Sustaining pedagogic innovation in vocational education settings

An actor-network theory account

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Let us summarize the principal characteristics of a rhizome: unlike trees or their roots, the rhizome connects any point to any other point, and its traits are not necessarily linked to traits of the same nature (Deleuze and Guattari, 1987: 1).

Abstract

Market based approaches to education reform have gained ‘grip’ in the vocational education and training (VET) sector in Australia. In VET policy discourse, innovation is taken to be the main means of achieving this reform. Accordingly, innovation holds pride of place in the neoliberal reform program currently reshaping the VET system, and what VET educators do. However, neoliberal ideologies do not always ‘fit’ with local pedagogic practices and may serve to constrain rather than foster innovation. Given the pre-eminence of innovation in VET policy and management discourse, this ‘lack of fit’ is a policy problem.

Drawing on key concepts from the practice-based approach of actor-network theory, this study sets out to critically examine how pedagogic innovation is understood and practiced in VET. An investigation of four cases of pedagogic innovation attends chiefly to what makes pedagogic practices innovative, and how they might be fostered and sustained in VET settings. These are critical questions for a sector in the midst of tumultuous reform and under scrutiny for its capacity to innovate and produce innovative workers.

In contrast with innovation as diffusion (Rogers, 2005), innovation as translation (Latour, 1987, Callon, 1986) is tendered as a productive way to think and practice innovation. In the empirical analyses, pedagogic innovation presents as improvised, tenuous and emergent enactments in which spatiality, affectivity and distant policies play a constitutive part.

Innovative pedagogies are not packages of learning transactions, or the diffusion of knowledge and skills, as current policy framings have it. Rather, they are co-constitutive knowledge creating practices which are entangled in pedagogic networks consisting of surprisingly complex and powerful actors. What matters most to their ‘innovativeness’ is ‘who and what’ are enrolled in the networks.
Care emerges as the dominant practice the four educators use to make sense of the complex forces impacting on their pedagogic work and to ensure the best outcomes they can for learners.

This study concludes that neoliberal framings of pedagogic innovation, with their predilection for competitive markets, quality regimes and control ‘from above’ (Bathmaker and Avis, 2013), run counter to the relational, material and caring practices that predominate in everyday pedagogic work. Opportunities for pedagogic innovation emerge in the tensions and when innovative learning and practices of inquiry are embedded in the professional being of educators. They are also possible when the responsibility for innovation is shared beyond the immediate domain of pedagogic work.
Declaration of Originality

This is to certify that:

1. This thesis comprises my own original work towards the degree of Doctor of Education, except where indicated in the Preface below;
2. Due acknowledgment has been made in the text to all other materials used; and
3. The thesis is fewer than 57,000 words in length, exclusive of tables, maps, bibliographies and appendices.

________________________________
Melinda Waters

Preface

This thesis was edited by Rob Sheehan of Sharp Words, according to the requirements of the ‘Editing of Research Theses by Professional Editors’ guidelines.
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<td>ACE</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>OH&amp;S</td>
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<td>VET</td>
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Chapter 1: The problem of pedagogic innovation

In periods when fields are without secure foundations, practice becomes the engine of innovation (Marcus and Fischer, 1986:166).

Introduction

In the vocational education and training (VET) sector in Australia, pedagogic innovation is a policy problem. As with many policy discourses, the term innovation is consistently used in VET as a panacea for the economic and social challenges of globalisation. Yet, despite the exhortation to innovate in VET policy, in the organisational plans and strategies of VET institutions and in the literature and media (Winslett, 2014), calls for more innovative pedagogic practice have not always translated into local practices on the ground. This is the place where educators tackle the messy and indeterminate problems of educational life, where learners learn the skills, knowledge and attitudes for work and where innovation and change mostly happen.

If we understand VET educators as the innovators, the pioneers, the leaders of vocational learning into the future (Schofield, 1999: 3) and that VET is critical to Australia’s social and economic success, then any dissonance between policy and practice is surely problematic for Australia’s innovative future (Seddon, 2009: 57). Understanding the nature of this dissonance and how it plays out in local practices, as this study seeks to do, is fundamental to addressing the problem.

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2 Throughout this study, the term discourse is used to convey Foucault’s (1969) poststructuralist concept of ‘language in action’; the ‘windows’ through which we make sense of and see things, and through which power is conveyed (Danaher et al, 2000: 31).
Set within the state of Victoria, and drawing respectively on the education, innovation and management literature, this study investigates cases of ‘good’ innovative pedagogic practice in VET. The purpose of the research is threefold:

1. To problematise and critique established framings of innovation in VET that currently shape innovative pedagogies;
2. To capture a rich description of innovative pedagogies and the lived experiences of innovative educators; and
3. To consider how these practices might be better fostered and sustained in VET settings.

To this end, four cases of pedagogic innovation are explored in detail through a poststructural theoretical lens.³ The educators under study, all of whom were recommended by peers and managers as pedagogic innovators, are observed as they go about their everyday work with learners. Attention is directed to what the educators ‘do’, the forces shaping their pedagogic work and those holding their practices together (Fenwick, 2001).

Guided by actor-network theory (ANT)⁴ (Latour, 2009, Law, 2009, Fenwick, Edwards and Sawchuk, 2011), this study follows the actors - the people, discourses, materials, objects, spaces, places, artefacts and other entities (Sørensen, 2009) – that are actively involved in innovative pedagogic performances. The methodology draws on key tenets of poststructuralism that understand truth is emergent and there are multiple ways of understanding innovation in education settings. Policy discourses are but one way of making sense of innovation yet they tend to dominate the way innovation is understood and practiced in the VET sector.

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³ In poststructuralism there is no authentic, unitary, individual ‘self’ that has agency and intentionality. The ‘self’ cannot be disentangled from the webs of relationships, meanings and social practices it inhabits (Fenwick, 2006: 22).

⁴ As a sociomaterial methodological approach, actor-network theory looks for webs of relations between human and non-human actors that shape local practices (Law, 2009: 141).
Current policy discourses that prioritise accountability, standardisation and quality are, as Seddon (2009) writes, paradoxical in that, while they espouse innovation, they work against its emergent, indeterminate and fragile nature. The imperative for this study is to raise the factors and logics of practice\(^5\) (Mol, 2008) that underscore innovative pedagogic practice into view and shed light on this paradox.

**Localising the problem**

As the educational sector most closely aligned with work and work-related learning in Australia (Seddon, 2009: 58), VET is held responsible for developing the skills and capabilities of the workforce (Skills Australia, 2011). The skills for innovation in particular are widely regarded by Commonwealth and State governments as the solution to the challenges of globalisation such as workforce productivity, climate change, security and rapidly changing work practices (Commonwealth of Australia, 2009: 1-3). Indeed, strong links are drawn in the literature between innovative capability, workforce productivity, economic prosperity and VET (OECD, 2009b, Dalitz et al., 2011, Toner, 2007, Commonwealth of Australia, 2009, Skills Australia, 2011, AWPA, 2013) in Australia and internationally. In Denmark, for example,

> The teaching of entrepreneurship was introduced into the vocational education system in 2007. It is emphasised that both practical and theoretical training should aim at providing students with general and specific qualifications directed towards entrepreneurship, innovation and starting a company (European Commission, 2009: 38).

Strong links are also drawn in the literature between higher levels of education in the workforce and innovation capability (Goffin and Mitchell, 2005: 50, Bradley, 2008: xi).

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\(^5\) Mol (2008: 8) defines a logic of practice as a way of explaining why some local practices ‘are more comprehensible than others’.
Conversely, lower levels of education are thought to markedly impede innovation and overall workforce productivity. Innovation in VET is thus an economic argument (Skills Australia, 2011, Toner, 2010, OECD, 2008), driven by the imperative to develop 'human capital' for the 'labour market' (Hodge, 2013: 29).

In this new 'vocationalism', policy demands that all educational institutions contribute to national economic imperatives (Chappell et al., 2002: 4). Indeed, the economic arguments underpinning current neoliberal reforms (Seddon, 2009: 57) are reshaping VET into competitive training markets in all Australian states and territories. In training markets, VET institutions openly compete for customers (students and industry clients), government funds and industry investment on the basis of their 'skill-building' capability (ibid.: 58).

The reforms to VET in Australia signal a significant change toward ‘public service professionalism’ or ‘organisational professionalism’ which, according to Bathmaker and Avis (2013: 731), gives priority to external regulation, accountability and standardisation in educational outputs and practices. These neoliberal ideologies are enshrined in policy documents, government directives, the mainstream literature and media, managerial cultures in VET institutions and human capital theories (Chappell et al., 2002: 6). The imperative to innovate in this environment is unequivocal. VET institutions need to meet the demands of governments and industries for innovative workers in order to secure financial support. Further, they need to innovate to attract and retain customers (students and enterprises) to survive in competitive training markets.

However, the capability of the sector to meet demands for innovation has been under scrutiny for some time. Cases of exceptional innovative practice do exist in the sector (Mitchell, 2003, 2011, 2012, 2013, Figgis, 2009, Hillier, 2008, Toner, 2007, Dalitz et al., 2011, TAFE NSW, 2004, Callan, 2004, Williams, 2013) but innovation in VET has generally been ‘uneven’ (Callan, 2004: 15), has not met the skill needs of enterprises (BCA, 2005: 7) or reached its full innovation potential (Skills Australia, 2011). The sector, as Hodge (2013) writes, remains ill-fitted and too slow to respond to the challenge.
For too long the sector has faltered in dealing decisively with underperformance in delivery, uneven quality and resistance to transparency in outcomes. This is holding back those who aspire to excellence and who visualise a system where innovation, adaptability and a positive embracing of complexity are the norm (Skills Australia, 2011: 21).

Complaints about the system are not new (Wheelahan and Moodie, 2011: 3). VET has long had many different masters (government, industries, enterprises, educational institutions, students and communities) with divergent and often conflicting interests and unequal distributions of power (ibid.). Exacerbating the problem, Australia lags behind in measures of global competitiveness with large businesses ranking last in innovation output relative to other OECD countries (AWPA, 2013: 52). Employers claim shortages of higher level skills (such as innovation), participation and completion rates remain low, particularly by apprentices (Dalitz et al., 2011) and there is a growing lack confidence in educative practices, such as assessment.

The problems manifest in two distinct arguments in the innovation debate. On the one hand, the slow uptake of innovation is blamed on the outdated pedagogic practices of educators (Chappell et al., 2002: 13). The shortfall, expressed in terms of a deficit in pedagogic quality, is evident in VET policy (Skills Australia, 2011, AWPA, 2013, Productivity Commission, 2011) and in the mainstream VET literature. According to the Productivity Commission (2011: 242), there are capability gaps in:

- the delivery of training and assessment to students who might experience disadvantage
- delivery of higher-level qualifications
- information and communication technologies skills
- Recognition of Prior Learning and Recognition of Current Competency
- [and] work based delivery.

The result is an intensified interest in improving the quality of pedagogic practice to solve the problem.
On the other hand, alarm is growing about how well VET policy settings foster innovative pedagogies and innovative capability in learners (Mulcahy, 2000, Chappell, 2003, Mitchell, 2003, Guthrie, 2009, Wheelahan, 2009, Seddon, 2009, Dalitz et al., 2010). Wheelahan and Moodie (2011: 15) for example, critique competency based learning in VET for its emphasis on traditional practices over ‘innovative knowledge and new forms of practice’.

Further, Mulcahy (2012b: 81, emphasis in original) claims that professional standards for educators, conceived in policy discourses as ‘tools that accurately report on the realities of teaching practice’, work to neutralise the ‘socio-political agenda-setting’ of pedagogic practice and conceal the circumstances (social, material, discursive, political) that can lead to innovation.

