thought deeply about all topics. Unlike me who has really only skimmed the surface of my brain for some superficial responses. (Mandy, IT1, DBP)

So it appears that participants were starting to reflect on their own, and others’ metacognitive strategies, and recognising they might need to take more responsibility for their own learning.

Overall, the analysis of the less experienced participants (who had completed fewer semesters of study) indicated that their confidence levels were closely linked to their experiences in other educational contexts and their family backgrounds (as discussed in Chapter 2). As a result, it appears that the main focus of students was on building their self-confidence by experiencing success in a number of units. For most participants, the teaching staff were seen as a very important factor in relation to whether they would succeed or not. The characteristics of the teachers most valued by participants were ones such as being accessible and approachable. Personal attributes such as such as “easy-going”, “welcoming”, “engaging”, “understanding”, “reassuring”, “focused”, “interactive”, “supportive” and “knowledgeable” were offered as descriptions of the teaching staff in the general comments section of the eSurvey, and similar comments were made in focus groups and interviews.

**Teaching staff**

For the teaching staff, the main focus in the first year units was to make the students feel confident that they were capable of succeeding in higher education. Cognisant that many of the students were nervous about returning to an educational setting, the emphasis was on encouraging the students to see the value in what they brought to the class cohort, in terms of their experience (either teaching, or discipline knowledge, or both), and to reassuring the students that university was not a ‘scary place’. James regularly used
emoticons, pictures and other friendly graphic images to make his online learning environment look more ‘fun’ than students may have expected. He also aimed to portray himself as accessible and unpretentious, responding to students using reasonably informal language. He noted:

So every time I contact a student or they’re very concerned and can’t find their way, I’m responding to them as people, and as a fellow-traveller in the learning journey. (James, IT1, IN)

Janet, who also taught first-year units, identified strongly with the students as she too had also started university as a non-traditional student, with doubts about her academic capability despite a successful career. She recalled her aims for the course when it first began:

We will recognise who these students are. We want to get to know the students, and help them to feel acknowledged for what they bring to the course – and that although they haven’t studied at university, we recognise everything else that they’ve done, all their other successes in life, and their potential to succeed at university. (Janet, IT1, SD)

Encouraging students to ‘find their voice’ was integrated into the learning and assessment activities in all units but particularly those of the first year. For example, in the very first unit of study students were required to identify a strength that they believed they brought to their (intended or present) role as a teacher. This task proved challenging for students, perhaps because it forced them to ‘own’ something positive at an early stage of their study, as well as share that with their peers and the teacher. Each student would then link their identified strength to the most appropriate competency from the national professional standards for teachers, so that they could each begin to see how their own professional attributes would eventually be mapped against all the requirements at graduate teacher level. Students were also made aware that this mapping process would continue in each unit of their course, culminating in their final unit in their fourth year of study where their ePortfolios would be assessed to ensure that each student had comprehensive evidence against all the professional standards. The aim of this process was, from the very start, to encourage students to see the value in what they were doing and know that they would be able to make choices along the way in terms of how they constructed and evidenced their learning.
Iteration 2

Students
The findings from the second iteration of the study indicate that participants were beginning to feel more confident in their ability to successfully engage in the course and meet the academic requirements. This appeared to trigger a more outward-looking approach to their study. For some participants at least, they began to change their question from ‘Can I actually do this?’ to ‘How can I make the most of this course, and how can this course extend my learning?’ As described in Chapter 7, however, there was still an element of fragility within many participants, and a negative experience in a unit could easily send them back to questioning their ability to succeed academically.

In the focus groups conducted at the end of the second iteration, participants were asked to describe what, if any, changes they were starting to notice about themselves that could be attributed to their experience in the course. All participants were able to identify some changes in the way they perceived themselves and many of these were quite significant. For Bec, who was a first-in-family to attend university, her experience was profound:

I feel empowered, something that is hard to describe. I feel a sense of something good will happen because I will earn this qualification, it comes back to the feeling of opportunity education at this level brings. (Bec, FG, IT2)

This feeling of empowerment was a consistent theme in participants’ responses. It appeared that participants were feeling increasingly confident to be more active in collegial discussions within the university learning environment as well as beyond that, in their workplaces and community settings. Participants seemed to have more faith in themselves, as a result of their study.

I think anyone that goes to university, first of all, it gives you a sense of confidence in your own being. (Katie, FG, IT2)

Participants were recognising, and welcoming, the changes that they were seeing in themselves. For Lionel, a pre-service teacher who was taking a new direction in his life by enrolling in the course, the changes felt quite transformative:

And what I like about this is that I’m changing now…I’m developing and I’m becoming a different person. I don’t know what that person’s going to be in two or three years’ time. (Lionel, IN, IT2)

Lionel did, however, provide a useful reminder that, for him at least, the newfound level of confidence remained tenuous:

I’m 53 years old, and I still find myself doubting my own ability, and needing to be, you know, patted on the head like a good little boy. (Lionel, IN, IT2)
Overall, there was a general feeling at the focus groups that being at university added depth to their existing knowledge and made them feel more capable and competent. Natalie’s comment represented the feelings of her focus group well:

Look, I was intelligent before I started uni. My intelligence was different. It was broader, my contexts were different, and my way of looking at life was different. Not that I felt uncomfortable then, but I do feel more comfortable now to put an opinion out there. (Natalie, FG, IT2)

For those participants who were VET teachers on multi-sector campuses (i.e., with school teachers as well), there was a growing sense of confidence:

And also in the academic discussions at work that we’ve been having, I felt like my opinions are worth more because I’ve now got some of the knowledge and some of the expert knowledge to be able to impart as well, which I’ve been really pleased with. (Jenny, FG, IT2)

Responses like these appear to demonstrate a greater willingness to ‘own’ their beliefs and take responsibility for what they express to others. This was an encouraging sign for the teaching team, who wanted students to feel that they could contribute meaningfully to the course itself, in terms of how they might be able to engage with the learning and assessment tasks and choose to evidence their achievements.

Not everyone, however, appreciated an environment that invited students to take more responsibility for their learning. One VET teacher who withdrew from the course cited time and computer-access challenges, but offered this parting comment:

I was hoping you were going to teach us what we need to know, rather than ask ourselves what we need to know. I shudder to think what the outcome would be if I asked my students what they wanted to know, most would say what time can they go home. In fact most can’t understand why we teach them the stuff we do and neither can their bosses! (IT2, EM)

While the validity of this student’s reasoning is open to challenge, it does provide a useful reminder to teaching staff that the pedagogical design and approach could feel quite radical, and even threatening to some students. Support and scaffolding remained a critical role for the teaching staff. The language used by the student reveals a fear of being asked to take some ownership of her learning and this appears to be evident in her own teaching, where she is afraid of asking her students to share their learning desires. Ironically, by suggesting that her students would prefer to go home than stay in the classroom, the participant reveals her belief that her own teaching and learning environment is not a particularly positive one at present.
There was also evidence that participants were noticing that peers were engaging in different ways, and reflecting on why that might be so. For example, one participant, Rick, described how he judged some posts on the forum:

I think some people are doing, they’re looking at it and thinking ‘this is what the lecturer wants to hear so this is what I’m going to tell them.’ Instead of saying what they really think. (Rick, IT1, IN)

Perhaps then, some participants were beginning to feel more confident that they held ownership over their progress and success, while others still believed the lecturer was in the position of power and their focus therefore remained on doing ‘what the lecturer wants’.

As described earlier, teaching staff within the program were open to ideas from students on ways that the course and unit design could be modified to improve learning outcomes. In the focus groups, when participants gathered in a semi-formal manner, ideas were often generated and discussed. In the second iteration of the study, participants discussed how it would be useful to have a more formal way of undertaking independent projects instead of the set assignments. The following transcript extract reflects two participants, Katie and Rachael, raising the unit project idea with Janet, their lecturer, when responding to the question: When does the course feel most ‘applied’ – in other words, what activities or strategies feel most useful to your professional development?

Katie: I do like the fact that…when I might have a different idea about something, they haven’t necessarily thought about that and then they go, “Well, yeah, I see how that would work. Go with it.” I do like that ability to be able to do that. I don’t think that is very common in other courses. Could we have that option in every unit, do you think?

Janet: I think that’s really good idea and I would like to think that we could actually action that pretty quickly. I was just writing down notes as you were saying that. We could almost have, like….imagine if you had something in every unit that sort of gave you a template that says, ‘The assignment says to do this, but I’d like to do this.’

Katie: Yes! If you’re interested in something then you’re more likely to get something out of yourself. You’re more likely to research and do more.

Rachael: Janet, you need to scaffold it—you need to start off with guidelines to begin. Then as people go on, I think people start to go, “Actually, I feel confident enough to put that strategy forward and say this is…” I don’t know what everybody else thinks about that? (FG, IT2)

The language used by the participants reflects their growing confidence. For participants like Katie and Rachael, their focus had moved from themselves to the course itself. Instead of thinking about what they must do to pass the course, they were now starting to think about how the course could be enhanced to increase their potential for learning.
**Teaching staff**

For teaching staff, the focus also began to shift in the second iteration of the study. As students began to reflect a growing confidence in their ability, staff began to consider how best to move students towards a growing sense of responsibility for how they engaged with learning and assessment activities. For James, modelling what he considered best practice in teaching was critically important. In particular, aspects that students found technically quite challenging (such as the ePortfolio) were best managed by James sharing his own work and explaining how he approached the tasks they were also engaged in:

> I actually share my practice. I talk about me. I show them what my e-portfolio looks like. So, what they’re doing is not something that is totally separate from what I do. I’m sort of saying, ‘We are doing the same thing.’ And that’s a really important one in this space, because I think there is an incredible danger to, and the propensity to say, ‘Do as I say, not as I do’. (James, IT2, IN)

James also created a number of multi-media files that students could access independently that showed a step-by-step approach to mastering the technological aspects of the ePortfolio, which allowed other teachers to also direct students to those resources when required. Some students quickly became very proficient with the ePortfolio application, and tended to help their peers on a regular basis. This helped build their problem-solving skills, and encouraged a greater level of communication between students. As discussed in previous chapters, the willingness of students to altruistically help their peers was increasingly evident over the three iterations of this study.