The two views highlight the ‘dissonance’ (Perillo, 2007), ‘disconnect’ (Schofield, 1999: 8) or ‘incompatibility’ (Seddon, 2009: 59) between the way policy understands the problem (and its solution) and what occurs in local practice. Seddon (2009: 58) describes how the dissonance plays out:

\[
\text{On the one hand, governments drive change through top-down mechanisms that are relayed within organisations through managerial processes. On the other, the innovations that have occurred as a result of these reforms do not seem to be recognised or resourced in ways that would ensure their sustainability.}
\]

**VET policy and practice**

Three policy mainstays underpin the Australian VET system: competency based training (CBT), competency based standards (industry-defined occupational standards that are grouped into qualifications by Training Packages) and a national regulatory framework. The three mainstays are highly relevant to the focus of the research reported here. Not only do they underpin the system, they channel certain discourses to the VET sector and actively mediate innovative practices in the four cases under study.

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6 The competency based VET system in Australia is explained in the following section.
Further, CBT and Training Packages are viewed as systemic policy innovations in Australia that fundamentally changed the nature and behaviour of the VET system (its institutions and educators) when introduced in the early to mid-1990s (OECD, 2009).

CBT, the ‘key plank’ of VET (Guthrie, 2009: 4), is a ‘standardised system’ of skill development’ (Mulcahy, 2000: 2) based on the achievement of occupational standards. Expressed as units of competency, standards represent specific work tasks that lead to occupational outcomes (Guthrie, 2009: 5). As opposed to input models of curriculum, competency standards describe the outputs of learning – that is the skills, knowledge and attributes required by learners to perform effectively at work.

Based on modular arrangements, competency standards promote flexibility and responsiveness, consistency and standardised skills, and privilege industry and work based learning (Smith, 2013b: 124). Unlike curricula however, competency standards do not specify particular pedagogic approaches (Curtis, 2010: 11), except for learning and assessment contexts and assessment criteria (Schofield & McDonald, 2004: 4). Training Packages ‘package’ together related units of competency in specific industry areas into ‘skill sets’ and qualifications according to the Australian Qualification Framework (AQF).7

The third mainstay of the VET system, the national quality framework, is the vehicle used to regulate the quality of training delivery. Quality is controlled through national regulatory mechanisms8 that monitor training delivery and the operations of VET institutions through rigorous reporting, auditing and registration requirements.

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7 The Australian Qualifications Framework is a system that defines all nationally recognised qualifications in schools, VET, and the higher education sector (Guthrie, 2009: 15).
8 The Australian Skills Quality Agency (ASQA) regulates VET and the Tertiary Education Quality Standards Agency (TEQSA) regulates the delivery of higher education in VET institutions. The VET system is also controlled through funding regimes at state and territory levels.
Quality is a prominent issue in current VET policy. The emergence of a training market in Victoria spurned significant growth in private providers\(^9\) (DEECD, 2012: 12) and resulted in highly publicised instances of poor quality pedagogic practice and exploitative profit making activities. Not only has negative publicity impacted on Australia’s educational reputation nationally and internationally, it has also reduced the economic value of the sector, due mostly to a decline in international student numbers amidst increasing consternation about the quality of VET provision. In response, Commonwealth and state governments have strengthened regulation\(^10\) despite calls by reputable VET providers, and commentators across all educational sectors, that too much regulation works against innovation (Guthrie, 2009, Seddon, 2009, Perillo, 2007, Norton and Kemp, 2014).

**Rationale for the research**

This study contends that the problem of pedagogic innovation lies largely in the fundamental philosophical differences between the way VET is understood by policy makers and by educators. The ‘innovation talk’\(^11\) (Winslett, 2014: 163) in VET policy encapsulates the problem. Despite innovation being a ‘slippery’ and nebulous concept (ibid.) with varied meanings and definitions, innovation talk assumes a shared understanding of the concept and a shared appreciation of the imperative to innovate. Policy discourses however, do not give consideration to the complexities of innovative practice and how local pedagogies might differ across multiple settings.

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\(^9\) Private ‘for profit’ training businesses are registered with the national agency ASQA to deliver VET qualifications. Increasingly these institutions receive government funding traditionally allocated only to public providers, Technical and Further Education (TAFE) institutes.

\(^10\) More recent reforms (July 2014) seek to deregulate the VET system and reduce the ‘red tape’ of regulation. However, the quality of VET remains a highly contentious issue as reforms continue to deregulate the sector (November, 2014) and instances of poor and unethical conduct by some providers continue to be reported in the media (May, 2015).

\(^11\) Winslett (2014: 164) uses the term ‘innovation talk’ to capture the overuse and indeterminate meaning of the word innovation and its use in corporate culture and media (and the literature) to create an urgency for change and a sense that change is imminent.
Caplan’s (1979) explanations are helpful in understanding why this might be the case:

1. ‘Policy system constraint’ – where policy systems and policymakers are unable to handle the findings of educational research;
2. ‘Knowledge specific theory’ – where the research informing VET policy is located within a too narrow theoretical framework; and
3. ‘Two-communities theory’ – where policymakers, researchers (and educators) adhere to different cultures, each with its own norms values and agendas that are not explicit.

Indeed, Caplan’s insights are drawn upon at different times throughout this study. In particular, the ‘two-communities theory’ applies when policy decisions involve instrumental application (ibid.: 463) and when the theoretical frameworks underpinning policy decisions are too limited. Policy accounts of pedagogic innovation that draw on Roger’s (1995) diffusion model of innovation are a prime example.

Based in the discipline of economics, diffusion theory portrays innovation as a highly planned and sequential process for the development and commercialisation of new products and services. According to the diffusion model, an innovation emerges when people create new ideas, test them against predetermined criteria (prototypes) and then systematically funnel them towards a market (ibid.).

However, this scientific ‘research and development’ model, highly influential in the mainstream VET, innovation and organisational learning literature, is criticised for being deceptively simple and for failing to account for the formative social factors that shape innovations along the way (Hellstrom, 2004, Latour, 1987, Law, 1999, Callon, 1986). Mulcahy (1999: 236) attributes the diffusion model’s prominence in VET policy to positivist thinking by policy makers. Positivism, as Goulding (2002: 43) writes, provides a way to get at the truth, and explain the world well enough to predict and control it.

At the heart of the crisis of confidence in the professions is a widening gap between thought and action, theory and practice, the academy and the everyday world. The sources of this gap are rooted not in science or the professions themselves but in a particular view of them embodied in the technical rationality inherited from nineteenth-century positivism, according to which instrumental, practical knowledge becomes professional when it is based on the results of scientific research.

**Touching on new thinking**

Recent theorising about innovation has shifted to more cyclic, open and networked views of innovative practice (Winslett, 2014). Fenwick (2001: 248-251) for example, claims that people do not work, learn and innovate in separate processes but in connected communities of people and objects that co-create complex systems. Perillo (2007: 3) describes innovative pedagogies in schools as fluid, multiplicit and indeterminate practices that cannot be determined before they are practiced.

Hillier (2009) describes innovative pedagogies in VET as practices that mirror the messy, unpredictable and uncertain nature of the workplace. When portrayed in this way, it is difficult to imagine how innovative pedagogic practice might be directed and controlled by others, or learned by educators in advance. Educators are more likely to innovate as they learn to act amidst uncertainty and disorder (Fenwick, 2001: 253).

In a translation view, there can be no transportation of an idea (innovation) without transformation (Latour, 1996: 119), so innovation becomes an inherently political activity, rather than an unproblematic product development process. Innovating activities then involve convincing others, controlling their behaviour, gathering sufficient resources in one place and spreading the claim of an object (innovation) out in time and space (Latour, 1987: 131). Thereby, two different and opposing views inform the innovation debate: the traditional and dominant view of diffusion and the less prescriptive theory of translation.

The former (diffusion) is highly familiar in VET and in the mainstream innovation literature. The latter (translation) is new and potentially disruptive of VET’s established epistemic orientations. Indeed, the two views are fundamentally divergent. Diffusion is grounded in objectivism (which assumes the world is knowable and discoverable using the ‘right’ methods). Translation is a generalised version of constructivism which assumes that meaning is made by people in association with materials, machines and objects (Latour, 1987).

**Clearing definitional ground**

Derived from the Latin ‘innovato’ (meaning renewal or renovation), the term innovation traditionally describes the crafting of an idea into new products and services with a specific and often economic benefit. In mainstream VET literature, innovation is defined in terms of newness, creativity, discovery, invention, development (often technological), ‘abnormal events’ (Dalitz et al., 2011: 34) and acts of individual genius.

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12 Serres inspired Bruno Latour’s interest in relational metaphysics; the movements, connections, and mediations that occur in practice and also in de-naturalising scientific forms of knowledge (Blok and Jensen, 2011: 16).
Alternative definitions, however, portray innovation as a process of learning, transformation and adaption before an idea becomes an end result (Callon, 1986).

This study adopts Schuetze’s (1999:1) definition of innovation as a knowledge producing practice that involves ‘absorbing knowledge, applying it to new uses and creating new knowledge’. A knowledge based view of pedagogic innovation draws attention to how knowledge and practices are produced in relationships between educators and learners (Mulcahy, 2006) and to the conditions that produce new knowledge (Lather, 1992). Opportunities for innovation are then understood to lie in the ‘tensions between existing practices and learning experiences’ (Hager and Johnson, 2009: 8).

The term ‘pedagogic innovation’ marries Schuetze’s definition with the language of pedagogy; a term that encapsulates the practices and philosophy of teaching and learning.\(^{13}\) While a contested term in VET\(^{14}\) the word ‘pedagogy’ is deliberately used throughout this study to emphasise the highly complex, challenging and skilful nature of educative work (Lather, 1992) in VET.

Pedagogic innovation thus infers new and/or improved practices (IBSA, 2009, Mitchell et al., 2003, Guthrie and Dawe, 2004) that involve the circulation of knowledge among people and materials (Perillo, 2007: 3 - 5) and places, processes and things (Mulcahy, 2006: 57). This definition makes good sense if one accepts Hegarty’s (2000) description of teaching as a knowledge based activity that requires educators to know about curriculum, how students learn, how to teach and how to manage learning environments (cited in Hopkins et al., 2011: 541), and that education is a material practice (Sørensen, 2009).

\(^{13}\) Fenwick and Edwards (2010: 40) warn against directly equating the terms ‘teaching and learning’ with ‘pedagogy’. The former focuses primarily on changes in humans and human-human interactions and is therefore at odds with the sociomaterial methodological approach of this study.

\(^{14}\) The term pedagogy is contested for its inference of childhood education, and also for its association with the academic language of VET researchers who are often removed from the daily practice of educators. For the educators themselves, the term represents a lack of understanding of the applied nature of their practice.
Alternative definitions of pedagogic innovation in VET challenge traditional positivist and instrumental views that promote the ‘transmission’ and ‘transfer’ of skills and knowledge. These conceptualisations no longer ‘fit’ (Perillo, 2007) when one is pursuing new understandings of how innovative pedagogies happen, where knowledge lies, how people know and learn, how they generate and share new ideas and practices and what innovative effects are produced by different pedagogies, settings and things (Fenwick et al., 2011: 14).

**A practice based inquiry**

To investigate these complex and contested questions (as is the nature of innovation), this study scrutinises what happens empirically when VET educators innovate. As a qualitative, practice based inquiry, the methodology draws on ANT and selectively on practice based theorising, which is located in the broader field of organisational change (Gherardi, 2000). Change, as Perillo (2007: 662) writes, is the reason why most organisations commit to innovation.

Set within the interdisciplinary field of Science and Technology Studies (STS), ANT is a sociomaterial approach to research that understands innovation as a network building, knowledge creating activity involving people, materials, knowledge, non-human life forms, social facts and collectivities (Law, 2008: 632). ANT is a form of practice-based theorising (Mulcahy and Perillo, 2009) that provides alternative ways to analyse what innovative educators do, what and who is involved in educative practice and how knowledge and innovation come to be (Gherardi, 2000: 215). This approach fits with VET inasmuch as ‘things’ are fundamental to vocational learning, as Fenwick and Edwards (2010: 6) affirm.

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15 STS originates in studies of the sociology of science and is also known as ‘science studies’, ‘science, technology and society’, ‘the sociology of scientific knowledge’, and ‘social studies of science and technology’. STS holds to the idea that scientists and social scientists need to understand how one field influences another, how science is conducted in practice, and the culturally complex and socially situated nature of scientific knowledge (Law, 2008: 624 - 627).
Educational policy processes, workplace learning, curriculum-making, technology implementation and evaluation activities are all fundamentally shaped by the material things with which they associate and are associated, as much as by the human ideas, desires, meanings and actions that are entangled within them (ibid.).

Close attention is paid throughout this study to the complexities, temporalities, textures and nuances (Kamberelis and Dimitriadis, 2005) in the everyday sociomaterial practices of innovative educators. Of particular interest are the forces that shape these practices and make them ‘hang together’ enough to give them a tangible coherence (Mol, 2008: 8). As Latour (2005) explains, ANT does not start with a predetermined view on these questions.

To tell an actor-network story is to be able to capture those many connections without bungling them from the start by some a priori decision over what is the ‘true size’ of an interaction or of some social aggregate (ibid.: 178).

The research design includes a critical review of pedagogic and innovation discourses in the VET and broader educational literature and, to a lesser extent, the innovation, organisational change and management literature. The review is followed by four detailed cases of ‘good’ innovative practice based on data gathered through an online survey, an individual interview with the four educators and an observation of each educator’s practice.

Case study methods are utilised to capture the emergent, complex and sometimes perplexing interactions (Yin, 2003) that emerge as innovative pedagogies are performed. Methodologically, the ‘specificity of the case study’ (Law, 2008: 636) is in keeping with actor-network theory’s practice-oriented, sociomaterial approach.

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16 According to Kamler and Thompson (2006: 40), ‘becoming critical’ as a researcher means paying attention to the definitions, underpinning assumptions, theoretical resources, epistemology, and methodology in order to establish points of difference and similarity in a literature review.
Research questions

Four research questions guide the analysis:

1. What counts as pedagogic innovation in the VET sector?
2. How is pedagogic innovation undertaken from an educator’s point of view?
3. To what end is pedagogic innovation directed in the VET system?
4. How might innovative pedagogic practices be fostered and sustained?

Positioning the researcher

A poststructural study is an ambitious undertaking for a novice researcher, albeit an approach highly suited to the controversies and ambiguities of innovation. Attempts to disrupt the centrality of positivist knowledge (Skattebol, 2010: 77) in VET might equally be considered to be ambitious. However, as Fenwick et al. (2011) argue, the decisions of policymakers at all levels (international, national, local and organisational) frame, contextualize and shape what educators do. Indeed, their decisions have ‘marked effect’ on local VET practices (Harris, Simons and Clayton, 2005). It is therefore critical to surface, interrogate and critique assumptions underpinning policy discourses if one wishes to theorise innovative pedagogic practices and understand how they might be sustained in new ways.

On a research continuum from positivism to poststructuralism, the conceptual paradigm (Lather, 2006) underpinning this study has shifted slowly from positivist attempts to understand the ‘truth’ of pedagogic innovation to an appreciation of the complex, multiple and emergent nature of educative practice. This shift resulted from the Masters study preceding this work in which I explored the implementation of a technological innovation in VET using the methodological approach of action research.

Drawing largely on the diffusion model, and humanist understandings of innovation, this study concluded that complex and invisible social forces work against innovative efforts in VET institutions. It did not, however, theorise innovative practices in new ways, or lead to new insights into what these forces might be, and how they might collectively impact on local practices. The focus was resolutely on the behavioural and cognitive factors of individual innovators and their managers. In hindsight, the functional definition of innovation adopted in the study limited the research.

_Innovation is a process of co-evolution between technology and culture. . . a cross functional activity that arises from tensions in differences between people’s ideas, values and aspirations and the act of balancing the cost and quality of products and services._ (Waters, 2005: 26).

Once acknowledged, these limitations provoked further theoretical exploration and resulted in the adoption of a new methodological direction that I now deem to be generative inasmuch as it has enabled a shift in focus from ‘innovation’ as a ‘cross functional activity’ to performances of innovative (pedagogic) practice. This new focus, I argue, better ‘captures’ the dynamic and indeterminate character of the phenomenon under study.

17 Lather (2006: 37) describes paradigm shift in terms of a movement from modernist, structural, humanist theories/discourses to postmodernist, poststructural, posthumanist theories where all the ‘posts’ deconstruct concepts of language, discourse, knowledge, truth, reason, power, freedom, the subject, and so on. According to Lather, this shift in thinking is not a linear pathway (ibid.).
Outline of the thesis

A brief précis of the following eight chapters concludes this introduction.

Chapter 2: What counts as pedagogic innovation in VET?

Chapter 2 reviews the extant educational, innovation, organisational change and management literature in order to understand how pedagogic innovation in VET is currently conceptualised and understood. The review is organised by way of three interpretive frames; what I call the received view, the contextual view and the articulated view (McGregor Wise, 2011). Attending to the assumptions that underpin research undertaken in the area of pedagogic innovation, these views are briefly summarised below by way of introduction.

The received view understands people and an innovation (a new technology for example) as separate entities to be studied in isolation (McGregor Wise, 2011: 95). A study of pedagogic innovation from this view would investigate how an innovative product, process or practice develops and how it subsequently affects individuals and their social system. The more contemporary contextual view takes into account the situated and participatory nature of educative practice. Pedagogic innovation is then studied in its immediate social context or community (ibid.: 96). Both views are critically reviewed in this chapter.

The articulated view however, new to VET and education more broadly (Fenwick et al., 2011), understands innovation as emergent, complex and relational practices that consist of many ongoing connections (articulations) between people and things. The articulated view is elaborated and critiqued in the methodology chapter.
Chapter 3: Methodology

Chapter 3 outlines the qualitative methodology used in this study and the theoretical concepts underpinning ANT. Aligned with the articulated view and involving the ‘tracing of the sociomaterial’ (Fenwick, Edwards and Sawchuk, 2011), the methodological approach of ANT is outlined in detail with explanations of key features of sociomaterial analysis. The concept of translation, a key tenet of ANT, is explored before being put to work in the analysis of the empirical data (Chapters 4-7).

A rationale for the methodological choice, and a critique of both the articulated view and ANT, is provided in this chapter followed by an explanation of the research methods and sampling strategies used to recruit participants and collect, manage and analyse data. The chapter concludes with a reflection on the trustworthiness, rigour and ethical issues associated with the research design and limitations attaching to the study.

Chapter 4: Innovating through problem based learning

The first of four data chapters, Chapter 4 traces the practice of an innovative educator as he teaches other VET educators using pedagogies based on problem based learning. This case draws on Callon’s (1986) four moments of translation (classic ANT) to bring the processes of innovative pedagogies and instances of translation to view. The analysis traces the precarious and care-ful negotiations involved when educators try to convince learners (other educators in this case) to change their educative views and practices. Innovating pedagogies in this case are disruptive, scholarly and caring ‘boundary pushing’ practices that emerge in the ‘in-between’ of learning and work.

Chapter 5: Innovating through caring work

Chapter 5 describes an innovative educator in the community education sector who is teaching learners who have experienced homelessness how to use technology. Boundary pushing and caring practices are again central to innovative pedagogic work in this case, as are the highly complex negotiations required to change the thinking and identity of learners.
Innovative pedagogies involve listening, inquiring, experimenting, negotiating, cajoling, and appealing to, and balancing, the interests of learners, curriculum, project objectives and broader political networks. Analyses undertaken indicate that educators’ capacity for principled, collaborative and caring work is of prime importance to fostering and sustaining innovation in the community education sector.

**Chapter 6: Innovating places and spaces**

Chapter 6 recounts the story of an innovative educator as he teaches plumbers to become licensed green plumbing contractors. Set in a purpose-built physical environment, where plumbers are learning simultaneously online and in the classroom, this case captures the fluid nature of innovative pedagogies as they travel across time and space. Not surprisingly, technologies have significant effect in enabling and mediating this fluid movement. What is surprising, however, is the way technologies actively mediate and shape innovative pedagogic practices.

This finding challenges the view that technologies are simply tools designed to support the intentions of policy makers, administrators and educators. Questions arise in this case about how objects and spaces shape pedagogies, how pedagogies shape spaces and objects and how spaces enable learning and innovation (or not through exclusions).

**Chapter 7: Innovating through embedded learning**

Chapter 7, the final case study, is set in the workplace of a large construction company. At this particular work site, ‘doggers’ are learning the craft of ‘dogging’ which involves moving and loading large concrete slabs onto trucks for use in civil construction work. Here, pedagogic innovation is embedded in everyday dogging work and occurs ‘on the spot’ in improvised learning interventions. Gradually, the interventions transform largely unskilled doggers into safe and productive construction workers. Heightened by the threat of physical injury, innovative pedagogies present as every day, embodied, affective and transformational practices. The many different ways work is performed comes to the fore in this case, as does the role of policy and VET curriculum play in regulating work and pedagogic practices.
Chapter 8: Patterns of innovating

In Chapter 8, key innovative practices are identified across the four cases under study and their effects are discussed. The argument is made that innovative pedagogic practice takes form centrally in spatial, affective and discursive relations. The discussion concludes that policy discourses, while pressing in on practices, do not in the end determine them. Instead, innovative educators investigate and problematise discrepancies and disturbances in their everyday practices and experiment with new ways to work with them. The experimentation plays out in the ‘spaces in-between’ policy and practice and between learning and work.

Care for students emerges as the overriding ‘logic of practice’ (Mol, 2008) that enables the educators to make sense of the tensions and complex forces impacting on their pedagogic work. The discussion concludes that spatialities and affect are enabling conditions for innovation. The role of policy in fostering and sustaining pedagogic innovation however, remains under question.

Chapter 9: Breaking with tradition

Chapter 9 concludes this study by examining the implications of the research findings for VET policy and practice. Consideration is given to how VET institutions and policymakers might think innovation differently. Rather than creating specific conditions for innovation, a case is made for ‘creative’ or ‘innovative’ learning experiences for VET educators that include practices of inquiry embedded in pedagogic work. Innovation then becomes an integral part of an educator’s ‘professional being’ (Reid, 2004) and a natural and embedded way of ‘performing’ VET pedagogies.

If pedagogic practices in VET can be reimagined as complex, sociomaterial, political and knowledge building ‘live performances’ (Saunders, 2004: 117), then the sector might be regarded as innovative in its own right, rather than being positioned as the diffuser of innovation, technologies and knowledge and skills. The study concludes with a reflection on the transformational personal change this study has provided.
Chapter 2: What counts as pedagogic innovation?

*Serres writes about order and disorder. In his world there are patches of order in a sea of disorder. The most interesting places lie on the boundaries between order and disorder, or where different orders rub up against one another (Law, 2008: 144).*

Set within a context of reform in the Australian VET sector, this chapter examines what counts as innovative pedagogic practice in the extant education literature and draws selectively from the innovation, organisational change and management literature. One’s view on the question, as Law et al. (2013: 12) write, depends very much on one’s location, purpose and concerns, as this chapter reveals.

What currently counts as pedagogic innovation in VET is couched in terms of flexible delivery, flexible learning, e-learning,¹⁸ blended learning (Robertson, 2009: 110) and problem-based, networked and work-based learning. Most accounts are constructivist in orientation (Chappell, 2003) and are associated in some way with technology and work. There is an implication in the policy literature however, that traditional pedagogic practices are not flexible or responsive to learners and are therefore not innovative.

¹⁸ E-learning pedagogies are those that use technologies such as computer-based learning, online learning, web-based learning, virtual classrooms, digital collaboration and social media. (Flexible Learning Advisory Group, 2002, cited in Robertson, 2009: 113).
This chapter is structured by way of three interpretive frames\textsuperscript{19} which, for the purposes of this study, are called the received view, the contextual view and the articulated view (McGregor-Wise, 2009: 95). The first two views ‘capture’ pedagogic innovation in VET as it is generally understood and practised in Australia.