Another lecturer in the program, Brian, was responsible for one of the numeracy units. Many students were quite concerned about the numeracy units, recalling negative experiences from their school days. In an interview, Brian described the differences he noticed between the participants in this study and his younger students in other teacher-education programs:

> They are a bit more mature, they see education as something that is going to benefit them and they’re selective, you know, saying, ‘Well, how is this going to be good for me?’ The further we go though, the more I see of their vulnerabilities around their own confidence with mathematics and particularly when and ask them to share their way of doing things. At first, they are not willing to share because they are not confident enough. (Brian, IT2, IN)

Brian’s approach was to encourage students to shift their focus from finding the answer to a focus on the actual process of mathematics. For Brian, the participants’ initial focus reflected the traditional approach in the school sector:
[School] students are able to memorize procedures, they have the drive to do that, they have the cognitive capacity to do that, are able to pass exams which get them through the various stages up to being engineers or statisticians or whatever. I tell you, it does not necessarily mean they understand it. I think that, traditionally, understanding in mathematics has been left up to the learner. The way it has been assessed and the way it has been taught, it has not always been required. (Brian, IT2, IN)

So for Brian, the enactment of this principle involved inviting students to take increased ownership over how they approached their learning and how they came to particular understandings. He explained that, slowly over the semester, students became more confident to share their approach to common mathematical problems they encountered in their lives:

But now, they might say, ‘Oh well, I did it this way. I know it’s complicated or I don’t know if it’s right but this is how I did it’ and this is good because I feel like I’ve got to a point now where they can feel confident to say, ‘Uh look, I’m not really very sure but I would have a go this way’, and you know, that’s so good. (Brian, IT2, IN)

Brian’s approach was very popular with the students. Each week, he would pose a mathematical problem on the discussion forum, and invite students to share how they might go about solving that problem. He would then lead a group discussion on the various approaches during a weekly web-conference with students (that was recorded and circulated afterwards). It appeared that students responded with great enthusiasm to the unit and the approach Brian adopted, and their fears of numeracy and mathematics were somewhat abated by the end of the semester. Similarly to the broader approach, Brian focussed on students becoming more aware of their own goals for learning and strategies to go about achieving those goals rather than, for example, preparing students for a numeracy exam which would, he believed, “just reinforce the jumping through hoops” approach. When participants spoke about their experience in Brian’s unit, it was interesting to see how the VET teachers immediately spoke of how they had changed the way they taught numeracy themselves. Emma’s comment typified the feelings of the participants:

Doing the units on numeracy, it’s given me confidence to know how to go about teaching that stuff, how to embed it into the course rather than teach it separately. That’s how my students really get to understand the maths – and then they feel better about their ability. (Emma, IT2, FG)

Given broad concern with mathematics education, comments like this indicate that Brian’s approach may be a very effective one and highlights potential for this principle to be useful more broadly.
Iteration 3

In relation to this design principle, the focus groups and interviews for the final iteration focussed on identifying the extent to which participants felt that they had increased their sense of ownership over learning. This last focus group was led by a facilitator who was not familiar with the course, and that resulted in participants providing some quite rich examples to help her understand how they felt. The facilitator asked participants about their overall feelings about a sense of ownership and responsibility for their own learning, and this sparked some interesting responses:

Probable when you first start the degree, you wouldn’t think about putting your hand up and saying, ‘Well, excuse me, but can I do it this way?’ But now that we’re this far through the course, we can, we have the confidence; we know that the respect is a two-way street. (Anne, IT3, FG)

To which Diane added: “And we know we’re not going to get shot down, that we have an open door”. The facilitator asked participants about when they thought this change happened—when they felt comfortable to ask about taking more responsibility for how they approached tasks. Responses included:

I don’t think it’s a sudden realisation, I think it’s a gradual process. (Emma, IT3, FG)

And it’s their approach, how they speak to us as well. They actually treat us like we know what we’re saying and doing, if you know what I mean? (Anne, IT3, FG)

We kind of grow with our confidence with each unit, and we’re not afraid to ask questions …. ‘Can we do it like this, or can we do it like that?’ (Diane, IT3, FG)

The workplace project option, as well as other units that encompassed a semester long project, such as the eLearning strategy, strongly integrated the types of graduate attributes that the course was aiming to develop. Students who chose the workplace project were expected to regularly check-in with their lecturer, providing updates on their progress and plans for the next stage. Communication skills, problem solving, research skills and being increasingly independent were all integral aspects of the workplace project. The diversity of student projects meant that the lecturer’s role needed to become one of purposeful support rather than leading all students from one discrete activity to the next. For example, in the eLearning strategies unit, resources were drawn upon as students required them, browsing the relevant section or seeking advice from their peers and teaching staff in the discussion forums. This did cause some participants some stress at times, particularly as some had embarked on quite significant projects that required significant time and effort. Diane explained the journey she travelled in the eLearning unit:
In the e-learning unit Janet had all these readings and resources. I nearly drowned, I was thinking, "Oh, I just can’t cope. I can’t cope." I was nearly in tears.... But I coped—I ended up doing my task backwards, so I built my initial eLearning room then I went back in and looked for bits and pieces to help me. (Diane, IT3, FG)

The process Diane undertook is authentic to the way her workplace would approach the development of their eLearning environment, so the task helped her to feel confident that she could undertake major projects and seek resources as required.

Increasingly, participants recognised that they were taking a more diverse approach to tasks but all shared a common desire to meet the learning outcomes in a meaningful manner. This made the learning environment a vibrant place, where students compared their projects and gave advice to others who were facing similar challenges in their project. Emma describes how she saw the assessment tasks:

The assessment tasks are based around the theory, but they’re generic enough that you can tailor it to your context. I can tailor it to my context, you can tailor it to yours, and we all come away with meaningful learning that we can use in our classrooms. We can base it on our students in our classroom which then gives us a tool, a lesson plan, or something we can walk away with. (Emma, IT3, FG)

Emma noted the value in being able to ‘walk away’ with a product; she saw value beyond the unit of study. The process of ‘tailoring’ involved a range of skills not normally called upon in rigidly set assessment tasks—judgement making, communication skills, analysing, and so on. Students needed to make decisions about what would address the task criteria and create a useful product for their own context. Additionally, as students progressively built their ePortfolios they were conscious of building their claims of achievement against the range of professional teacher standards that were mapped against units of study, so this too became criteria considered as they engaged in their projects.

In the final iteration, it became more apparent that participants were noticing changes to their own teaching practices. Most commonly, it was being reflected in the belief that they were becoming more confident to trust their own learners, and encouraging them to take more responsibility. In a particularly noteworthy example, Rick described how he had changed his teaching approach at the prison, where he taught carpentry to the inmates. In answer to a question about what his students were gaining from his own experiences at university, Rick responded:

Flexibility. I used to be very much teaching like, ‘This is what we’re going to do, and we’re going to do it now.’ But now I let them have more choice. So, the feedback I got back from the last group, they just said it was amazing. I said,
‘Look, you don’t realise the pain I’ve had to go through to be able to do this!”’
But it works. Engagement’s gone right up because they’re doing what they’re
interested in, yeah, they just get in and do it. (Rick, IT3, FG)

Another in-service VET teacher, Brett, who specialised in Information Technology
agreed that his approach was changing:

I suppose previously I had it more structured that ‘you must do this and this and
this’. But now my approach would be quite different in terms of letting people
discover things…. I let them play. I let them design what they want to design…
yeah, I actually give them a lot more freedom now. (Brett, IT3, FG)

When participants spoke about the workplace projects that they had undertaken, it was
clear that these encompassed a significant amount of work, as discussed in the previous
chapter. Not surprisingly though, these projects did encourage a strong sense of
ownership, as each one was unique to the student and was worked on over a sustained
period of time and would be embedded within their actual workplaces once completed.
Even the participants who had not yet taken up the option to do a workplace project
appeared to approve of the option:

I didn’t take that avenue, but it was a whole different way of meeting the criteria
in a way that was meaningful to us. (Emma, IT3, FG)

That’s all about giving us options, allowing us to make our own choices and
hopefully come up with something that suits us, but also produces work that’s
authentic and an indication of our capabilities. (Anne, IT3, FG)

In summary then, the final iteration revealed a strong sense of agreement that the course
design had indeed encouraged students to become increasingly responsible for their
learning, not through being abandoned but through support and encouragement. As
analysed in previous chapters, there were challenges for students when they engaged in
units of their course that were not guided by the same design principles and teaching
approach. In these cases, some participants found it very frustrating to be back in an
environment where they felt that they were actively discouraged from suggesting any
departure from the set unit curriculum and assessment approach. They usually assumed a
compliant, rather than engaged, student profile and focussed on ‘doing enough to pass’.
For some students, these units were extremely disappointing and even stressful, as
discussed in earlier chapters.

**Discussion**
The findings reveal a progressive increase in the level of student ownership over the
three iterations of the study. The degree to which this increase can be attributed to the
course is uncertain because students would be likely to become more responsible for
their own learning over an 18 month period at university anyway. There is a dearth of literature on this aspect of student development, particularly in relation to teacher-education, and it points to a potentially fruitful area of future research.

The first iteration of the study reflects the participants’ concern over their own capability to succeed at university. Particularly with non-traditional learners, anxiety and self-doubt at university is common (Bamber & Tett, 2000) and the teaching staff needed to focus on providing strong emotional support, scaffolding and direction to keep students feeling confident of what was required and the steps to successful completion (Chickering & Reisser, 1993). Consistent with the perspective of ‘teacher as expert’ (Welker, 1991), some students were not comfortable with being given any responsibility for their learning in the early stages of their study. It appeared that many of the less-experienced participants assumed that the teaching staff were the ones who would judge their capability to succeed—a predictable characteristic formed during school days (Boud, 1988). Inviting students to make connections between their experience and the theoretical concepts helped to validate the value of what they brought to the learning environment, as well as making the concepts more meaningful to their work-roles (Knowles et al., 2011; Shulman, 2004).

Participants responded positively to teacher-behaviour that exhibited respect and genuine interest in the students’ opinions and beliefs, which supports the research by Dudley-Martin and Oppenheimer (1995) that pointed to the need to avoid a ‘political struggle’ over whose knowledge is valid. The findings support the four aspects of positive relationship building that Chickering and Reisser (1993) identified—accessibility, authenticity, knowledge and ability to communicate—but would perhaps suggest that these traits should be encouraged in students as well as the teaching staff. The eSurvey in the first iteration revealed that the more experienced respondents placed a higher value on their peers, which reinforces the value of strategies that encourage collaborative activities early in the university experience.

The findings from the second iteration indicated that most participants were beginning to feel more confident of their personal ability to succeed at university and therefore were more willing to start taking ownership of their learning. The ability to adapt the assessment tasks meant that students could increase task authenticity and, consequentially, their engagement levels (Herrington & Herrington, 2006). Also, as flexing tasks meant individualising, the notion of ownership became commensurate with
their efforts (Boud, 1988). Each student began to see learning as their own journey and therefore felt a greater sense of autonomy and choice (Tough, 1971). The ePortfolio tool, while requiring some effort in terms of technical mastery, enabled students to evidence their achievements and align outcomes with desired graduate attributes and professional teacher standards (Biggs, 1989).

The last iteration reported on a period when many participants were involved in major projects that dominated the semester. The implications of significant, authentic tasks were evident, namely high workloads for participants and teaching staff but compensated by a sense of satisfaction at what was achieved. Most significantly, participants were reporting changes to their own teaching practices as they too planned for how they could create more flexible, applied environments for their own learners. Perhaps this is the strongest indication of student ownership of learning, as the participants were taking not only what they had learnt through their studies but also what they had learnt through their experiences as a student and transferring that to a new context.

The challenges that were experienced in the enactment of this principle were not insurmountable. The high workload for students and staff (largely due to the over-exuberance of the participants in their projects) serve as a good reminder of the importance of clear assessment criteria and regular communication between the different parties.

**Conclusion**
As mentioned in the introduction, this design principle can be considered as the desired result of several other design principles, particularly Design Principle 2: *Recognise the lived experience of students*, Design Principle 4: *Encourage the development of a professional identity through collegial interactions in a variety of settings*, and Design Principle 5: *Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings*. In order to avoid any repetition, this chapter has focussed on the specific characteristics of ownership of learning, and how that can be encouraged. It is difficult to assess the extent to which the findings of this study can be applied in other contexts. As most of the participants in this study were in-service teachers, they began their studies with a strong desire for their university experience to assist with challenges at work. This fostered an environment that encouraged each student’s journey to be different, therefore requiring a greater degree of ownership of their learning. On
the other hand, as non-traditional students, they were likely to begin their studies with a lower sense of efficacy and possibly negative memories of school. As the findings for Principle 2 revealed, some of the participants learnt in school that if they did not do exactly what the teacher said, they would be in trouble. There was therefore a period of time where students were cautious about taking ownership but their fears appear to have gradually dissipated.

It seems a worthy aspiration for all students, traditional or non-traditional, in-service or pre-service, to be encouraged to take an increasing level of ownership of their learning. Particularly in teacher education, this surely is a desirable outcome that should become embedded in the graduates’ own teaching practice. As Shulman (2005) pointed out, however, it takes a confident and competent teacher to allow a degree of unpredictability in the classroom, whether that be on campus or online. It appears that appropriate professional development may well be required, particularly for those teacher-educators who have not studied adult education or worked specifically in that context.

The findings for the enactment of this principle add to a rather limited body of literature on student ownership of learning, particularly within undergraduate teacher-education courses. This study has found that students are motivated by the opportunity to take on a more autonomous role, and are keen to have more choice and responsibility in learning and assessment tasks. They are, however, likely to enter university with a limited degree of confidence to do this, and will need strong support and encouragement to take the first tentative steps on their own. Importantly, teaching staff must be prepared to change their role to one that is largely facilitative, while still ensuring that alignment is in place between the activity of the students and the desired learning outcomes. Ultimately though, successful enactment of this principle should ensure that graduates leave their university experience with the attributes that will serve them well in their career, and for graduate teachers, this should benefit the next generation of students.

The next chapter presents the conclusion of this thesis, bringing together the findings from the enactment of the six design principles that aimed to enable an applied, authentic approach to the online teacher education course.
CHAPTER 12

Conclusion

The concluding chapter considers the research questions guiding this study and then presents the design principles which responded to the problem identified in the first phase of the investigation. The design principles aimed to assist course developers and teaching staff in developing an applied, authentic learning environment for non-traditional students in a fully-online teacher-education course. Initial consultations with prospective students for a new course at the University highlighted the need for an alternative approach to course design and delivery. The course needed to encourage students to more effectively connect their studies with their everyday roles as teachers in VET and build their graduate capabilities to be confident, capable professionals in the broader education sector. To respond to their needs as non-traditional learners, the learning environment needed to integrate their existing skills and knowledge with new understandings within an active and engaged online community. To begin with, however, this chapter begins with a review of the study approach and findings.

The first chapter of this thesis outlined the initial consultations with these stake-holders, which drew attention to the need for an alternative approach to the learning environment that would respond to their needs and achieve the desired course outcomes. Chapter 2 reviewed the literature that enabled a deeper understanding of the problem facing course designers. There were several aspects considered in this initial investigation of the literature. Firstly, despite the global increase in the number of non-traditional students entering higher education (Munro, 2011), there was little evidence of any significant change in the pedagogical approach of providers to better cater for these students (Crozier et al., 2008). Secondly, the rapid expansion of online learning had made higher education more accessible to many, particularly for those who wanted to combine study with other duties, such as being a parent, employee or carer, yet this mode of study brought challenges for students and staff particularly in relation to feelings of isolation, technical mastery and retaining engagement. Thirdly, teacher education courses were facing criticism for a lack of connection between theoretical concepts and practical integration, with concern that graduates were not class-room ready (Department of Education & Training, 2014).
A more comprehensive literature review was presented in Chapter 3. That review sought to identify the research findings that could inform and influence the creation of a set of design principles that offered a response to the problem identified in Phase 1 of the study. Once the design principles were articulated, an investigation of their effectiveness was warranted.

Design-based research (DBR) was identified as an appropriate methodology to guide the research study, as described in Chapter 4. There were four phases in the study, aligned with Reeves’ (2006) model of DBR, beginning with an investigation of the problem, followed by the development of a potential solution in the form of specific design principles, three iterations to investigate their effectiveness, and, lastly, the articulation of a final design model that reflects what has been learnt through the iterations and how the solution may contribute to both theory and practice.

Participants included students within the course and teaching staff, and data were collected over three semesters of study (18 months). Methods to collect data included surveys, interviews, focus groups and documents, and the analysis process adopted the approach of Miles and Huberman (1994) of data reduction, data description and conclusion drawing and verification (p. 10-11). The researcher interweaved these three aspects throughout the data collection process in an iterative manner. The coding of data followed a two-step approach, firstly, against a priori codes that were closely connected to the design principles, their theoretical underpinnings and the research questions developed for the study, and secondly, by inductive coding that responded to new or unexpected data that emerged from the data (Johnson & Christensen, 2004). As the study moved through the iterations, the enactment of the principles was informed by what had been learnt along the way, with both the researcher and the participants actively seeking meaning from their experiences in their course of study.

Chapter 5 presented an overview of the design of the learning environment, which aimed to effectively respond to each of the design principles and engage students in activities that could be applied to their particular context and which were authentic to the role that they were being prepared for. The learning environment also sought to tightly integrate the practicum component of the teacher-education course with theoretical studies, and encourage students to critically reflect on their experiences through blogging with their peers, teaching staff and their school Colleague Teachers (CTs).
Chapters 6-11 presented the findings of the investigation into the participants’
experience, with each chapter focussing on the implementation of a particular design
principle. For each design principle, the manner in which it was enacted and the
emergent challenges and affordances were explored, along with a positioning of the
findings within relevant literature. The analysis of each principle aimed to make sense of
the rich data provided by the participants, many of whom were highly engaged in the
study and recognised the value of the investigation to their own teaching role and
context. Changes to the enactment over the three iterations were identified and described,
along with ways in which the developing understanding of the participants and the
researcher influenced the learning environment. Unexpected events, such as the
experience of participants in some units of study that were not under the influence of the
design principles were also incorporated into the findings chapters, as they had a major
impact on engagement and motivation levels and hence brought greater clarity to how
course design affects the student experience.

Phase 4: Reflection after the final iteration
This chapter now turns to the fourth phase (Reeves, 2006) in design-based research, a
reflection on the findings from previous phases as well as articulation of the refined
design principles that were formed as potential a solution to the problem identified in
Phase 1 of this study. The chapter responds to the research questions guiding this study,
and this response begins with the first question:

1. In what ways do students engage with authentic, applied learning tasks?
In order to best respond to the first research question, each of the design principles
investigated in this study will be considered in turn, summarising what has been learned
after three iterations of enactment into the course. Following this, a response to the other
research questions will be presented.

Design Principle 1: Provide learning activities that connect
theory and application in authentic contexts.
For teaching staff, this principle sharpened the focus on the design and structure of each
learning activity. It ensured that students were not just exposed to, and then expected to
assimilate, large chunks of theory. Rather, the activities were purposefully designed to
bring theory to practice, or alternatively, practice to theory. From this study, the most
effective activities related to this first principle were those that were sustained over time,
involved a number of different activities that complemented each other, contributed
directly to an associated assessment task and, most importantly, were related to real-world situations.

The enactment of this principle highlighted the potential for technology to provide an important link between the experience and the subsequent meaning making, therefore connecting theory and practice. The investigation has added to what is known about applied learning because it has demonstrated how technology in online learning environments can facilitate a connection between the two types of knowledge that Ryle (1949) described: knowing that (theoretical knowledge) with knowing how (practice).

With universities looking for practicums (or work-integrated-learning) to play a bigger role in the student experience (Ash & Clayton, 2009), applied and authentic learning can offer a constructive and meaningful approach to the development of activities. The findings of the investigation into the enactment of this first principle indicate that theory and practice can be connected through activities in authentic contexts but that particular characteristics are likely to enhance the effectiveness of this principle.

These factors are depicted in Figure 14.

**Figure 14: Design Principle 1, with guiding points**

The discussion will now move on to the second design principle, and what has been learnt about its potential to be effective in an applied, authentic approach to the learning environment.
Design Principle 2: Recognise the lived experience of students

Key findings and contribution to theory
As non-traditional students, many participants began their studies with considerable trepidation due to negative memories of school and doubts over their academic ability. In order to challenge those beliefs, participants needed to engage with them and consider them in light of what they were now learning, and achieving, in their present course of study. The findings for this principle focussed on the experiences of three participants in this study: Rick, Rosie and Steven. There was strong evidence that the enactment of this principle contributed positively to their experience and engagement in the course.

Recognising the lived experience of students also entailed a willingness of teaching staff to allow students to adapt some assessment activities in order to maximise their value. As Brookfield (2006) warns, all teachers must recognise that the “sincerity of their intentions does not guarantee the purity of their practice” (p. 1). The findings indicate that enacting this principle requires teaching staff who are confident, capable practitioners. Once students’ lived experiences are recognised, they must be responded to appropriately, and that may well involve being willing to explain, modify or defend a particular approach or strategy in the learning and teaching environment.

Importantly, the findings revealed that participants were changing their own teaching practices as a result of their experiences at university, and particularly with respect to encouraging their learners to engage with their own experiences and beliefs. Given that the adult-education sector has embraced such a perspective for a considerable time (Lindeman, 1926), it is somewhat surprising that it is not already explicit in the pedagogical approach in higher education. Biggs’ (2003) is often cited for his claim that it is ‘what the student does that matters’ (p.1) and perhaps this could be extended to a proposition that it is ‘who the student is that matters’. The design principle, with guiding points, is presented in Figure 15.
Design Principle 2: Recognise the lived experience of students

Activities should:

- Encourage, value and respond to students’ existing beliefs and perspectives;
- Ensure that teachers model a willingness to challenge and be challenged;
- Be flexible and responsive to the realities of students’ characteristics and circumstances;
- Encourage and develop the attributes of a life-long learner.

Figure 15: Design Principle 2, with guiding points

This leads onto the third design principle and a summary of its evaluation in the investigation.

Design Principle 3: Provide meaningful opportunities for collaborative construction of knowledge within the learning community

From the initial and subsequent literature review, as well as the informal consultations with prospective students and the teaching team’s prior experience, it appeared that the advantages of online collaborative activities were always likely to be tempered by the challenges that participants would face in engaging in such strategies. The key to successful implantation of this principle appeared to lie in ensuring that any collaboration was genuinely going to benefit students and would align with the study patterns of non-traditional students.

In contrast to existing literature that suggests that the potential for meaningful collaboration will be enhanced when students perceive a degree of mutual dependence for goal achievement (Johnson & Johnson, 1998; Oliver et al., 2007) this study found that collaboration was most evident (and valued) when students shared an interest in or motivation to enhance learning potential but did not depend on the input of others or have others depend on them. In particular, collaborating with peers for summative assessment tasks was not perceived as desirable. It is likely that the characteristics of non-traditional students, with their competing roles and accountabilities, may at least in part explain their reluctance to collaborate in such tasks. The challenges of fully online study and the largely asynchronous mode of engagement may also subsume the potential for enhanced learning through working with others on assessable products.
In all three iterations of the study, however, the findings indicated that many participants were prepared to collaborate when it would be beneficial to their peers, regardless of whether or not they gained directly from that collaboration. Altruistic acts were evident in most units, particularly when it appeared that some students were struggling to comprehend concepts or complete complex and sustained activities. These findings are aligned with recent analyses of student behaviour in MOOCs, where it appears that members of the learning community gain satisfaction from adopting roles in the online learning environment that benefit others (Cheng, 2014). Despite this, there is a dearth of literature that promotes planning to create opportunities for students to commit altruistic acts in the learning environment. This seems a wasted opportunity, particularly given the ever-increasing demands on teaching staff. It appears that there is great potential to more purposefully harness the willingness of students to actively contribute to a collegial, collaborative learning environment, particularly as it will help build the students’ confidence and satisfaction levels.