The articulated view, new to VET and education more broadly, conceptualises the practice in a very different way. As Bigum and Rowan (2004: 223) write, how we frame educative work matters to what follows in practice. The three views assist in locating this study theoretically in the literature and go some way to establishing my identity and philosophy as a researcher (Kamler and Thompson, 2006: 32).

**The received view of pedagogic innovation**

According to Mulcahy (1999),\textsuperscript{20} the received view of pedagogic innovation casts VET as a ‘front end’ model of education that assumes learning occurs in a linear fashion before ‘doing’ or ‘using’ (Dalitz et al., 2011: 12). In this model, predefined knowledge and skills are taught to students as they progress chronologically through the system, before being assessed to see how well they have mastered them (Barnes, Christensen & Hansen, 1994, cited in Figgis, 2009: 10).

The main purpose of VET, according to the received view, is to improve the ‘economic participation’ of students and their capability to innovate (Dalitz et al., 2011: 1-7) at work, for greater workforce productivity (COAG, 2012, Skills Australia, 2011, AWPA, 2013). The rationale is channelled through government policy and mainstream VET literature, both in Australia and internationally and has firmly embedded ‘innovation talk’ (Winslett, 2014) in professional education discourses. In Australia, for example,

\textsuperscript{19} An ‘interpretive frame’ implies the intent to surface or ‘make plain’ the epistemic assumptions underpinning pedagogic innovation (Kamler and Thompson, 2006).

\textsuperscript{20} Reference to the received view is made here with particular regard to competency-based training, a curriculum approach that pre-specifies desired knowledge and skills and forms the cornerstone of VET’s outcomes-oriented education system.
Skilled people are the single most important prerequisite for successful innovation. A highly skilled workforce is the key to increasing our capacity for invention and translation into productive use (DIISR, 2011: 11).

The policy document, ‘Backing Australia’s ability: an innovation action plan for the future’ (Commonwealth of Australia, 2001) and more recently, ‘Powering ideas: an innovation agenda for the 21st Century’ (Commonwealth of Australia, 2009), have firmly cemented the link between productivity and innovation in policy discourses.


If we are to maximise our productivity and strive for innovation, we will need to ensure that Australia has the right skills in the right place at the right time. But, crucially, we will also need to make sure that individuals, enterprises and industries alike are using those skills to their full advantage.²¹

In Victoria, the innovation agenda for VET was set in the Ministerial Statements, ‘Knowledge and Skills for the Innovation Economy (2002), and ‘Securing jobs for the future’ (2008). In addition, neoliberal reforms, based on principles of market-economics, private/public competition and competitive tendering of government funds, were introduced in the state before being rolled out across all Australian states and territories. Based on neoliberal ideologies (circulating via discourses of globalisation, productivity, accountability, quality and competitive markets), these reforms are rapidly reshaping the VET system, how VET institutions operate and what educators do (Mulcahy, 2011: 219).

²¹ This quote was retrieved from the letter to the Minister from the then Chair of AWPA as an introduction to the report, ‘Future Focus: 2013 National Workforce development Strategy’.
In neoliberal reforms, students are regarded as the future labour force (human capital) and, along with industries and enterprises, are part of ‘current/future markets’ based on user choice (Skattebol, 2010: 77). Students are treated as customers or ‘calculative agents’ who make informed choices when purchasing educational products in pursuit of their individual interests (Callon, 1999).

Neoliberal philosophies make it possible to say that students ‘are entitled to value for money’ and that VET should follow student demand (Mol, 2008: 14, who describes neoliberalism in the health care industry). The effects of neoliberal ideologies on VET educators are well documented in the literature (see Stam et al., 2014, Bathmaker and Avis, 2013, Mulcahy, 2011, Cochrane-Smith and Lytle, 2009, Seddon, 2008, Goozee, 2001).

A recent statement by the Australian Government confirms these ideologies prevail.

To deliver job-ready graduates that meet the skills and productivity needs of employers, industry needs a stronger role in the system. The new quality standards introduce important changes such as strengthening requirements for registered training organisations (RTOs) to engage with industry and to use that engagement to inform their training and assessment strategies.22

Neoliberal framings of VET sit within a techno-economic (science and technology) paradigm (Kenway et al., 2004) which places economics firmly at the heart of education reform and is located in broader meta-discourses of globalisation, innovation, human capital and ‘marketable knowledge’ (Butler and Shore, 2010).

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This paradigm generates an engineering or ‘programmatic’ view of VET (Mulcahy, 2011: 223) which frames the system as a knowable and concrete ‘thing’ (Butler and Shore, 2010: 6), and pedagogic innovation as new products, services, or processes that are characteristically ‘new’, ‘good’, ‘better’, flexible, learner centred, focused on work and employers, and technology based. I call this framing the received or ‘product development’ view. Toner’s (2007: 2-3) definition of innovation in VET is illustrative in this regard,

\[\ldots \text{the implementation of technologically new or improved products/services, production processes and organisational and managerial processes.} \ldots \text{Innovation in products/services, production processes and work organisation is the principal source of productivity growth or increase in real capita income.}\]

Pedagogic innovation is thus an economic activity that starts when an individual (or group) invents a new product, process, or service and then diffuses (Rogers, 2005) it through a social system to be adopted or not by other educators, enterprises and learners. To be innovative in VET, one turns,

\[\ldots \text{an ‘invention’ such as an idea, technology or technique into a new product, process or service that is successful because it meets the needs of learners (Mitchell et al., 2003: 2).}\]

While acknowledging innovation cannot be simplified to ‘step-by-step’ formulas, Mitchell et al. (2003) describe three stages in the process including:

1. The presage or planning stage;
2. The process stage (implementation); and
3. The product stage (or outcome when an innovation’s benefits are realised).

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23 Butler and Shore use the term, ‘the “it” we call VET’, to explain how VET is categorised by ‘pulling together a global/local collection of myriad parts and people and things into some kind of containable and knowable “real thing”’. 
Ideas are sourced and selected, then tested and stabilised, before being commercialised in other markets and then evaluated against predetermined criteria to determine their success (Mitchell, 2012: 55). The ‘innovativeness’ in the practice of educators lies in how they,

\[ \text{... cater for learners’ individual differences... foster informal learning; design assessment for new contexts; and... use flexible learning approaches where they are appropriate (Mitchell et al., 2003: 42).} \]

Innovative practices involve the accomplishment of a series of innovation tasks (Kanter, 1988, cited in Messmann and Mulder, 2014: 81) that explore opportunities to generate, promote and realise innovative ideas.

The narratives imply a front end, chronological and unproblematic process that ends in something new and of ‘measurable benefit’ and ideally replaces the ‘outdated’ (Shapiro et al., 2007: 7). As Toner (2007: 2) writes, innovations do not need to be ‘novel or new to the world’, but must be new to the user.

The ideal of ‘newness’ is rooted in Schumpeter’s\(^{24}\) (1934) theory of economics. Highly influential in mainstream innovation theory, Schumpeter portrays innovators (entrepreneurs) as people who create disequilibrium by doing something essentially new (Hellstrom, 2004: 637). The ideal is signalled in VET in calls for a ‘new practitioner’ (educator) who,

\[ \text{... doesn’t rely on the old certainties, like pre-set curriculum and classroom instruction, but develops the attributes, attitudes, ideas and techniques to meet the needs of client. The new practitioner looks outwards at market needs and seeks to meet those needs (Mitchell et al., 2006b: 8).} \]

\(^{24}\) Schumpeter’s (1934) term ‘creative destruction’ (an ‘essential fact about capitalism’ as he writes), signifies that the old is destroyed to make way for the new.
It is also reflected in the way VET educators describe pedagogic innovation as ‘stepping outside the square’ to do something ‘unique’, ‘new’, ‘different’, ‘creative’, ‘fresh’, ‘clever’, ‘dynamic’, and ‘not done before’ (Figgis and Hillier, 2009: 14). This is perhaps not surprising given that anything new, such as new materials, technologies or frameworks, is often ‘read, ipso facto, as innovation’ (Rowan and Bigum, 2004: 3, emphasis in original).

Yet, when questioned further by Figgis and Hiller (2009: 14-15), the educators quoted above preferred ‘practical, applicable ideas’ that could be embedded in everyday practice in an evolutionary way to something completely new that leads to major change.

Two schools of learning theory, Behaviourism and Cognitivism underpin the received view of pedagogic innovation. A central tenet they share is that learning occurs inside a person’s head and is essentially an individual activity (Chappell, 2003: 3). Ideas, attitudes, knowledge and skills are understood as ‘tangible things’ that can be transferred to learners and to other contexts (Hagar and Hodkinson, 2009: 619). As such, knowledge and skills are ‘unproblematic givens’ (Chappell, 2003: 3) that exist prior to learners and are acquired and stored for future use (as Gherardi, 2006, critiques).

Similarly, models of ‘good innovative practice’ can be transmitted to others by tapping into educator networks, offering incentives for continuous innovation, and fostering people’s ‘innovation dissemination’ skills (Mitchell et al., 2006: 26). Further, elements of an innovation can be transferred to other contexts provided the ‘imitators’ apply similar effort to that of the ‘originators’ of an idea (ibid.: 27).

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25Behaviourism (the theory of ‘operant conditioning’) is visible in CBT’s ‘outcomes’ approach to learning, the behavioural objectives of competency standards, the way work is broken down into atomised tasks, behaviours are shaped through feedback (formative assessment) and the intended outcomes of learning are disclosed before learning occurs (Harris et al, 1995: 16).

26Cognitivism (theories of the mind) associates learning with knowledge acquisition (Harris et al, 1995: 16) and underscores rhetoric such as meeting different learning styles, learner-centred pedagogies (Chappell, 2003: 3) and self-directed learning.
These tenets manifest in professional teaching, policy discourses and in competency standards which, as Hodge (2014:12) writes, are designed to transmit intact the intentions of their original objectives (the acquisition and transfer of knowledge and skills) to teachers and learners. The problem with these tenets is that they promote transmissive and teacher-led pedagogies based on traditional teacher-student power relations (Mulcahy, 2010: 57). Underpinning the received view, they pay little attention to the practices of educators.

Indeed, the absence of empirical accounts of the practices and experiences of innovative educators is so notable in mainstream literature (Mulcahy, 2011, Seddon, 2009), it is difficult to visualise what happens between the formation of a new idea and an innovative pedagogy.

Take for example the Australian Flexible Learning Framework’s (2010) list of seven factors that are required to sustain e-learning innovations in VET. These include strategy, senior leadership, a business case, resourcing, champions, people support and technology but no mention of educators, or their practices, or the power and political interests that shape them (Gherardi, 2006). In this example in particular,

... innovation via technology is seen as so good, that few questions need to be asked about the specific practices the technology supports. ... on-line teaching is automatically accorded the status of innovative, and innovation is assumed to be good (Rowan and Bigum, 2004: 4).

There is also an assumption that innovation occurs ‘outside’ formal VET systems (Mulcahy, 1999: 226) and everyday educative practice.
Innovation as diffusion

The received view of pedagogic innovation draws quintessentially on Everett Rogers’ (1995) diffusion model of innovation (OECD, 2009, 2009b, Toner, 2007). Put simply, an innovation, once conceived, is applied at the front end of the innovation process, follows a defined path though a social system and is commercialised at the other end (Rogers, 1995: 5).

In this familiar research and development model (the product development view), ideas are generated, filtered and analysed along a highly organised and linear path to becoming new products, services, and business practices (Figure 2.1). As they travel, new ideas, products or processes pass unchanged from person to person along a path to predetermined outcomes (marketisation).

Figure 2.1: The ‘Innovation Development Funnel’ (Goffin and Mitchell, 2005: 17).