The role of designers and teaching staff, therefore, lies in considering how the learning environment can foster collaborative acts that fit with the nature of the students, the realities of their lives, and the affordances and barriers that come with an online learning environment. For example, the findings indicate that collaborative activities that have a strong connection to an assessed task (e.g., the wiki activity where students collaboratively compiled an annotated bibliography of all the unit readings) are more likely to succeed. Such activities meet the traditional understanding of collaboration, with the end product being perhaps better than what could have been achieved individually but they also allow students to contribute at a time that suits them, and with a greater degree of flexibility over the actual contribution. When relating this to the workplace context, it can be argued that this is also more representative of the way that workers collaborate – through task division, individual responsibility to attend to their particular tasks, and then coming back together to compile the final product.

Consistent with the literature related to learning communities (Wenger, 2005), the findings suggest that a sense of belonging and community is fostered when students feel respected and encouraged to share their experiences. In particular, the findings revealed a high degree of value associated with the sharing of what Korthagen (2001) refers to as perceptual knowledge, or practical wisdom. Sharing stories and reflecting on authentic experiences appeared to have wide appeal. Conversely, collaborative activities that aimed to facilitate the development of episteme, or true and certain knowledge
(Korthagen, 2001) did not engender much enthusiasm or engagement, with participants suggesting that this form of knowledge was more easily gained in other ways.

In summary, the findings suggest that when designing for an applied, authentic learning environment for non-traditional students, collaboration is valued and embraced provided that certain factors have been considered. Firstly, collaboration in online learning environments seems to work most effectively when it does not entail mutual dependence for the production of an assessed product. Secondly, opportunities for collaboration should be built in to the structure in a way that allows students to act altruistically, knowing that they will do so happily and enthusiastically. Thirdly, collaborative activities that encourage the sharing and development of practical wisdom (as opposed to propositional knowledge) appear to be more attractive to students. Perhaps this is because it is more closely related to the type of informal collaboration and co-construction of knowledge in social settings described by Brown, Collins and Duguid (1988).

Figure 16 presents the third design principle, together with key guiding points that emerged from the investigation into its enactment.

<table>
<thead>
<tr>
<th>Design Principle 3: Provide meaningful opportunities for collaborative construction of knowledge within the learning community</th>
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<tbody>
<tr>
<td><strong>Activities should:</strong></td>
</tr>
<tr>
<td>• Encourage collaboration that leads to mutual benefits and knowledge creation</td>
</tr>
<tr>
<td>• Provide opportunities for students to contribute altruistically to the learning environment</td>
</tr>
<tr>
<td>• Foster a learning community by encouraging a range of different ways to contribute</td>
</tr>
<tr>
<td>• Utilise the affordances of technology to support collaborative efforts.</td>
</tr>
</tbody>
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Figure 16: Design Principle 3, with guiding points

The discussion will now move on to consider the implications of the investigation of the enactment of the fourth principle.
Design Principle 4: Encourage the development of a professional identity through collegial interactions in a range of settings

One of the key findings of the investigation into this principle is recognition of the importance of teacher-educators being able to model a professional identity themselves. Such modelling would include a willingness to engage in robust, collegial discussions, the confidence to defend or revise a particular perspective, active membership in a networked professional community, and recognition that professional identity develops over time and with experience. The participants in this study consistently portrayed their propensity to reflect on their teachers’ behaviour and evaluate that against the standards that they themselves were being evaluated against for their degree. When teaching staff modelled the behaviour that was being espoused participants recognised and responded positively, not only in terms of respect for their teachers but also (for those participants who were already employed as VET teachers) in terms of assimilating such behaviour into their professional practice. Conversely, when participants perceived their teachers’ behaviour to stand in contrast to what was being espoused, their own engagement and satisfaction was negatively affected.

The findings align with the call from Grossman et al., (2009) for ‘pedagogies of enactment’, or approximations of desired practices within the teacher-education program. Loughran (2014) recognises, however, that this may not be easy, as the transition from teacher to teacher-educator has potential for “feelings of unease [that] lies in the change in the nature of the teaching role and the expectations of academia” (p. 2). He calls for greater attention to the professional development of teacher-educators, to ensure that they are able to confidently approach their role in preparing students for their teaching careers. In a similar manner to the previous design principle, the findings suggest that those teachers who are experienced in the adult education sector are less likely to struggle with the enactment of this principle. This is because they are likely to have more experience of teaching in unpredictable environments, whereas the learners may experience disorientation in the face of new concepts and perspectives and want to engage in robust discussion on the merits or otherwise of alternative views.

In an environment where the teacher-educators are willing and able to model a developing professional identity, the findings indicate that a number of activities were particularly useful in developing those attributes in the students. Aligned with the authentic learning framework of Herrington et al., (2010) there was great value in
providing opportunities for students to rehearse the skills of a professional teacher, such as participating in web-conferences with experts or being introduced to professional networks through learning activities or assessment tasks. As observed in some participants, however, this takes time and will need ongoing support from teaching staff in order to assure students that they are capable of performing in that role. As this investigation found, non-traditional students are more likely to have a lower sense of self-belief and a propensity to withdraw if they feel uncertain of their position. The findings indicate, however, that within an environment that responds positively to students and encourages them to express their views without fear of being curtailed by others, their sense of professional identity can develop quickly.

In an era of professional accreditation, there are explicit expectations for graduate attributes and a need for the university context to take more responsibility for the development of a professional identity (Mayer, 2014) and the findings from this study offer teacher-educators some food for thought. Firstly, there is an imperative for practitioners to be confident in their own sense of professional identity, both as a teacher and as a teacher-educator. This in itself may require ongoing professional development in recognition of the complexity of teaching teachers about teaching. Secondly, the pedagogical approach needs to position students as professionals-in-training, exposing them to the types of interactions and networking that they will be expected to engage in once they begin their careers. Concurrently, students will benefit from reflecting on those experiences and the challenges encountered along the way, as well as the strategies that they used to overcome those challenges. These types of activities can be conducted over a sustained period of time, incorporating a number of discrete tasks that can be reviewed by teaching staff or student-peers, with formative feedback consolidating the resultant learning.

The findings of the investigation into the enactment of this principle align with the published literature on the development of a professional identities, particularly the views of Laurillard (2002) who called for a ‘conversational framework’ that positions the student and lecturer as equally involved in an iterative process of adaptation, reflection and assimilation. The findings also concur with Brookfield’s (1995) contention that students will make assumptions about their teachers (and the profession of teaching) based on their experiences in the educational context. These, of course, can be both positive and negative, depending on the modelling provided by the teacher.
The affordances of technology enabled this principle to be instantiated in a number of ways, and in this sense the findings can contribute to future practice. While practicum placements have traditionally assumed responsibility for developing the confidence and capabilities of students to engage with other professionals, this is not something that should be assumed to have occurred (Darling-Hammond, 2006). Alternatively, strategies such as web-conferences, Skype meetings, blogs, wikis and even online discussion forums can facilitate a range of collegial interactions and build the students’ sense of professional identity. With the ability to connect geographically diverse practitioners, the university learning environment can establish the foundations of professional networks and a sense of membership in a Community of Practice, developing the attributes that are expected in graduates.

The fourth design principle along with key points for its enactment, is presented in Figure 17.

Design Principle 4: Encourage the development of a professional identity through collegial interactions in a range of settings

Activities should:
- Ensure teacher-educators are able to model a professional identity and its continuing development
- Allow students to rehearse the skills of professional interactions with diverse practitioners
- Facilitate the students’ foray into membership in professional communities and valuing networks in their discipline
- Maximise the affordances of technology to facilitate a range of interactions with other professionals

Figure 17: Design Principle 4, with guiding points

The chapter will now review the findings for the fifth principle, and identify implications for theory and practice.

Design Principle 5: Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings.

There were a number of key findings from the investigation. Firstly, while not all non-traditional students will begin their higher education with fears concerning assessment, many will and it will take time, effort and appropriate design to lessen those feelings.
Other students may feel uncertain about being asked to take more ownership over assessment and will need support as they begin to engage with alternative approaches. For them, academic success has come from identifying and responding to exactly ‘what the teacher wants’ and that may well have been a regurgitation of content rather than authentic application of knowledge. Such habits can take a while to change, and students will need to have a positive experience when they take their first tentative steps towards a new way of engaging with assessment.

Secondly, the findings of this investigation revealed a high degree of diversity within teaching staff in relation to exactly what authentic assessment is. There appears to be merit in collegial gatherings to foster common understandings of the philosophical underpinning and pragmatic implementation of a more applied, authentic approach to the assessment. In a similar manner, the assessment criteria, associated marking rubrics and guides need to respond to what Boud (2000) refers to as the ‘double duty’, considering both the immediate learning outcomes desired as well as, beyond that, equipping students for lifelong learning and assessment. By doing so, the assessment tasks should recognise the multi-dimensional and complex nature of authentic contexts and legitimise the diversity that will be represented in submissions.

Thirdly, the findings of this study indicated that an assessment approach that encouraged students to closely link the assessment demands to real workplace challenges fostered high levels of engagement and greater satisfaction on completion. To begin with, participants appeared to struggle with the concept that authentic tasks could and should have a tight connection to theory but over the three iterations such struggles seemed to dissipate as they became more attuned to connecting theory with practice, as intended by the overall design approach.

This study contributes to the conceptualisation of authentic assessment, particularly in terms of the value of integrating more flexibility into the regime. Such flexibility responds to the characteristics and needs of non-traditional students as well as recognising that knowledge and skills can be demonstrated in a variety of ways. Adopting a more flexible approach may feel threatening to academic staff, however, as it will result in diverse responses from students that could test the competence and confidence of staff to assess such products appropriately. This is where the importance of well-articulated learning outcomes and criterion-based assessment come into play, to
ensure that units of study are truly valuing what they should be, that is, the skills, knowledge and attributes sought by graduation.

Organisations are seeking a tighter connection between the demands of their workplaces and the activities engaging students at university, and the findings of this study suggest that authentic assessment provides an appropriate response. Technology-enhanced environments offer effective ways for students to work collegially with a range of stakeholders, communicate with their teaching staff about progress, and participate in meaningful peer-reviews. The major difference for teaching staff is that what may arrive for marking will be more diverse, multi-dimensional, and situated within particular contexts that they may themselves be unfamiliar with. This changes the role of the assessor, from viewing submissions in terms of compliance to rigid expectations, to a more holistic assessment against the ability of the student to integrate theory and practice in an authentic manner and demonstrate the achievement of the desired learning outcomes. Across units, courses, faculties and institutions, this appears to be a worthy change to adopt, and the tested design principle, along with some key points for enactment, is presented in Figure 18.

Design Principle 5: Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings.

Activities should:

- Ensure mutual understandings about the nature and purpose of authentic assessment
- Support students as they engage with diverse approaches to assessment tasks
- Encourage and enable regular, constructive and formative feedback to students
- Adopt a flexible approach in terms what constitutes knowledge and how it is demonstrated

Figure 18: Design Principle 5, with guiding points

The findings from the sixth, and final, principle will now be reviewed, before moving on to the second research question.
Design Principle 6: Encourage an increasing level of student ownership of learning
This design principle aimed to encapsulate and add to the intention of the other principles guiding the course. The findings revealed that participants believed that they were feeling increasingly confident to take ownership of their learning. This was evidenced in a number of ways, including becoming more confident in flexing assessment tasks and making suggestions for different learning activities and approaches in the online environment. Perhaps most significant was their sharing of new approaches in their own teaching that reflected a desire to increase their own learners’ sense of ownership over learning. Such examples provided sound evidence of the applied nature of the course; participants were experiencing a particular approach then enacting that same approach in their own environment.

The findings supported the research of others, particularly Ramsden (2003) and Boud (1988), namely that students may be hesitant to take on a greater degree of ownership because of their formative experiences in school, and, particularly, their sense that success comes with strict compliance to teachers’ request. There was also evidence that, as suggested by Herrington and Herrington (2006), while adult learners seek more responsibility, they will still need support from teaching staff at critical times.

Technology offers much in the instantiation of this principle, as it enables students to work independently and create products that are unique and that represent their particular experiences, perspectives and beliefs. The integration of the ePortfolio, enabling students to evidence their learning outcomes and, importantly, their journey towards those outcomes, played a major part in the students themselves beginning to transform their feelings of ownership over learning.

The successful enactment of this principle relies heavily on teaching staff to genuinely have confidence in their own teaching, and also in their students’ ability to increasingly take responsibility for their learning. The two aspects are mutually dependent, as shifting responsibility to students increases the chances of what Shulman (2004, p. 496) refers to as a “chaotic mess” that could, understandably, be unsettling for everyone. As Dudley and Oppenheimer (1995) pointed out, it is critical to avoid a ‘political struggle’ over whose knowledge is valid – so teaching staff will need to feel that the respect in which they are held comes from other aspects of their behaviour. Yet once the students felt safe to take the first tentative steps towards a greater level of autonomy, they found that the
desire for a closer integration with their authentic workplace needs were more likely to be met and therefore the benefits were significant and meaningful.

Within teacher education, there is a dearth of literature that explicitly addresses the value and approaches that will encourage a growing sense of ownership over learning. This increases the likelihood that graduates may not feel confident about shaping their own career and continuing professional development once they once they begin teaching. If this is true, then it could be expected that classroom practices are unlikely to reflect continual improvement. Yet, and benefitting from the in-service nature of participants, the findings of this study indicated that within a relatively short period of time the classroom practices of participants were actually changing. Thus, further research into strategies that will encourage this approach more broadly in teacher-education appears to be warranted.

The final design principle, while also aiming to be a result of the principles before it, deserves its place in a model for applied learning in online teacher-education. The principle and key aspects of its enactment are presented in Figure 19.

<table>
<thead>
<tr>
<th>Design principle 6: Encourage an increasing level of student ownership of learning</th>
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<tr>
<td>Activities should:</td>
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<tr>
<td>• Ensure teaching staff feel confident in their capacity to create a more</td>
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<tr>
<td>autonomous learning environment</td>
</tr>
<tr>
<td>• Support a progressive approach to students’ growing ownership of learning;</td>
</tr>
<tr>
<td>• Design activities that lend themselves to authentic workplace needs</td>
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<tr>
<td>• Integrate technology that can support the creation of products that will be</td>
</tr>
<tr>
<td>useful beyond the university context</td>
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</table>

Figure 19: Design Principle 6, with guiding points

The chapter now turns to the second research question, which considered how the students responded to the course of units that were designed using the applied learning principles. In particular, the response to this question considers how the role of a student changes as they experience a course of units all underpinned by the same design principles.
2. How do students respond to a course of units designed using applied learning principles?
The findings revealed that the student-participants were well aware of the design principles guiding the course, and the manner in which the instantiation of those principles influenced the learning environment and their subsequent role within that environment. This was particularly evident when participants were enrolled in units of study that were not under the influence of the design principles and consequently resulted in a quite different experience, including the behaviours and role they undertook within that environment.

The course of units underpinned by the design principles aimed to foster an environment where students could authentically apply what they were learning about to everyday problems and opportunities in real workplaces. This entailed students taking a greater level of responsibility for their learning – they often needed to connect their studies to their own, unique, context. This is at the heart of an applied learning pedagogy—recognising and responding to the individuality of meaning-making and knowledge creation, and using that individuality to create more meaningful links between theory and practice.

Over the three iterations of the study, the student-participants showed a gradual and, in some cases, transformational change in the role they undertook in their own learning and their confidence to grow professionally. Perhaps most indicative of this value was the evidence that students were changing their own teaching practice in response to how they experienced their university learning environment. It seemed that as participants became more comfortable taking responsibility for their learning, they also became more confident to make changes to their own teaching practice.

Students needed to reconceptualise their role in the learning environment. This often began with a need to (re)examine their beliefs about themselves as learners and the way in which they engaged with their teachers and peers. Rather than being passive receivers of content from an ‘expert’ teacher, they were introduced to new concepts, ideas, theories, frameworks and such like, and asked to examine and interrogate those in light of their existing perspectives and beliefs. Some participants with negative connotations from their school days were reluctant to show any behaviour that could be seen as challenging the authority of the teacher. With growing numbers of non-traditional students entering university, it is particularly important for teaching staff to be conscious of the likelihood that these students will arrive with a lower sense of self-efficacy.
Students in applied learning environments will therefore need to be encouraged and supported as they develop the confidence to critically engage with their peers and teaching staff and wrestle with alternative perspectives. It may take time to feel able to communicate effectively in a professional, collegial manner and to be prepared to re-examine, reconsider and perhaps reform their beliefs and perspectives.

Finally, students in a course underpinned by an applied learning approach will be expected to be developing and rehearsing the skills of a life-long learner, identifying the ways in which they can progress towards desired learning outcomes, and drawing upon the expertise and guidance of others when required. They will need to be able to make sound judgements about particular strategies to facilitate learning and develop the confidence to adapt those approaches when necessary, in order to reach desired learning outcomes.

The role of the student in an applied learning environment, as reflected by the findings of this study, are summarised in Figure 20.

The role of a student in a course underpinned by applied learning principles:

- To take responsibility to engage with the activities in an authentic and applied manner – seeking connections with real-life contexts and integrating theoretical concepts with application in learning and assessment activities
- To contribute to the learning community in a purposeful and constructive manner, drawing upon existing skills and knowledge and helping to build a culture of collegiality and professionalism
- To develop the capacity and confidence to take increasing responsibility for own learning, identifying strategies and projects that will facilitate progression towards desired outcomes, both personal and professional

Figure 20: The role of a student in a course underpinned by applied learning principles

The response to the third and final question will now be presented, with a particular focus on how the role of teaching staff changes as they develop a course of units that are all underpinned by the applied learning design principles.
3. How do teaching staff respond to a course of units designed using applied learning principles?
This investigation considered eleven units of study that were all guided by the design principles for applied learning. In a similar manner to the students, teaching staff were aware that the enactment of the design principles had implications for their role in the learning environment. Perhaps most importantly, there was a need to model the attributes that were being developed in students – to be professional, reflective practitioners who engage collegially with others in the learning community, within and beyond the University. Accordingly, such modelling may include examining their own teaching practices and perspectives and, potentially, transforming some of their own views. Subjecting one’s own teaching practices and beliefs to critical review requires confidence and a degree of resilience, yet if students are being asked to do so it seems only fair that teachers are too. Teaching staff who implement the applied learning principles are likely to see their role move from one that positions them as experts to one that is more aligned with that of a continual and lifelong learner.

Additionally, as applied learning strategies will see students engaging in diverse ways, the learning environment could become somewhat chaotic. The challenges lie in embracing the individual journeys that students embark upon and providing the support they need at critical times. Assessment task design will need to recognise the value that comes from the learning process as well as the resultant product created by students, and recognising that there may be multiple ways to achieve desired learning outcomes.

Teaching staff will also need to be familiar with a greater range of authentic contexts outside of the university. In an applied learning approach, the role of the teacher/assessor becomes one of evaluating the degree to which students are connecting theory to practice, and demonstrating the development of the desired graduate attributes. This calls upon teaching staff to be familiar with contemporary workplace contexts and to ensure that their discipline knowledge is still current. Engaging more regularly with schools, industry, professional bodies and such like will add value to the role they undertake and will respond to calls from employers for closer links between universities and industry.

The role of the teacher in an applied learning environment can be summarised as in Figure 21.
The role of a teacher in a course underpinned by applied learning principles:

- To provide a supportive, responsive learning environment that respects and values what each student brings to the learning environment
- To encourage each student to take a greater responsibility for their learning, accepting that this will entail greater differentiation and diversity in the ways in which students engage and evidence their learning
- To feel comfortable in a role that positions themselves as life-long learners, engaging in collegial discussions and modelling the attributes of a professional educator within and beyond the learning community

Figure 21: The role of a teacher in a course of units underpinned by applied learning principles. Following the responses to the research questions, this chapter now turns to the final phase in design-based research—the production of a tested design model.

**Final design model for applied learning in an online teacher-education course**

The fourth and last phase in design-based research is the production of a final design model, which can claim to have been tested over a number of iterations (Reeves, 2006). Accordingly, and drawing upon the summary of findings for each design principle, a model for applied learning in an online teacher-education course is offered, and described in Figure 22.
### Applied Learning Design for online teacher-education

<table>
<thead>
<tr>
<th>Design principle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design Principle 1:</strong> Provide learning activities that connect theory and application in authentic contexts.</td>
</tr>
<tr>
<td>Activities should:</td>
</tr>
<tr>
<td>• Take place over a prolonged period of time;</td>
</tr>
<tr>
<td>• Be situated in real-workplaces with supportive supervisors;</td>
</tr>
<tr>
<td>• Encourage regular, collegial interactions between all stakeholders;</td>
</tr>
<tr>
<td>• Require on-going critical reflection that is valued in the assessment process;</td>
</tr>
<tr>
<td>• Be designed by teaching staff abreast of current workplace practices.</td>
</tr>
</tbody>
</table>

| Design Principle 2: Recognise the lived experience of students. |
| Activities should: |
| • Encourage, value and respond to students’ existing beliefs and perspectives; |
| • Ensure that teachers model a willingness to challenge and be challenged; |
| • Be flexible and responsive to the realities of students’ lives; |
| • Encourage and develop the attributes of a life-long learner. |

| Design Principle 3: Provide meaningful opportunities for the collaborative construction of knowledge within the learning community |
| Activities should: |
| • Encourage collaboration that leads to mutual benefits and knowledge creation; |
| • Provide opportunities for students to contribute altruistically to the learning environment; |
| • Foster a learning community by encouraging a range of different ways to contribute; |
| • Utilise the affordances of technology to support collaborative efforts. |

| Design Principle 4: Encourage the development of a professional identity through collegial interactions in a range of settings. |
| Activities should: |
| • Ensure teacher-educators model a professional identity and its continuing development; |
| • Allow students to rehearse the skills of professionally interacting with a diverse range of practitioners; |
| • Facilitate the students’ foray into membership in professional communities and valuing networks in their discipline; |
| • Maximise the affordances of technology to facilitate a range of interactions with other professionals. |

| Design Principle 5: Provide authentic assessment tasks that reflect the way the knowledge will be used in real work settings. |
| Activities should: |
| • Ensure mutual understandings about the nature and purpose of authentic assessment; |
| • Support students as they engage with diverse approaches to assessment tasks; |
| • Encourage and enable regular, constructive and formative feedback to students; |
| • Adopt a flexible approach to assessment in terms what constitutes knowledge and how it is demonstrated. |

| Design Principle 6: Encourage an increasing level of student ownership of learning. |
| Activities should: |
| • Ensure teaching staff feel confident in their capacity to support a more autonomous learning environment; |
| • Support a progressive approach to students’ growing ownership of learning; |
| • Lend themselves to authentic workplace needs; |
| • Integrate technology that supports the creation of products that will be useful beyond the university context. |

Figure 22: Final framework for Applied Learning in an online teacher-education course
**Concluding remarks**

The findings of this investigation suggest that the intervention was effective in helping students to engage in their studies, connect theory with practice, and build their professional identities. A key contribution to theory is a greater understanding of applied learning, and its potential in the higher education context. Specifically, it provides course designers with a theoretically underpinned framework that will help them to build an engaged, supportive online learning community where students are increasingly able to take responsibility for their own learning and development. The applied learning framework helps teaching staff to design activities that will help students make meaningful connections between theory and practice through application in real-world contexts.