Also familiar in the literature is Rogers’ (2005: 262) concept of ‘adoption’ which enables one to predict on an S-shaped curve when individuals in a social system will adopt or reject a new idea or innovation. The innovators start the adoption process, followed by the ‘early adopters’ (the first 10-25% of members) who are the first to take up a new idea, then the ‘majority adopters’ who take some time to weigh up the benefits and finally the ‘laggards’ who are last to come on board (Figure 2.2).
Figure 2.2: Diffusion of innovation: adopter categories.\textsuperscript{27}

As social pressure mounts on individuals to adopt, the rate of adoption spreads with a ‘domino effect’ as people imitate others until the fabled tipping point is reached, and the rate of adoption rapidly increases (Rogers, 2005: 265). Critical mass is attained at a point in-between the early and late majority adopters. Ultimately individualist in orientation, the success of an innovation thus depends on an individual’s willingness and ability to adopt and implement change (Winslett, 2014: 165).

In a review of innovation in the Australian VET system, the OECD (2009b) utilises Rogers’ (2005) model to describe an individual’s decision-making process. Assuming a choice exists, individual decisions are often made on a sequential basis where they:

1. Acquire knowledge about an innovation (Knowledge);
2. Form a personal attitude toward it (Persuasion);
3. Decide to adopt or reject it (Decision);
4. Integrate it into practices (Implementation); and then
5. Continue to use it (Confirmation) (ibid.: 83).

The OECD also uses Rogers’ model to define the process an innovation follows at the organisational level.

As illustrated in Figure 2.3, diffusion commences with an initiation (agenda setting) stage and then passes through the implementation stage, until it reaches a point where it becomes routine practice, and is no longer considered to be innovative.

![Decision Diagram]

**Figure 2.3: Innovation at an organisational level (Rogers, 2005).**

A ‘modification/re-invention process’ occurs during the redefining stage which allows problems to be matched with an innovation in order to better fit an organisation’s priorities (Perillo, 2007: 93). The attributes and characteristics of a technological innovation, for example, would be evaluated at this point (Tatnall, 2011: 57). To ensure ‘full use’ of an innovation, communication links are used to connect the five channels and are often facilitated by a change agent (Rogers, 2005: 20-21).

Diffusion thinking is evident in the VET literature in references to the technical aspects of innovation, the specific stages it passes through, the communication channels used during the process, how adoption decisions are made, the degree of homophily (similarity) between individuals in the system and how well an innovation meets its original intent (Bigum, 2000). Dalitz et al. (2011: 23), for example, describe innovative VET practice in the mining industry as a process of diffusion that ‘follows a clear path’. The diffusion model provides policymakers, researchers and managers with a simple and practical framework to plan and manage innovation (Rogers, 2005: 61-63). The advantage, as Bruno Latour (1987), a well-known critic of diffusion theory writes, is that any innovation can be explained by reference to the initial force that launches it. Thereby,
people do not do anything more to the objects, except pass them along, reproduce them, buy them, believe them . . . as people so easily agree to transmit the object, it is the object itself that forces them to assent. It then seems that the behaviour of people is caused by the diffusion of facts and machines (ibid.: 133, emphasis in original).

Innovative cultures

When VET is framed as a ‘diffuser’ of knowledge, skills and technology (Toner, 2007, Dalitz et al., 2011), educators become ‘human resource developers’, ‘workplace trainers’ and ‘providers of educational services’ (Mulcahy, 2000: 3). They are regarded as diffusers of new ideas and plans for innovation that are typically developed by others. Writing in the context of schools, Reid (2004: 9) explains the process:

. . . a policy, plan or product is developed in central office – usually as a response to emerging needs or a government priority . . . there is usually some form of consultation or, at the very least, attempts to use anecdotal evidence from the field.

The consultation process, however, rarely involves the conceptualisation process underpinning the plan, play or product and ceases altogether when the development phase is over (ibid.).

The preoccupation with innovative cultures in the VET and management literature reflects this approach. Accordingly, innovation in VET can be fostered if senior leaders respond strategically to internal or external pressures by developing a corporate culture of innovation and new ideas (Mitchell et al., 2006: 29). As innovation can’t be forced upon educators, ‘skill and wisdom are needed to nurture innovation’ (ibid.). Educators working within these cultures exhibit innovative work behaviours (Messmann and Mulder, 2014: 81), which can be ‘spread’ through the ‘transmission’ of ‘good practice’ to other educators and contexts (Mitchell et al., 2006: 28).
Innovative cultures are thus highly attractive propositions. As entities in themselves, they learn from customers and other organisations (Callan, 2004) and often result in increased productivity, job satisfaction, trust and enthusiasm (Harris et al., 2007). Further, they can be ‘built’, if people are trained to be creative and when:

- The right people are provided with the right challenge;
- Effective teams are built through support and recognition;
- Teams are given autonomy (but not to choose the challenge);
- Adequate resources and realistic timelines are set;
- Quick and appropriate responses are provided by management; and
- Support is guaranteed from the whole organisation (King and Anderson, 1995:19).

Innovation in VET institutions is more likely to become a ‘core capability’ if ‘failure-tolerant’ leaders (Callan, 2004: 15) encourage cultural diversity, empower people to experiment and take risks, and when they reward and celebrate innovating efforts (ibid.: 26).

Innovation also depends on having enough time to work on new ideas (Mitchell, 2012, Figgis and Hillier, 2009, Suchman and Bishop, 2000), and on the ‘coherent integration’ of all aspects that contribute to innovative practice (such as learning environments, content, methods etc.) (Shapiro et al., 2007: 8). While these conditions are no doubt highly important to innovative practice, in effect they reflect a top-down approach in which,

...grass-root activities are acknowledged and rewarded and adjudicated by and made visible from a top-down vantage point (Winslett, 2014: 165).

Pedagogic innovation thus relies on supervisors to ‘enhance’ the intrinsic motivation of educators to innovate (Messmann and Mulder, 2014: 86) and manage their knowledge and creativity. In this sense, innovative cultures can be seen as a form of control which seeks to enforce existing norms and values.
The underlying assumption is that, if educators are not innovative, they can acquire certain skills and knowledge (they do not currently have) that are ‘given in advance of action’ (Mulcahy, 2011: 223) in professional development programs. Reflecting human and social capital theory (Meyer, 2003: 6), and prominent in the VET, organisational learning and management literature, this view also assumes that multiple individual innovators will constitute an innovative and productive workforce.

**Problematising the received view**

While ingrained in VET policy and practice, the received view is subject to considerable critique in the literature. Reid (2004: 10) for example, argues that front end interventions driving pedagogic change in schools, privilege bureaucratic knowledge over the local knowledge produced by educators.

Pedagogic innovation is then framed using traditional theoretical frameworks that do not (or cannot) account for the empirical world of educative practice. Top-down approaches to educational reform are ‘filtered through the lens of established beliefs and practices’ and are ultimately ‘colonised by them’ (ibid.). The ensuing gap (dissonance) between policy and practice not only impoverishes the knowledge base of policymakers, it creates significant barriers to how learning and (pedagogic) innovation is understood and theorised (Gherardi, 2000: 218). The gap is pronounced in a trade teacher’s comment in Harman’s (2013) study.

*There’s a whole bureaucracy out there that comes up with this stuff and they all have a vested interest in making it as complicated as possible and generating as much paperwork . . . We spend more time finding ways around it than actually performing with it* (ibid.:8).

The political nature of pedagogic practice, well concealed in the received view, comes to the fore in this comment.

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Indeed, pedagogic innovation becomes a political argument when innovative practice is considered by those intent on preserving the status quo to be separate or ‘unnatural’ to everyday activities (OECD, 2009b: 45). Equally, accounts of innovative practices that portray pedagogic practices as unproblematic activities render those that are problematic (as is invariably the case with innovation) as troublesome and/or that the educators responsible are not coping, and/or are not skilled enough, and/or are failing to meet prescribed standards and expectations.

Further complicating pedagogic innovation for educators is the Australian Government’s call to strengthen industry’s influence in the sector’s operations. Robertson (2009) correlates this reform with incremental shifts in pedagogic power from educators to industry leaders, and the subsequent undermining of pedagogic influence ‘at both industry-teacher, and teacher-learner interfaces’. An educator’s comment, cited in Hodge’s (2014: 19) study, reflects the result:

... they (competency standards) seem to be political documents, written to satisfy too many masters. They don’t seem to me to be written with the student or teacher in mind... They’re written for auditing requirements.

One might argue, however, that current reforms that are driving industry-led systems and competitive training markets should be conducive to pedagogic innovation. As Drucker (2004) writes, innovation flows from unexpected occurrences, disruptions, incongruities and rapid change in systems as has been the case in VET for some time.

Indeed, reforms to VET have resulted in considerable innovative pedagogic practice, according to Seddon (2009), Mitchell (2012, 2013), Mitchell et al. (2003), Toner (2011), Dalitz et al. (2011), and Williams (2013). However, much of this activity has occurred despite the system’s predilection to discourage innovation.

Competency based training for example, a mainstay of VET, is heavily critiqued in the literature for favouring tradition (Guthrie, 2009, Schofield and McDonald, 2004) over ‘innovative knowledge and new forms of practice’ (Wheelahan and Moodie, 2011: 15). CBT’s focus on instrumental skills endorses ‘adaptive learning’ and the reproduction of reliable, routine and conforming work performances (Nilsen and Ellstrom, 2012: 160-161). Such performances, Mulcahy (1999: 235) asserts, are in ‘no way’ compatible with the requirements of ‘new learning and innovation’.30

Much of the problem, according to Wheelahan and Moodie (2011: 15), lies in the focus in competency standards on learning outcomes that ‘must be related to a specific workplace activity’. This focus is highly problematic on a number of levels. Firstly, work tasks are described in terms of current and past practices and secondly, it allows new practices that might not fit standardised and predetermined measures of performance to be denied or rejected. Hale (2013: 365) agrees. The standardisation of work and learning in the received (product) view of VET,

\[\ldots \text{devalues the uncertainty of learning as a creative endeavour} \ldots \text{that holds the promise of transformative engagement with ideas and knowledge.}\]

In the innovation literature, Latour (1987: 133) critiques the diffusion model’s failure to explain the complexity of innovation – the mistakes, accidents, power plays, modifications and controversies that inevitably occur during the process.31 What seems to be forgotten, Latour argues, are the complex negotiations between people and other actors that shape the facts and generate other ideas along the way. Law (1992: 960) similarly critiques the diffusion model for its failure to consider what happens when an innovation is not adopted in its original form.


31 It might be noted here that Rogers (1995: 371) acknowledges the diffusion model’s shortcoming in explaining how reinvention and modification occurs.
Latour (2005) also rejects the diffusion model’s determination of categories of innovation for research and evaluation purposes (such as the types of adopters mentioned earlier). Examples of categories in VET include the process, product, or organisational categories of innovation in Mitchell’s (2012: 5-8) study and the categories of radical and incremental innovation defined by Toner (2007, 2010).

These categories imply the existence of a binary which can work to obscure innovative activities that do not fit it (or are not yet obvious), or may be occurring simultaneously in different innovative processes (Perillo, 2007: 95).

The key point about category-based approaches to the study of innovation, according to Bigum (2000: 9, original emphasis), is that ‘the success or failure of an innovation is explained in terms of influences whose characteristics have been judged retrospectively’.

For instance, category-based analyses find that some innovations fail because of inherent flaws in the innovation or succeed because the innovators ‘got it right’ or were successful because a particular change agent proved to be highly effective. That an innovation had flaws or that the innovators managed to get it right are things that are deemed after the event (ibid., emphasis in original).

The process of innovation by its very nature produces new arrangements (Rowan and Bigum, 2000).

In studies of innovative teachers, Stam et al. (2014: 252) equate categorisation practices in research with positivism and ‘convergent deductive thinking’ where deductive thinking ignores what cannot be planned or perceived from the top. Studying innovation, however, requires ‘divergent inductive thinking’ which ‘cherishes the unique and that which has not yet been classified’ (ibid.).