The findings of this investigation indicate that the applied learning framework responds positively to the needs of the growing number of non-traditional students in higher education. These students need support as they re-engage with formal learning, and they cannot be assumed to feel comfortable with traditional teaching and learning approaches. Most importantly, these students need to see a direct link between what they are studying and the needs of the workplace, and they respond well to activities that provide opportunities to authentically apply new understandings in a range of contexts. Additionally, the findings suggest that providing non-traditional students with opportunities to act altruistically may help build their confidence and level of self-belief at university. In this way, not only will a more applied approach improve the learning experience of non-traditional students, it is likely to improve the experience of the traditional cohort of students entering university from the school sector.

It is hoped that the framework for applied learning, underpinned by the design principles tested in this study, might be adopted in other programs, courses and institutions. In other disciplines where a strong connection between the university and industry is sought, or where the cohort includes students who are combining study with employment in the same profession, the framework should help to motivate, engage and facilitate the achievement of desired learning outcomes as it will foster a tight connection between the two contexts. Additionally, this study has added to understandings about how collaboration in the online learning environment is most effectively structured and supported, and how assessment practices benefit being positioned as flexible and adaptable to authentic contexts.
The findings suggest that in order to achieve an applied, authentic learning environment in teacher-education, it is necessary to reconceptualise the role of the lecturer and their students. For teaching staff, their role becomes, appropriately enough in an era of globally dispersed knowledge and technologically enhanced learning environments, one of facilitating their students’ development towards the desired outcomes of the course of study rather than purely one of subject expert. This entails an acceptance that each student may take a slightly different path to their learning, but that the journey will be focussed on their development and achievement of agreed learning goals and, in particular, the attributes of life-long learners. As well as providing consistent, constructive feedback and support, teachers need to be confident in modelling those attributes being espoused and aspired to, and this may be challenging for some to do. Adequate support and encouragement must be extended to teachers as they adopt a more flexible and differentiated approach to their role, as the applied learning framework encourages a greater level of power-sharing than in a traditional teaching approach.

For students, the applied learning framework increases their role in making meaning from learning activities, as they will be expected to integrate theory with application in their assessed work and play an active role in the online learning community. Rather than see themselves as passive recipients of knowledge, they will be expected to take ownership over how they will gain and evidence their attainment of expected learning outcomes, drawing upon the expertise of others as required, and returning those favours in a reciprocal manner. Students will learn that what is valued is not just the end product but the development of key attributes such as communication and problem-solving skills, as well as critical thinking and reflective practice. Graduates will reflect the attributes of a life-long learner, embracing opportunities to further develop themselves and their community, and recognising that their own learning journey may be different to others but just as valid.

Finally, this study has shown the great value of an environment that encourages students, teachers and assessors to talk openly and collegially about learning and teaching, and explicitly values the perspectives that all stakeholders bring to those discussions.

**Limitations of the study**

There are two types of limitations in this study. Firstly, there are limitations in a design-based research approach. These include the nature of design-based research to produce large amounts of data that may only make small contributions to knowledge (Brown,
1992), the challenge to be able to perform the dual role of developing globally useful knowledge and refine local educational interventions (Design-based Research Cooperative, 2003), the potential lack of transferability due to the contextual nature of the research (Lincoln & Guba, 1985), and the very nature of iterative research where continual adjustments are made and it can be difficult to know what actually contributed to its success or otherwise (di Sessa & Cobb, 2004). All these limitations associated with design-based research are applicable to this particular study, and the findings should be considered with that in mind. In many ways, however, it is through the characteristics of design-based research that a richness is found through the analysis of data and might otherwise be difficult, if not impossible, to achieve. Because design-based research does not aim to prove that one approach is better than another or prove or disprove a particular concept (Reeves, 2006), it offers practitioners and their participants an opportunity to engage deeply with a process that will deepen understanding of a particular approach or intervention, and ultimately improve professional practice.

Secondly, this study examined the experiences of a somewhat unique cohort of students, in that they were generally experienced VET teachers who wanted to add an education degree to their existing qualifications. While this added to the credibility of the findings through the participants being naturally inclined to be engaged with the research process itself, it may limit the usefulness of the findings to other settings where the nature of the participants is quite different. Additionally, as experienced practitioners themselves, their own biases relating to teaching and learning are likely to have influenced their responses in the research activities to a greater degree than perhaps otherwise might be expected from students in a higher education context. Again, this limitation, while important to acknowledge, also offers a potential strength to the findings, as the participants’ knowledge, commitment and passion for education fuelled their enthusiasm for contributing regularly and substantially to this investigation.

**Recommendations for further research**

At the conclusion of this investigation, there are a number of areas that have been identified as worthy of further research. First and foremost, it would be of great value to test the applied learning framework, with its six design principles, in other teacher-education programs. Regardless of whether the students in the programs were of an in-service nature or not, the inclusion of a significant practicum component should provide sufficient opportunity for authentic contexts and potential for theory to be applied to real-life situations. Going further afield, the applied learning framework could be tested
in other disciplines, particularly those which are delivered online and attract students who are combining study with employment in the same discipline or profession.

A number of other areas worthy of further research came to light during this investigation. Firstly, the findings indicated that many students are altruistically motivated to support their peers in online learning environments. There is a very limited body of research in this area but given the pressure on teaching staff in universities, there appears to be significant worth in investigating this more and considering how pedagogical design could embrace this characteristic of student behaviour. Secondly, the very interesting observations from one of the participants, who has high-functioning autism, highlight how the needs of such students are currently not well understood or catered for in university settings, particularly online environments. It is certainly an area worthy of further research as the statistics indicate a significant growth in this cohort over coming years. And, finally, the dearth of literature related to the strategies, benefits and challenges of increasing the level of student-ownership of learning suggests that this too could benefit from further research.
References


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Appendices

Appendix A: Characteristics of qualitative research and their enactment in the study

Appendix B: Units underpinned by design principles during each semester (iteration)

Appendix C: Email invitation to participate in the research project

Appendix D: Information Sheet and Consent Form

Appendix E: eSurvey (first six questions)

Appendix F: Example of Focus Group guiding questions

Appendix G: Example of semi-structured interview questions

Appendix H: A priori and inductive codes for each iteration

Appendix I: Course structure for the Bachelor of Education (Applied Learning)

Appendix J: Example of an assessment task and associated criteria
### Appendix A: Characteristics of qualitative research and their enactment in the study (based on Patton, 2015, p. 40-41.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Stage in the research process</th>
<th>Characteristic</th>
<th>Enacted by ensuring:</th>
<th>How this characteristic is reflected in this research design:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design strategies</td>
<td>Naturalist inquiry</td>
<td>Studying real-world situations as they unfold naturally; non-manipulative and non-controlling; openness to whatever emerges.</td>
<td>The study took place in a real setting, over a significant period of time and participant involvement was entirely voluntary.</td>
</tr>
<tr>
<td>2</td>
<td>Emergent design flexibility</td>
<td>Openness to adapting inquiry as understanding deepens and/or situations change</td>
<td>The study encouraged participants to be actively involved in suggesting changes to the design, and examples of such changes are described in the findings.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Purposeful sampling</td>
<td>Cases for study are selected because they are information rich and illuminative, that is, they offer useful manifestations of the phenomenon of interest.</td>
<td>The context offered a rich and dynamic opportunity for exploration, with demonstrated interest in the findings and how they could be useful in the broader environment.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Data collection and fieldwork strategies</td>
<td>Qualitative data</td>
<td>Data collection methods that yield detailed, thick description; inquiry in depth, interviews that capture direct quotations about people’s experiences.</td>
<td>The range of data collection methods and the manner in which they were enacted ensured comprehensive and rich detail was captured. Participants had multiple opportunities to be involved and through a range of methods.</td>
</tr>
<tr>
<td>5</td>
<td>Personal experience and engagement</td>
<td>The researcher has direct contact with and gets close to the people, situation and phenomenon under study; the researcher’s personal experiences and insights are an important part of the inquiry and critical to understanding the phenomenon.</td>
<td>The researcher’s own experience and insights, along with an established and trusted relationship with the participants ensured a rigorous and credible approach to gathering and interpreting the data collected.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Empathic neutrality and mindfulness</td>
<td>Seeking vicarious understanding without judgment by showing openness, sensitivity respect, awareness and responsiveness.</td>
<td>The researcher reflected critically on her behaviour and paid constant attention to demonstrate openness, sensitivity and respect to her participants at all times.</td>
<td></td>
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<tr>
<td>7</td>
<td>Dynamic systems</td>
<td>Attention to process; assume change is ongoing whether the focus in on an individual, an organisation, a community or an entire culture.</td>
<td>The extended period of data collection recognised and responded to the ongoing development and change in the participants, the context and the researcher herself.</td>
<td></td>
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<tr>
<td>8</td>
<td>Analysis strategies</td>
<td>Assumes that each case is special and unique; the first</td>
<td>The research findings acknowledge and reflect</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Stage in the research process</td>
<td>Characteristic</td>
<td>Enacted by ensuring:</td>
<td>How this characteristic is reflected in this research design:</td>
</tr>
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<td>-----</td>
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<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>level of analysis is being true to, respecting, and capturing the details of the individual cases being studied.</td>
<td>the individuality of cases, and attempt to capture the uniqueness of each person’s experience.</td>
</tr>
<tr>
<td>9</td>
<td>Inductive analysis and creative synthesis</td>
<td>Immersion in the details and specifics of the data to discover important patterns, themes and interrelationships.</td>
<td>The researcher was embedded in the context on a full-time basis for the entire period of the study, enabling her to become aware of, and responsive to, particular issues, inter-relationships and complexities.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Holistic perspective</td>
<td>The whole phenomenon under study is understood as a complex system that is more than the sum of its parts.</td>
<td>The study aims to deepen understanding while accepting the complexity and uniqueness of the context under study.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Context sensitivity</td>
<td>Place findings in a social, historical and temporal context.</td>
<td>The findings are contextualised to the particular place and time of study, aware of the changing nature of the environment and the participants.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Voice, perspective and reflexivity</td>
<td>The qualitative analyst owns and is reflective about her or his own voice and perspective; understanding that complete objectivity is impossible and pure subjectivity will undermine credibility; the researcher’s focus becomes balance.</td>
<td>The researcher acknowledges and accepts that the findings are subjective, but attempted to find an appropriate balance between that and objectivity through critical examination and self-reflection.</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix B: Units underpinned by design principles during each semester (iteration)

<table>
<thead>
<tr>
<th>Iteration 1 (3 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL102 Foundations of Professional Learning</td>
</tr>
<tr>
<td>EAL201 Facilitating Engaging Learning Experiences</td>
</tr>
<tr>
<td>EAL202 Developing Applied Learning Strategies in Discipline</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iteration 2 (5 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL102 Foundations of Professional Learning</td>
</tr>
<tr>
<td>EAL110 Theories of Learning and Teaching</td>
</tr>
<tr>
<td>EAL112 Foundations of Applied Learning</td>
</tr>
<tr>
<td>EAL211 Inclusive Practices in Educational Settings</td>
</tr>
<tr>
<td>EAL302 Literacy Strategies within Discipline</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Iteration 3 (6 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL102 Foundations of Professional Learning</td>
</tr>
<tr>
<td>EAL201 Facilitating Engaging Learning Experiences</td>
</tr>
<tr>
<td>EAL202 Developing Applied Learning Strategies in Discipline</td>
</tr>
<tr>
<td>EAL311 Numeracy Strategies within Discipline</td>
</tr>
<tr>
<td>EAL322 Quality and Evaluation in Vocational Education</td>
</tr>
<tr>
<td>EAL323 Engagement with Professional Standards 1-3</td>
</tr>
</tbody>
</table>
Appendix C: Email invitation to participate in the research project

Subject line in email: PLEASE CONSIDER BEING PART OF A RESEARCH PROJECT CONDUCTED BY JILL DOWNING.

Dear student,

You are invited to participate in a research study investigating the development of an alternative pedagogical teaching and learning approach in units which you are currently enrolled in, within the Bachelor of Education (Applied Learning). The study is being conducted by Jill Downing, Lecturer in Education (Vocational and Adult Education), University of Tasmania (UTAS), who is completing her PhD with Murdoch University. Jill’s supervisors are Professor Jan Herrington (Murdoch University) and Associate Professor Sharon Fraser (UTAS). The study will collect data for 3 semesters: Semester 1, 2013, Semester 2, 2013 and Semester 1, 2014.

Attached to this email you will find an information sheet that describes the research study in more detail. Please read this information sheet and if you have any questions please contact me, (name of RA). I am the research assistant for this study. My contact details are listed on the information sheet and also at the bottom of this email.

The first stage of this research project is an electronic survey, which is open now for your consideration. You are invited to participate in this survey, which will take approximately 10 minutes to complete. In line with the National Statements on ethical research, completion of the survey will be considered an expression of your consent to participate in this part of the research.

There are two other activities in this research study that you are also invited to participate in: a web-conference, and an interview. You are also invited to consider authorising the possible collection of electronic artifacts from MyLO.

Details of each of these are shown below:

Web-conference:

You will be invited to participate in a web-conference that will take approximately 1 hour. This web-conference will use the platform Collaborate, and will be conducted after the semester concludes. In this web-conference there will be several questions relating to the design and delivery of units recently completed. You will be invited to respond to the questions posed, either through speaking or typing your responses into the chat box.

Interview:

You will also be invited to participate in an interview that will take approximately 30 minutes. The interviews will explore emerging themes from the survey responses and the web-conferences. The interviews will be conducted either face to face, on the telephone or via Skype, depending on your own preference. They will be recorded using digital voice recorders.

Electronic artifacts:

You are also invited to allow the researcher to gather electronic artifacts from the Learning Management System (MyLO). This could include extracts from discussion board postings, and assessment tasks. All identifiers, such as your name or student ID will be removed, and replaced with a code to ensure that the data is not identifiable.

If you would like to participate in any or all of these other activities, please read the attached information sheet, and if you are satisfied that any questions have been answered, complete and return the attached consent form to me. You can sign and return the form electronically, or print it out and sign by hand, returning it via the postal service.
Thank you for considering participation in this research study. If you have any questions about the study, please contact me (phone, email and office details are below).

Yours sincerely,

(Name of Research Assistant)

Research Assistant
Faculty of Education, UTAS
(contact details here).
Appendix D: Information Sheet

Dear student,

This information sheet accompanies an invitation you have received to participate in a research study that is investigating the learning design guiding the development of the course you are currently enrolled in (the Bachelor of Education (Applied Learning)). This study is part of my PhD Degree at the Faculty of Education, Murdoch University, supervised by Professor Jan Herrington (Murdoch University) and Associate Professor Sharon Fraser (UTAS).

Nature and Purpose of the Study

The proposed study will investigate the student and teacher response to an alternative pedagogical teaching and learning approach within units of the Bachelor of Education (Applied Learning). The study aims to develop and evaluate a set of principles that will undergird the design and the development of the course, using the iterative process of design research. It will investigate the ways in which the set of principles support the development of an applied, authentic learning environment in a higher education course, and the experiences of the students and the teaching staff within it. The results of this study will inform other teacher education courses and university courses more broadly, where a more applied and authentic learning environment is sought in order to offer an engaging environment for students.

The research questions that will guide the conduct of the study reflect the three key aspects of the project. These are: the development of a set of principles and the design of the curriculum, the implementation in a course of study, and the cognitive and affective outcomes for students. The questions are:

1. In what ways do design principles of applied learning support the development of course curriculum?
2. In what ways do students engage with authentic, applied learning tasks?
3. How do students respond to a course of units designed using applied learning principles?

If you consent to take part in this research study, it is important that you understand the purpose of the study and the tasks you will be asked to complete. Please make sure that you ask any questions you may have, and that all your questions have been answered to your satisfaction before you agree to participate.

What the Study will involve:

If you decide to participate in this study, you will be invited to participate in one or more of the following:

- Complete an electronic questionnaire that will ask about your recent experiences in the course.
- Attend a web-conference which will consist of a focus group discussion focussed on the research questions that are the focus of this study (I hope to have approximately 20% of those who complete the survey participate in the web-conference). The web conference will be conducted after the end of the semester, and before the start of the following semester.
- Participate in an interview following the web-conference (I hope to have approximately 20% of those who attend the web-conference participate in an interview). The interview will be conducted either via Skype or face-to-face, depending on where the participant and the interviewer are located. The interviews will be conducted after the end of semester, and before the start of the following semester.
- Allow collection of extracts of electronic artifacts (such as discussion board postings and/or extracts from assessment task submissions) from the Learning Management system (MyLO).
Collection of artifacts will be conducted after the end of semester and before the unit is archived in the electronic storage system at UTAS.

It is estimated that the questionnaire will take approximately 10 minutes to complete. The web-conference will take approximately 1 hour and the interview will take approximately 30 minutes to complete.

**Voluntary Participation and Withdrawal from the Study**
Your participation in this study is entirely voluntary. You may withdraw at any time without discrimination or prejudice. All information is treated as confidential and no names or other details that might identify you will be included in any publication arising from the research. If you withdraw, all information that can be identified as being provided by you (i.e., has not been given anonymously) will be destroyed.

Your privacy is very important. Because some of the research team are staff members associated with this unit, whether you elect to participate or not will be kept entirely confidential. Any members of the research team who are associated with you in other roles (e.g. the teaching, coordination or administration of this unit) will not know whether you have elected to participate and will view anonymous data from the survey only until after academic results for the semester have been finalised and published. Web-conferences and interviews will only be conducted after the academic results for the semester have been finalised and published.

All data collected in this research study will either be anonymous or be coded after collection to remove any identifiers (such as names or Student Identity Numbers). Thus, it will not be possible to identify you and you will not be identified in any publication arising out of this study.

**Benefits of the Study**
Participants in this research could potentially benefit in at least two ways. Firstly, as the participants are enrolled in a Teacher Education program, the pedagogical focus of this research will encourage and facilitate deeper reflection and consideration of the design and development of educational interventions. Secondly, as the participants will be active contributors to the course itself, any modifications that are done in response to the data analysis should improve the student (and teacher) experience.

**Possible Risks**
There are no specific risks anticipated with participation in this study. However, if you find that you are becoming distressed due to any aspect of this research, we will arrange for you to see a counselor / medical practitioner at no expense to you.

**Dependency issues:**
In this study, I will be both the researcher and a teacher/Course Coordinator. The duality of roles has both potential risks. The potential risks are that:

1. Students could feel pressured to become participants in this study.
2. Participants could feel pressured to say (or refrain from saying) certain things in the study instruments.
3. Participants might feel that their academic results have been influenced (or could be influenced in the future) by their responses.

**Specific strategies to reduce risks:**
1. The invitation to participate in the study has been sent by a research assistant independent of the course and me.
2. The identity of those who agree to be participants will not be known to me until after results are finalised in each unit.
3. Any identifiable or re-identifiable data will only be collected (via web-conference and/or interviews) after unit results have been finalised.
4. The electronic survey will be administered by a research assistant who is independent of the course.
5. The results of the electronic survey will not be accessed until after results have been finalised for each unit.
6. Invitations to be part of a focus group and/or interviews will be administered by a research assistant who is independent of the course.
7. Any data that is identifiable or re-identifiable can be withdrawn from the study at the request of the participant, if he/she chooses to withdraw from the study at any time.
8. A participant ‘advocate’ will be appointed who will be independent of the course and able to give advice to any participant at any stage of the study.

These strategies will be ongoing throughout the research project. Your decision to participate (or your decision not to participate) WILL NOT have any impact on your grades (academic progress) or your relationship with staff in the Bachelor of Education (Applied Learning).

If you have any questions about this project please feel free to contact either myself, Jill Downing, on mbl. 0408550022, or either of my supervisors: Professor Jan Herrington, Murdoch University, ph. (08) 9360 7005, or Associate Professor Sharon Fraser, UTAS, ph. (03) 63243083. My supervisors and I are happy to discuss with you any concerns you may have about this study.

Once we have analysed the information from this study we will publish a summary of our findings on a web-site. You will receive a link to the web-site and be able to access this feedback within 6 months of the completion of the research (December, 2014).

What are the next steps?

You have received an email invitation to participate in the electronic questionnaire. The email includes a hyperlink to the questionnaire. Complying with the national statements on ethical research, the completion of a questionnaire survey will be considered an expression of your consent to participate.

As part of the questionnaire, you will also be given the opportunity to volunteer to:

• participate in a web-conference; and/or
• participate in an interview; and/or
• allow the collection of electronic artefacts in MyLO (as described above).

If you volunteer to participate, the contact details that you provide will be kept separately to your questionnaire, so your responses in the questionnaire will remain anonymous. You will then be contacted within two weeks, and given a consent form to sign before participating in further activities in this research study.

Thank you for your assistance with this research project.

Sincerely,

JILL DOWNING
Course Coordinator of the Bachelor of Education (Applied Learning)
Faculty of Education
Email: Jillian.Downing@utas.edu.au | Tel: +61 3 62262577 | Mob 0408550022
Web: http://www.utas.edu.au/educ
Mail: Faculty of Education, University of Tasmania, Locked Bag 66, Hobart TAS 7001

This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2012/194), and UTAS Human Research Ethics Committee (Approval H0012947). If you have any reservation or complaint about the ethical conduct of this research, and wish to talk with an independent person, you may contact Murdoch University’s Research Ethics Office (Tel. 08 9360 6677 or e-mail ethics@murdoch.edu.au). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix E: eSurvey (first six questions)

Q1 Thank you for participating in this survey, which should take approximately 10 minutes to complete. Please answer all questions - your contribution is greatly valued. When considering the questions below, please reflect on Bachelor of Education (Applied Learning) units. This means that the unit code/s began with EAL.

Q2 Reflecting on your experiences in unit/s in the Bachelor of Education (Applied Learning), please indicate the extent to which you agree with the following statements:

<table>
<thead>
<tr>
<th>Related Statement</th>
<th>Strongly Agree (1)</th>
<th>Agree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Disagree (4)</th>
<th>Strongly Disagree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The activities (such as discussions, exercises, wikis etc.) in the unit feel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>authentic (realistic and relevant to required teacher competencies) (1)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>The activities helped me to understand the theoretical concepts in the unit (2)</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

Q3 Are you currently working as a teacher (either paid or voluntary)?