The diffusion model of innovation thus paints a reductive picture of innovative pedagogic practice as a planned, individual and unproblematic activity and, by doing so, risks obstructing any attempts at innovation (Perillo, 2007b: 630). While the diffusion model may apply well in some circumstances in VET, it is generally of ‘little practical value’ to policymakers and VET educators in practice (Smith, 2012).
The contextual view of pedagogic innovation

The second framing of pedagogic innovation, the contextual view, shifts the focus from individual innovators to a metaphor of participation (Fenwick and Edwards, 2010) or ‘interplay’ between individuals and their social environment (Mulcahy, 2011, DeFillippi & Ornstein, 2003, Lave and Wenger, 1991). The contextual view holds that people learn at work while being subsumed into complex social structures (Hagar and Hodkinson, 2009: 628). This view provides for a social perspective on innovation (a perspective predominant in the European literature) (Mulcahy, 2000: 221) which takes pedagogic innovation to be a continuous process of learning related to social action in one form or another.

Innovative pedagogies are no longer based on assumptions of knowledge and skill acquisition, transmission, or transfer, but assume instead an active involvement by learners in the learning process. In the contextual view, educators are actively,

. . . suggesting and guiding rather than giving instruction, asking ‘open’ questions that do not necessarily lead to one correct answer, learning alongside the students, helping to resolve conflicts and difficulties that may arise and persuading students to face up to things they may essentially resist or avoid (European Commission, 2009: 25).

It can be claimed that VET has developed a strong pedagogic identity underwritten by the contextual view. Well known contextual pedagogies in VET include communities of practice (Wenger, 1998), learning networks (Hillier, 2008, Figgis and Hillier, 2009, Mitchell et al., 2006), networks of practice (Brown and Duguid, 2001), facilitated collaborative practices (Billett et al., 2012) and work based learning32 (Billett, 2002, Hillier, 2009).

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32 Work based learning is defined as learning in the workplace that entails credentialed learning as part of a VET qualification (Figgis, 2009).

Accounts of innovative pedagogies often involve authentic learning (Figgis, 2009, Hillier, 2008) that occurs in work based projects, recognition of prior learning, coaching and mentoring, reflective practice (Nilsen and Ellstrom, 2012, Boud, 2001), practice firms (TAFE NSW, 2004), action learning and problem based learning (Mulcahy, 2006, Mossuto, 2009, Han, 2011). In these accounts, learners are central mediators of what they learn (Billett, 2006: 9), as Mitchell’s (2012: 50) study illustrates:

_The Graduate Training Program is a highly innovative training initiative that centres on bridging the gap between the training environment and industry. . . . Graduates are given the opportunity to undertake real industry projects with deadlines, in a commercial environment. These projects provide greater weight to the graduates’ portfolio as they are high quality and have industry recognition._

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34 There are very few examples in the literature of direct relationships between pedagogic innovation and communities of practice, although Mitchell et al (2003: 32) cite instances where educators were able to function more effectively in environments of reform as a result of their involvement in a community. The management literature however, claims that communities of practice increase response time to market for innovations and learning and change initiatives. The APQC (2005: 1) for example, claims that communities of practice create, share, validate and transfer tacit and explicit knowledge with significant impact on time to market, employee development, knowledge sharing and organisational learning and change implementation.
Work based learning, a broad field fundamental to VET policy and practice, involves a range of pedagogies that make informal learning\(^{35}\) at work more visible and assessable (Figgis, 2009: 16). Learning (and innovation) is shaped by participation in everyday workplace practices and activities and knowledge arises from ‘inter-psychological processes’ between people, artefacts, symbols and the physical work environment (Billet, 2002: 28-31). Increasingly common in VET, problem based learning is recognised as a form of work-based learning (Mulcahy, 2010: 56).

In this pedagogical approach, learning is based on problems arising in everyday work where learners are given ill-defined problems and are required to seek solutions through collaborative research exercises (such as case studies) and role-playing activities (Han, 2011: 13). Put simply, problem based learning involves identifying what needs to be done, why it is done in a particular way, before reflecting on what needs to be done next (Figgis, 2009: 10-11).

The authentic nature of learning in the workplace is captured in Williams\(^{36}\) (2013: 12) case of a VET educator working with students and winemakers to solve a problem concerning the capture of carbon dioxide from fermenting wine. Situated in a winery, this experience was:

\[\text{Fully integrated into the institutes' viticulture and winemaking teaching program as an embedded practical component, which meant the students . . . were involved in carrying out the research levels appropriate to their progression.}\]

\(^{35}\) Informal learning occurs incidentally in work whereas formal learning is more planned, deliberate, and general in nature. (Kalantzis, 2004, cited in Perillo, 2007: 54).

\(^{36}\) William’s (2013) study is focused specifically on Boyer’s scholarship of engagement in the context of higher education in VET institutions.
Situated and sociocultural practices

The contextual view draws on sociocultural theories of learning (Vygotsky, 1987) and, more particularly, the situated learning theory (SLT) of Jean Lave and Etienne Wenger (1991: 35). Emerging from studies of apprentices, SLT theory has been influential in advancing the understanding of learning as participation in situated, social activities.

Highly relevant to VET, Lave and Wenger’s (1991) study concluded that apprentices learn within communities of practice at work. These communities bind their members together in a social group based on a common domain of knowledge and a shared concern or passion for something they do and want to do better (ibid.).

Once newcomers (such as apprentices) enter a community, they learn from more experienced practitioners through processes of ‘legitimate peripheral participation’ (Lave and Wenger, 1991), moving from being novices at the periphery (the edge) of the community to becoming experienced participants at its core (Figure 2.4).

![Figure 2.4: Types of participation in a community of practice.](http://etec.ctlt.ubc.ca/510wiki/images/c/ce/Participation_COP.jpg) Access date: 19 October, 2014.
Through the process, they slowly develop the capacity to participate in the community and, as a result, form a strong identity with it (Fejes and Kopsen, 2014: 275). Alternatively, newcomers might follow a peripheral trajectory which gives them access to the community, but not full participation in it (Wenger, 1998: 154-155).

The periphery of a community, where different communities intersect, is where learning and innovation are most likely to happen (Brown and Duguid, 2001, cited in Perillo, 2007: 55). Further, according to Gherardi (2012: 219), innovation occurs when members of a community ‘insert spaces’ into existing practices toward creating new practices. Newcomers can also spark new learning and practices among members by bringing new ideas into the community (Perillo, 2007: 56). New activities emerge in the spaces between explicit knowledge (coded processes such as procedures and job descriptions) and implicit knowledge (how people undertake and enact their work) (Ellstrom, 2010: 30).

Knowledge in communities of practice thus resides with individuals and requires a social process between members of a community to make it explicit and enable it to be shared (Nonaka and Takeuchi, 1995). Pedagogic innovation is understood as a continuous refinement of practices through complex social processes of ‘constructing, recognising, analysing and reflecting on experience’ (Hillier, 2008: 6). Mitchell et al. (2008: 134) provide an empirical example:

> Issues that were raised were sometimes challenging and provocative. Differences within the group were the very basis for learning by the participants and the facilitator used these constructively to increase understanding and knowledge.

Common in VET, communities of practice are recognised as opportunities to develop the capabilities of members, for building and exchanging valuable knowledge and for enabling the transfer of good practice (Mitchell, 2003). Other benefits for organisations include improved productivity, the reinforcement of strategic directions and the fostering of innovation in an atmosphere of trust (ibid.: 15).
The contextual view is largely constructivist\(^{38}\) (in particular social constructivist), and draws on experiential learning\(^{39}\) theories (Rogers, 1987; Kolb, 1984) and the situated cognition movement\(^{40}\) (Brown, Collins and Duguid, 1989). Discourses of reflective practice, self-directed learning, individual learning styles (Fenwick, 2008: 19), work-based learning, student-centered learning, problem-orientated learning and ‘contextualised knowledge’ reflect a constructivist approach (Wheelahan, 2009: 227).

Constructivist pedagogies are also associated with transformational learning experiences (Fenwick, 2008: 19) which are captured in the concepts of radical learning (as opposed to incremental learning), creative or developmental learning (Ellstrom, 2010), ‘expansive learning’ (Engstrom, 1988), ‘double loop learning’\(^{41}\) (Argyris and Schon, 1996) and ‘transformative learning’ (Mezirow, 1991).

Transformational learning is an ‘exhilarating, disruptive and liberating’ experience that brings about deep changes in how people see the world and themselves (Hodge, 2012: 54). Pedagogic innovation in the contextual view is, therefore, a process of co-constructing knowledge and changing beliefs, identities and practices (Perillo, 2007: 40-41).

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\(^{38}\) Constructivism, derived from John Dewey (1916), ranges from theories of individual learning (Phillips, 1995) where reality exists in the mind of the knower, to social constructivism (Vygotsky, 1986), where learning occurs through social interaction.

\(^{39}\) Experiential learning (Kolb, 1984) is a process of creating and testing knowledge in the experiences of learners through doing, observing, conceptualisation, and experimentation.

\(^{40}\) Billett (2008: 3) describes the situated cognition movement as a way of understanding how knowledge is transferred from one setting to another (for example, school to the workplace).

\(^{41}\) ‘Double-loop’ learning occurs when a mismatch between intentions and their outcomes is identified, is turned into a match, and leads to significant modification in behaviours (Argyris 1999). Conversely, single loop learning occurs when there is a match between an idea and outcome, and changes to normal work do not present a significant challenge or threat.
Critically considering the contextual view

While much research and practice in VET is shaped by the contextual view, there are inherent conceptual tensions in this view that can thwart innovation, according to the critics. Mitchell et al. (2006) for example, criticise communities of practice for ‘overlooking’ issues of power and inequality and for perpetuating traditional (and sometimes unethical) practices. Mulcahy (2011: 225) similarly critiques communities of practice for their capacity to reproduce the status quo and for failing to acknowledge the complexities of social and spatial boundaries.

The structural boundaries of communities of practice imply a ‘container’ in which knowledge and practices sit and make it difficult for new knowledge and practice to be shared beyond them (Gherardi, 2012: 221). A container image also evokes ‘rhetorically powerful’ feelings of identification by members which can exclude others and/or oppress members who seek to challenge the status quo (Fenwick et al., 2011: 163).

Further tensions are evident in Gourlay’s (2011: 68) study of novice educators in higher education which found that the features of communities of practice defined by Lave and Wenger (1991, Wenger, 1998), such as a ‘shared repertoire’, ‘mutual endeavour’ and ‘expert-novice’ relationships, were non-existent in practice. As a result, novice educators in the community were left feeling isolated, confused and distrustful of what was going on.

Smith (2001:613) cites cases of apprentices without an identifiable mentor and trainer in the workplace, being marginalised by other workers and confined to the periphery of the community. ‘Old-timers’ in established communities, Lave and Wenger (1991: 95) conclude, are not always welcoming or supportive of newcomers. In a separate study, Fuller and Unwin (2004) observed apprentices engaging in a surprising two way pedagogic relationship with workers, rather than following a traditional learning pathway from novice to expert.
This finding in particular, raises questions about the ‘expert-novice’ construct and the contextual view’s focus on the end state (expert, full membership, belonging, legitimate participation) over the process of learning and becoming (Mulcahy, 2011: 225). It also highlights a significant limitation in the contextual view’s assumptions about ‘who’ is doing the learning and ‘what’ and ‘who’ are impacting on the process.

In the innovation literature, Roberts (2006, cited in Gherardi, 2012: 220) argues that radical innovations require new (not old) communities of practice. As Gherardi explains, it is often easier to start a new community than overcome barriers in existing communities that block communication and quash challenges from members. When this occurs, innovation is at risk of becoming ‘trapped within a system of idiosyncratic relations’ and insulated from dynamics that might lead to new ideas, practices and interpretations (ibid.).

This implicit power is also evident in Stephen’s (2010: 19) study of early childhood teachers which found that tacit ‘theories-in-use’ (Argyris and Schon, 1996) overrode what teachers had learned as good practice in their training (the espoused theory). This is not uncommon in workplaces. Fenwick (2004: 232) for example, describes how power relations socialise (or inculcate) new educators into complying with rules that are ultimately designed to sustain and protect a community in its current state. Questions then emerge about who in the community is excluded from learning and the construction of knowledge and what dysfunctional or exploitive practices are being perpetuated (Fenwick, 2008: 21).

Studies of work based learning bring further controversies to the contextual view. Billett (2002: 28-29) cites power relations, organisational pressures, local cultural practices, peer influences and individual agency as factors that strongly influence learning at work. Clearly, workplaces are not the learning-conducive environments they are assumed to be. The effects of hierarchical relations, workplace cliques, affiliations, gender issues, race, language, and employment status can be major barriers to learning (ibid.).
Nor are work based pedagogic practices as apolitical as one might assume. Most often, as Edwards and Nicoll (2006:182) write, these practices induct workers into specific power-knowledge formations and disciplinary practices within organisations, and their industries.

The contextual view of innovation pervades the organisational learning and management literature and, like the received view, strongly influences managerial cultures in VET. Learning and innovation are conceptualised as practices to be managed through knowledge management and innovation strategies, such as communities of practice.

Constructivist in theory, the contextual view is appropriated by instrumentalism (or management of an instrumental kind), as reflected in discourses of human resource management (HRM) in VET which consider work based learning to be an effective way to align work (human capital) with broader economic and corporate imperatives. HRM also assumes that individual learning is part of an organisation’s broader learning strategy (DeFillippi and Ornstein, 2003: 24).

Thus, the contextual view is closely associated with social capital theory (Fenwick, 2004: 232), human capital theories (Chappell et al., 2002) and neoliberalism (Mulcahy, 2000: 220). Smith et al. (2012) write that HRM practices have a weak and indirect effect on innovation in VET and tend to ‘institutionalise’ creativity and knowledge. Further, they legitimise managerial techniques of control (Bathmaker and Avis, 2013) and positivist approaches to innovation. Innovators in these environments ‘burn out’ quickly, and send clear messages to others about what happens when one attempts to innovate (Waters, 2005).

Hale (2013: 365) warns of the dangers inherent in both the product development (received) and process (contextual) view of education. Where the former emphasises the value of skills based and adaptive learning, the latter is prone to politics which are often unacknowledged, and tend to limit how learning is applied beyond fixed boundaries.

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42 Wheelahan (2009: 227) writes that constructivism and instrumentalism have many philosophical similarities, such as a commitment to experiential learning and a strong emphasis on ‘authentic’ learning in the workplace.
Both views perpetuate an applied rationality (Gherardi, 2006: 5-9) and a humanistic orientation to pedagogic innovation although, by comparison, the individual and the social are more enmeshed in the contextual view (Fenwick, 2008: 20). Discourses of power, however, remain silent and privileged.

**The articulated view of pedagogic innovation**

In contrast to the received and contextual views, the articulated view is highly attuned to the effects of power on local practices. The articulated view looks for the multiple articulations (connections) that take place as innovative educators work and asks how these connections are made, sustained, transformed and unmade (McGregor Wise, 2009: 97).

> Thus, to articulate, to make or break connections between objects, between ideas, between objects and ideas, takes power (ibid.).

The articulated view does not separate thinking from doing, or educators from their environment (other people, objects, cultural practices, shared history, actions, materials, politics, ambitions, vocational habitus and so on), or theory from practice. Nor does it separate learning outcomes from the process of learning, or pedagogic innovation from the innovators.

Contesting to some degree the concept of communities of practice in the contextual view, the articulated view also does not presume that learning and innovation have fixed and structural boundaries. Knowledge is not understood as a thing to be acquired or constructed, but as ‘relational and political’ and material processes (Fenwick, 2004: 231) that defy boundaries through action. The interest in the materialities of practice fundamentally distinguishes the articulated view from the contextual view.

Nespor (1994), for example, investigates the experiences of undergraduate students in an American university using translation as an analytical framework. Translation, according to Sakari (2006, cited in Hamilton, 2012), is the process of articulation which assumes that all actors in a ‘socio-technical network’ (Tatnall, 2011) are connecting with other actors to enlist, displace and transform their interests (Callon, 1986). From a translation view, in order to innovate an educator must convince others that they want what he or she wants (Latour, 1987: 131). From his study, Nespor (1994: 131) concludes that knowledge and learning are ‘space-time’ processes that are shaped by specific forces ‘brought into articulation’. ‘What this boils down to’, Nespor writes,

\[\ldots\ is\ the\ idea\ that\ when\ we\ act\ we’re\ simultaneously\ interacting\ with\ the\ people\ and\ things\ in\ the\ immediate\ environment,\ and\ with\ people\ and\ things\ spatially\ and\ temporally\ removed\ from\ us,\ but\ nonetheless\ present\ in\ the\ situation\ in\ some\ way\ (ibid.:\ 3).\]

When used to theorise innovative pedagogic practice in VET, Nespor’s findings further elucidate the shortcomings of communities of practice. Innovation is not understood as a practice in its own right, or practices bounded by social communities, but as practices enmeshed in expansive networks of sociomaterial relations (ibid.:141).

Mulcahy (2010) applies the ‘space-time’ concept in studies of teacher education to analyse connections between pedagogies, spaces and teacher identities. In her study, Mulcahy concludes that pedagogies are practices that produce and organise space and time and move in patterns across them. Space does not precede pedagogic practice as such, but is ‘done’; that is ‘constituted through action’ and relations (ibid.: 58-59). Sørensen (2009) provides an insight into how spatial relations emerge with effect in a school setting.

\[All\ pupils\ were\ seated\ at\ their\ desks.\ The\ teacher\ was\ at\ the\ blackboard,\ writing.\ The\ pupils\ were\ carefully\ watching\ the\]

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43 In translation (articulation), an innovation is not a fixed entity that propels itself through a social system. Rather it undergoes continuous transformation (translation) to meet people’s needs and interests (Latour, 1987: 135), as explained in detail in the following chapter.
teacher’s writing. Or, more precisely, they were watching the letters appear on the backboard. The visual materiality of the letters appearing on the blackboard constituted a geographic space to which each child’s eye was fixed (ibid.: 140).

In further studies of teacher education, Mulcahy (2011: 220) unearths a surprising range of material, social and psychological actors involved in the process of becoming a teacher including:

... bodies (embodied routines and habits of the profession), texts (images of professionals, professional standards), objects (tools and technologies specific to professional practice) and institutional contexts (e.g. professional education, professional practice settings).

Mulcahy analyses the way these actors relate to each other, the effects of their power and agency and how patterns of power shape the teachers’ learning and pedagogic practices.

In studies of pedagogic practice in schools, McGregor (2004) finds that particular configurations of actors work to reinforce traditional teacher-led pedagogic practices, such as those that produce traditional classroom arrangements. However, when these configurations change (through the use of technologies for example), new spaces are created that mediate opportunities for new pedagogies ‘beyond the classroom’ (ibid.: 360). Like Nespor and Mulcahy, McGregor’s analysis attends carefully to the effect of distant networks (such as national curriculum) on local pedagogic practices.

The effects of distant networks are also of interest to Hamilton (2012), Fenwick (2012), and Perillo and Mulcahy (2009). Hamilton (2012: 53) in particular, follows a national education policy initiative (individual learning plans for teachers) to see how it is ‘choreographed’ into ‘localising moves’. While highly contentious with teachers, the individual learning plans become a ‘central nexus’ that slowly brings policy and other discourses together across space and time and the activities of teachers and students into alignment with policy goals.
Distant actors (such as funding decision makers and inspectors) emerge in this study as powerful mediators in the teachers’ networks. Indeed all the actors involved (students, forms, plans, policy targets, curriculum, administrative processes and so forth) are collectively translating individual experiences into policy and curriculum targets.

Hamilton also illuminates how power and ‘institutional activity’ ‘impose a certain order on the disorderly flow of social life’ and create knowledge that eventually becomes ‘unquestioned truth’ (ibid.: 53). She reveals how people and things in the network under study ‘constantly escape’ from the plans of policy, even when policy is promoted in the most ‘rational, scientific and managerial way’ (ibid.: 56).

The heterogeneous nature of innovative pedagogic work is also apparent in Nimkulrat’s 44 (2014) account of textile artefacts in innovative approaches to teaching art and design courses in a university.

The art objects were displayed on the table and were immediately accessible to students . . . This aimed to make the students feel as part of the world they would belong to after graduation, and to motivate students’ participation when they knew that what would be presented in a professional creative context had transferred into curriculum prior to the outside world, bringing the real-world into the classroom (ibid.: 8–9).

While Nimkulrat describes the artefacts as tools to support ‘verbal explanation’ 45 in pedagogic practice, they are in fact powerful actors that are mediating learning by bringing the past, present and future of textile practice (with its associated traditions and politics) together.

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44 Nimkulrat’s (2014: 8) research is underscored by phenomenology (making for a humanistic account that emphasises personal perspective and interpretation of experience) and is introduced here as a powerful example of materiality in educative practice.

45 Reflecting the preceding comment, the separation of people and materialities in the situated pedagogic practices here reflects the contextual view more than the articulated view.
The mediating role of things in innovative practice is also apparent in Bigum and Rowan’s (2004) study of online learning. Further to the technologies and people involved in the practice (students, lecturers, head of unit/school, Dean, technical support staff), the study follows the actors beyond immediate practices to,

...software including vendor and maintenance personnel, system software for PCs and servers (plus vendor and maintenance personnel), hardware (plus vendor and maintenance personnel), physical settings and other resources for students/lecturer/tutor and so on (ibid.: 220).

The technologies in this study, and the textile artefacts in Nimkulrat’s study, are not inert devices or tools or means to pedagogic ends (Sørensen, 2009), but are entities actively participating in innovative activities. They are, as McGregor (2004: 353) writes, ‘transacting themselves, circulating ideas and affecting actions through relationship’.

Perillo (2007: 213) similarly observes technologies in schools, ‘formatively’ shaping (and at times dominating) the experiences of innovative educators. These experiences are not separate to the technologies (the material world), but are produced empirically by and through them (Sørensen, 2013: 121). In other words, they are co-produced socially and materially. One might argue therefore, that an innovation, such as a new technology, has ‘no initial inertia or momentum’ of its own, and is not autonomously propelled though an educational system (Rowan and Bigum, 2004: 2).

If it progresses at all it does so by interesting and recruiting other actors and forming an alliance with them (ibid.).

The diffusion model fails to account for this relational and material complexity.
In a comparison of different theories of technological innovation in education, Tatnall (2011: 57)\(^{46}\) concludes that ‘Innovation Translation’ has significant advantages over the diffusion model (‘Innovation Diffusion’). Innovation Translation, Tatnall writes, better accounts for technological innovation in education, particularly when it is difficult for an innovator to garner support or when a change in technology is implemented (ibid.: 53).

Bigum (2000: 20) also supports translation (articulation) as a better way to account for the ‘high situated’, messy and fundamentally political translations that transpire when online learning systems are implemented.

The articulated view is also highly attuned to the affective\(^{47}\) nature of innovative pedagogic practices. The power of affect is evident in Skattebol's (2010) study of early childhood teachers who experienced profound change in their pedagogic practices. The change manifested in intense embodied reactions which impacted temporarily on their confidence and sense of resilience when working with students. Stam et al. (2014: 262) similarly found that innovative pedagogic practice is extremely difficult emotionally for educators and, in some cases, is ‘a chastening experience for everyone’.

Fenwick's (2001, 2003) studies of entrepreneurial women in business affirms the power of affect in innovative practice. The women concerned describe their experiences of innovation as managing inner fear, getting over the inevitable anxieties of risk, and learning to minimise the extreme emotional ‘highs and lows’ associated with ‘screwing up really badly’. Affect can equally produce powerful positive effects on innovative pedagogic practice.

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\(^{46}\) Tatnall (2011) concludes that it is too simplistic to assume that Innovation Translation is a better approach in all situations and cites examples where diffusion is better suited, such as in large scale technological adoptions.