☑ Yes (1)
☑ No (2)

Q4 Please indicate the extent to which you agree with the following statements:

<table>
<thead>
<tr>
<th>Related Statement</th>
<th>Strongly Agree (1)</th>
<th>Agree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Disagree (4)</th>
<th>Strongly Disagree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have already changed aspects of my teaching practice as a result of what I</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>have learned in the unit/s (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am better able to describe the theoretical underpinnings of my teaching</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>practice as a result of what I have learned in the unit/s (2)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I intend to change aspects of my future practice as a result of what I have</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>learned in the unit/s (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q5 How important are the following in your university experience?

<table>
<thead>
<tr>
<th></th>
<th>Extremely important (1)</th>
<th>Very important (2)</th>
<th>Unsure (3)</th>
<th>Not very important (4)</th>
<th>Not at all important (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having regular interaction with teaching staff (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having regular interaction with my student peers (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning new skills that I can use immediately (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having an online environment that allows anytime/anywhere access to study materials (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing my own experience with my peers and the teaching staff (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working collaboratively with my peers in learning activities (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having assessment tasks that reflect the way knowledge will be used in real work settings (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing my academic skills (researching, writing, referencing) (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing my professional skills as a teacher (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

Q6 Considering your experience this semester, please indicate the extent to which you agree with the following statements:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree (1)</th>
<th>Agree (2)</th>
<th>Neither Agree nor Disagree (3)</th>
<th>Disagree (4)</th>
<th>Strongly Disagree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have had regular interaction with teaching staff (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have had regular interaction with my student peers (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am learning skills that I can use immediately (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The online environment has allowed anytime/anywhere access to study materials (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have shared my own experience with my peers and the teaching staff (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have worked collaboratively with my peers in learning activities (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My assessment tasks reflect the way the knowledge will be used in real work settings (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am developing my academic skills (researching, writing, referencing) (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am developing my professional skills as a teacher (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Appendix F: Example of Focus Group guiding questions

Focus Group Questions: December, 2013

Preamble:

Thanks for coming along to this focus group; I really appreciate your time and support of my PhD. As you know, my research is investigating the effectiveness of a set of design principles which aim to create an applied learning approach in a University teacher-education course.

In this focus group session, I would like to ask you about how you perceive yourself as a student. In terms of the related literature, you are all classed as “non-traditional’ students. Basically, this means that you don’t fit the ‘traditional’ model of students who complete Year 12 then continue on straight away to University. There are also some other characteristics that are associated with non-traditional students (NTS), for example, NTS are often working, have family commitments, and may not have not been in formal study for some time.

In the last couple of weeks, I’ve been spending a lot of time reading about the characteristics and needs of NTS. What I’d like to do in this session is find out what my PhD participants are like, and how they feel about certain aspects of being a student at University.

Does that sound okay to you all?

Questions:

1. For each of you, is this your first experience at University?
2. Did you like school? How would you describe yourself as a student?
3. Did you always think you would attend University? Why or why not?
4. In your immediate family (not your children), are there many who are university graduates?
5. What are the major challenges that you find, as a university student? For example, finding time to study, or academic writing, or other challenges?
6. Fast forward now, to when you graduate….what will it mean to you?
7. In what ways has being at university changed you? Do you feel differently about yourself in any way because of what you’ve learnt, or achieved since you started the course?
8. As a ‘non-traditional’ student, what do you most feel that you need, in order to be successful at University?
Appendix G: Example of semi-structured interview questions

Preamble:

The questions for the interview are designed to further explore some of the findings from the eSurvey and the focus groups held previously. In particular, I am keen to learn more about your thoughts in relation to collaboration (both within and beyond the online learning environment), and also in relation to assessment strategies in the BEd AL.

The questions are:

1. What forms of collaboration with students do you feel are most useful to your learning, and are most authentic (realistic, similar) to how collaboration occurs in workplaces, particularly educational settings?
2. What do you see as the possible advantages, and disadvantages, of incorporating a more flexible approach to assessment strategies? For example, students could be allowed to collaborate on an assessment task and submit in pairs/groups, or ‘tweak’ assignment requirements in order to make the assignment more useful to their workplace and the associated skills and knowledge required.
3. Do you have any suggestions for how the course better cater for pre-service students?
4. Optional question! Below are my design principles for applied learning in Higher Education. These principles are the focus of this study. Do you have any comments or suggestions on how they could be improved?

Principles of Applied Learning Design:

1. Provide learning activities that connect theory and application in authentic contexts.
2. Recognise and incorporate the lived experience of the 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 assessment tasks that reflect the requirements of authentic work settings.
6. Encourage an increasing level of student ownership of learning.
Appendix H: A priori and inductive codes for each iteration
<table>
<thead>
<tr>
<th>Node</th>
<th>5</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>Beliefs about University</td>
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<tr>
<td>characteristics of NTS</td>
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<td>6</td>
</tr>
<tr>
<td>Expectations at Universiti</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Experiences at Universiti</td>
<td>4</td>
<td>9</td>
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<td>Family history</td>
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<td>Motivation to do the cou</td>
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<td>Tim Atkins</td>
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<td>Feedback</td>
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<td>Flexibility perceptions of authenticity</td>
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<td>Problems or challenges</td>
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<td>37</td>
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<tr>
<td>Role of assessment</td>
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<tr>
<td>Student perspective</td>
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<td>Developing awareness</td>
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<td>Self-efficacy</td>
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| 3rd Iteration                      | 0 | 0 |

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<tr>
<td>Challenges of authenticity</td>
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<td>15</td>
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<tr>
<td>Principle 2 Recognise and identify</td>
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<td>15</td>
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<tr>
<td>Bruce's feelings about t</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>non-traditional students</td>
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<td>8</td>
</tr>
<tr>
<td>Fragility</td>
<td>2</td>
<td>9</td>
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<tr>
<td>Principle 3 Collaborative co</td>
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<td>30</td>
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<tr>
<td>Topic</td>
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<tr>
<td>Principle 3 Collaborative co</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Principle 4 Reflective, prof</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>ESH versus EAL</td>
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<td>Johns feelings about the</td>
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</tr>
<tr>
<td>Principle 5 Provide flexible a</td>
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<tr>
<td>Principle 6 Encourage incre</td>
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<td>65</td>
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<td>Changing teacher practi</td>
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<td>11</td>
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<tr>
<td>Role of the EAL lecturers</td>
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<td>6</td>
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<tr>
<td>Teacher interviews</td>
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<tr>
<td>Feelings about the principal</td>
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<td>13</td>
</tr>
<tr>
<td>Jills reflections</td>
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<tr>
<td>Participants</td>
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</table>
### Appendix I: Course structure for the Bachelor of Education (Applied Learning)

#### Year 1

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL102 Foundations of Professional Learning</td>
<td>EAL101 Training &amp; Assessment 1</td>
</tr>
<tr>
<td>EAL101 Training &amp; Assessment 1</td>
<td>EAL110 Theories of Learning and Teaching</td>
</tr>
<tr>
<td>EDU112 Foundations of Literacy</td>
<td>EAL112 Foundations of Applied Learning (includes PE)</td>
</tr>
<tr>
<td>EDU120 Personal and Professional Numeracy</td>
<td>Student Elective (Discipline)</td>
</tr>
<tr>
<td>EAL103 Discipline Skills &amp; Knowledge A*</td>
<td>EAL113 Discipline Skills &amp; Knowledge B*</td>
</tr>
</tbody>
</table>

#### Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL201 Facilitating Engaging Learning Experiences</td>
<td>EAL210 Training &amp; Assessment 2*</td>
</tr>
<tr>
<td>EAL202 Developing Applied Learning Strategies in Discipline</td>
<td>EAL211 Inclusive Practices in Educational Settings (Includes PE)</td>
</tr>
<tr>
<td>EAL203 Discipline Skills &amp; Knowledge C*</td>
<td>EAL212 Discipline Skills &amp; Knowledge D*</td>
</tr>
<tr>
<td>Student Elective (Discipline)</td>
<td>Student Elective (Discipline)</td>
</tr>
</tbody>
</table>

#### Year 3

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP221 Sustainability across the Curriculum <strong>Unit can be taken only once all level 1 completed</strong></td>
<td>EDU304 Reflective Practice – The Classroom Researcher <strong>Unit can be taken only once level 1 and 2 units have been completed</strong></td>
</tr>
<tr>
<td>EAL311 Numeracy Strategies within Discipline</td>
<td>EAL302 Literacy Strategies with Discipline (Includes PE)</td>
</tr>
<tr>
<td>EAL303 Discipline Skills and Knowledge E*</td>
<td>EDU305 Learning in Society</td>
</tr>
<tr>
<td>Student Elective (Discipline)</td>
<td>Student Elective (Discipline)</td>
</tr>
</tbody>
</table>

#### Year 4

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAL323 Engagement with Professional Standards 1-3 (includes PE)</td>
<td>EAL334 Engagement with Professional Standards 4-7 (includes PE)</td>
</tr>
<tr>
<td>EDU380 Digital Technologies</td>
<td>EDU371 Thinking Globally</td>
</tr>
<tr>
<td>EAL322 Quality and Evaluation in Vocational Education</td>
<td>EDU390 Aboriginal and Torres Strait Islander Education</td>
</tr>
<tr>
<td>EAL324 Engagement with Discipline: Practices and Trends*</td>
<td>EAL310 Strategies for eLearning Environments</td>
</tr>
</tbody>
</table>

* Indicates that the unit is taken via a credit pathway/advanced standing.
Appendix J: Example of an assessment task and associated criteria

Assessment Task 1: Designing an eLearning strategy (EAL310)

Task Description:
This assessment task requires you to design an eLearning strategy on a topic that relates to your current or intended area of teaching. Learners in your eLearning strategy will be expected to be involved in 4-6 hours of activity. Their activity should include interaction with peers, for example, an online discussion or a collaborative task.

This task only requires you to design the course – and in AT2 you develop the course and trial it with your peers in this unit (and for in-service teachers, your own learners if you would like to). So please read the AT2 details before you start work on this assignment.

For this assessment task, you will submit your design plan. You may choose to use the online Learning Design Tool for this or use another template that provides the following details:

- Design overview, including connection to a particular curriculum.
- Learner overview.
- Learning Design Framework (including intended learning outcomes).
- Learning Design (including a storyboard/flow chart of your eLearning strategy).
- Methods chosen for assessment (formative and summative).
- Criteria for evaluation of the design by your peers.

(all of these aspects can be completed using the Learning Design Tool).

Additionally, you will add the following details to this document:

- A description of the role you intend to fulfil as facilitator.
- A summary of peer review and any resulting modifications.
- A theoretical justification of your design (600-800 words, as a guide).

A web-conference will be held to discuss this assessment task.

<table>
<thead>
<tr>
<th>Task Length</th>
<th>1750 words (or equivalent).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Criteria</td>
<td>1. Clarity and completeness of design.</td>
</tr>
<tr>
<td></td>
<td>2. Theoretical justification of design.</td>
</tr>
<tr>
<td></td>
<td>3. Evidence of collegial review.</td>
</tr>
<tr>
<td></td>
<td>4. Application of professional and academic communication and presentation skills.</td>
</tr>
<tr>
<td>Submission Details</td>
<td>Refer to the following URL for the submission process: <a href="http://www.utas.edu.au/education/learning-and-teaching/resources/unit-outline-information-essential-to-all-units">http://www.utas.edu.au/education/learning-and-teaching/resources/unit-outline-information-essential-to-all-units</a></td>
</tr>
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