\(^{47}\) Affect here is broader than human emotions and is understood as a tangible, embodied force that operates between people and adds complexity to relationships (Skattebol, 2010: 78). The concept disputes the separation between mind and body.
In Figgis and Hillier’s (2009) study, educators knew they were being innovative when they felt increased energy and passion, when they had a heightened sense of anticipation and when they thought they were outside their comfort zone. Innovative teachers, as Stam et al. (2014: 260) found,

... reported major benefits in terms of feelings of satisfaction and joyfulness. They felt proud of themselves, of the team, and of their students. They fought the discontinuity evoked by boundary experiences by building up their self-confidence.

The articulated view thus brings to the fore the performative, heterogeneous and affective nature of pedagogic innovation. A performative view understands that pedagogies are multiple practices that are each enacted with their own reality. The performative concept is apparent in Rowan and Bigum’s (2000: 5) description of a quality assurance manual in a university.

The manual describes and creates a quality assured reality. It not only represents a quality assured reality, it also performs it. To undo this performance would require a lot of tracking back and checking of allies, following policy decisions and practices, tracking KPIs to their origins and out to their negotiation, examining and interrogating committees, individuals and showing that things have been done not as the manual suggests or, may have even been fabricated (ibid.).

The concept of multiplicity is again evident in Edwards’ (2012) study of cookery educators in Scotland where pedagogies are enacted in two different settings (one in a College and one in a school). The pedagogies emerge as a ‘networked array’ of sociomaterial practices that translate the curricula in very different ways. What is enrolled in each network, Edwards concludes, makes ‘a big difference in terms of practice and what is learnt.’
We may infer from this case that schools and colleges may provide similar opportunities at a formal level, but they are very different organisations serving different student groups, often with different types of staff with varying professional backgrounds and formations. . . . Curriculum-making is multiple precisely because the prescribed curriculum mobilises different networks of actors (ibid.: 37).

In this study, Edwards (2012) challenges the fundamental assumption in CBT that pedagogic practices and learning outcomes will always be equivalent in VET settings. He then questions the ‘type and amount of work’ that goes into standardising curriculum and pedagogic practices in VET to exclude, or discourage, different and multiple experiences.

Like Edwards, Perillo (2007) observes everyday pedagogic innovation being performed differently depending on local circumstances. A teacher in a boy’s school in Perillo’s study illustrates the concept.

Here we all get to know the boys very well and are very aware of their abilities or lack of abilities. We alter what we teach in our own way. Even the classes we teach may vary because the students in them are different (ibid.: 207).

Perillo (2007) concludes that innovative pedagogic practices do not ‘live’ as complete or whole performances in schools, but as a series of ongoing negotiations that are ‘kept alive’ by plays of difference, shifting relations and articulations among people, technology and physical settings.

Viewing pedagogic innovation in VET as performative and multiple practices challenges the representational epistemology underpinning much educational research (Fenwick and Edwards, 2013) that assume that reality is ‘out there’ and reliable statements (representations) can be made about it, with little regard to how these statements enact (perform, constitute) this reality, or bring it into being.
Summing up the evidence

The chapter began with a critical analysis of the received and contextual views of pedagogic innovation. Clearly there is considerable controversy in the literature about how the current VET system and its practices are theorised. As Mulcahy (1999: 235) sums up, linear and sequential models of training that,

\[ \ldots \text{give priority to outcomes, while meeting the needs of} \]
\[ \text{enterprises for efficiency and productivity, do not take various kinds} \]
\[ \text{of competency and aspects of learning and innovating into account.} \]

The review of the literature confirms that a paradox exists in both the received and contextual views. While they espouse innovation, both views equally pose significant barriers to innovative pedagogic practices through the assumptions they are built on. Of the two, the contextual view might be said to be more conducive to innovative pedagogic practice in VET.

We know from the review that innovative pedagogy is occurring but we do not have a clear picture of what it looks like in practice, how complicated the practices might be, what forces are impacting on them and what makes the practices innovative. The detail of the practices, and what it takes to be innovative, is clearly under researched in VET.

The articulated view opens a space to ‘hesitate and analyse in detail’ (Sørensen, 2009: 28) the ‘lived experience’ of pedagogic innovators and theorise their practice in a very different way. The articulated view is adopted hereon in as the theoretical framework for this study with due recognition of its shortcomings and limitations. These are discussed in detail in the following methodology chapter.
Chapter 3: Methodology

Sociologists of the social seem to glide like angels, transporting power and connections almost immaterially, while the ANT-scholar has to trudge like an ant, carrying the heavy gear in order to generate even the tiniest connection (Latour, 2005: 25).

Theoretical framework

The research methodology aligned with the articulated view is actor-network theory (ANT). ANT is a relational, sociomaterial and process orientated sociology (Law and Mol, 2003: 7) that eschews humanist, cognitivist and representational idioms in order to follow ‘surprising actors to surprising places’ (Latour, 1987).

Embedding a ‘generalised constructivist’ approach to research (Perillo, 2007: 65), ANT attends to the back room workings of social technologies in the making (Hamilton, 2012) and reframes ‘how we might enact and engage’ with educational issues (Fenwick and Edwards, 2010: 1). ANT is used in this study to explore the complexities, temporalities, multiplicities, and materialities of innovative pedagogies in VET as they unfold in practice.

Further to ANT, the research design draws selectively on the work of Michel Foucault (1980), Gilles Deleuze and Felix Guattari (1987) and practice based theorising (Gherardi, 2000). ANT borrows from Deleuze and Guattari (1987) the metaphors of rhizome branching networks, assemblages and flows in order to critique the notion of fixed boundaries and identities (Fenwick et al., 2011: 139). Practice based theorising understands innovation as situated and relational practices that emerge in specific historical, sociomaterial and cultural contexts (Gherardi, 2012: 225).

48 Constructivism is a contested term in ANT and is discussed later in this chapter.
Indeed ANT is a form of practice based theorising (Mulcahy and Perillo, 2009) with an interest in spatial concepts (Deleuze and Guattari’s legacy is evident here) and the way history, discourse and power shape subjects and their worlds (echoing the work of Foucault). As Foucault (1980: 98) writes:

*Power must be analysed as something that circulates . . . It is never localised here or there, never in anybody’s hands, never appropriated as a commodity or piece of wealth.*

Pedagogic innovation is thus an iterative process whereby knowledge and ‘the subjects and the objects of knowledge’ are produced together (Gherardi, 2001: 132) in the politically charged negotiations (Law, 1989) of everyday work.

**Actor-network theory**

ANT is located in the interdisciplinary field of Science and Technology Studies (STS); a field that works through case studies (Law, 2009) and is closely associated with innovation.49 By showing how webs of relations are made and unmade, how negotiations take place and how articulations work or not, ANT analyses uncover how knowledge is produced and how learning and innovation happen. ANT is therefore an ‘archaeology of innovation’ (ibid.), or a theory50 about how knowledge and innovation come to be (Gherardi, 2006, 2012).

As the methodological choice, ANT is highly suited to this study’s view of pedagogic innovation as emergent knowledge building activities (Law, 2007: 4), rather than deliberate, observable and calculable behaviours (Perillo, 2007: 13). More a methodology than a theory (Latour, 1999), ANT is an analytical ‘tool kit’ for tracing the experiences of educators ‘from within’51 (Gherardi, 2012: 225).

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49 In particular, science based innovation and the development of technologies (Law, 2008: 625).

50 Law (2007: 2) argues that a theory is usually foundational in that it explains why something happens. ANT however is descriptive, and is better understood as telling stories about how relations assemble or not.

51 By the term ‘from within’, Gherardi (2012: 225) is referring here to the educators’ view – the intellectual, passionate, ethical and aesthetic attachment that ties subjects to objects, technologies, the places of practices and other educators.
The tools of ANT are used in the cases under study to analyse how innovating networks come to be, how they associate with each other, how they exercise power and how they hold together and sustain themselves (or not) long enough for an innovation to come to fruition. Mifsud (2014) in particular, describes ANT as a theory of the ‘mechanics of power’ that can be used to investigate the ‘establishment of hegemony’. An ANT methodology ‘picks apart’ assumed categories, binaries and structures in VET to make visible the workings of power and its effect on what educators do.

Looking for binaries is an important feature of post structural theorising (Somerville, 2006, Sørensen, 2009) and sociomaterial approaches to educational research (Fenwick et al., 2011: 168). In ANT there are no a priori fixed binaries or boundaries, as explained in the following section in this chapter. ANT is also acknowledged as an empirical form of poststructuralism in which actor-networks can be viewed as ‘scaled-down’ versions of Foucault’s discourses, or epistemes (Law, 2009b: 145). An episteme:

\[
\text{. . . is the product of certain organising principles which relate things to one another (by classifying things, and by allocating them meanings and values) and which, as a result, determines how we make sense of things, what we can know, and what we can say . . . they are the grounds on which we base everything, so we more or less take them for granted (Danaher et al., 2000: 17).}
\]

To clarify these concepts, this chapter provides in chronological order, an explanation of key tenets of ANT, followed by an outline of ANT’s ontological development from early conceptualisations (early or classic ANT) to more contemporary ‘after-ANT’ approaches. This development is reflected in the writing of the case studies and is important to understanding the ontological foundations of the methodology.

The first two case studies follow the ‘sociology of translation’ of early ANT, whereas the latter cases grapple with ontological issues of fluidity, multiplicity and complexity that distinguish after-ANT approaches.
A justification and critique of the methodological choice is provided toward the end of the chapter, followed by a detailed description of case study methods and a consideration of ethical issues and questions of rigour (e.g. trustworthiness of claims made) raised by this research.

**Concepts relevant to a study of innovation**

Often counter-intuitive to traditional research, key theoretical concepts in ANT are used in this study to theorise innovative pedagogies as sociomaterial practices (Sørensen, 2009: 12). The defining concept of ANT, translation, assumes that all actors in a network are translating, or transforming, the interests of others (Blok and Jensen, 2011: 48). An actor is a working entity (Fenwick et al., 2011: 98), or a flowing and circulating object (Mifsud, 2014: 5), that works on other entities to form and stabilise, or dismantle, a network (Fenwick and Edwards, 2010: 9).

Translation is a process that happens at the points of connection, or nodes in a network, as articulations occur (Figure 3.1). As Mifsud (2014: 5) writes, ‘at each connection, one entity works upon another to change it so it can become part of the network’.

*Figure 3.1: Nodes of translation in a network.*
Key to translation is the principle of ‘symmetry’ where all actors in a network – both human and non-human – are treated equally in the analytical process (Latour, 1987). As Sørensen (2013: 17) writes, agency in ANT can therefore be granted to anyone, or anything. In VET, students, teachers, managers, technologies, physical settings, learning resources, policies, power plays, tools, equipment and so forth are assumed ‘to be capable of exerting force and changing and being changed by each other’ (Fenwick and Edwards, 2012: 96).

The principle of symmetry challenges humanist philosophies (Maslow, 1970, Rogers, 1983) with their assumptions that it is humans who act on, and in, the natural world (as critiqued by Jackson and Mazzei, 2012: 113). This principle does not directly equate human agency with non-human agency, which might assume that objects, artefacts and materials can think or move by themselves. Instead, the principle of symmetry assumes that materialities have the capacity to change the ‘very fabric’ of the social collectives they are entangled within (Sayes, 2013: 138-139). Thus there are no differences between people and things (Nespor, 2012: 2) in ANT analyses.

The principle of symmetry also challenges well-established binaries between people and the naturalised environment and between macro/micro, true/false, content/form, large/small, agency/structure, before/after and knowledge/power. While binaries can (and do) come into being in VET practice, according to ANT these binaries do not exist in any a priori way (Law, 1999: 3).

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52 Fenwick et al (2011: 104) describe the agency of a teacher as an assemblage of different forces including actions, desires, capacities, connections, texts, technologies, buildings, etc. that circulate in practice.

53 Foucault (1980: 97) is similarly interested in how ‘subjects are gradually and materially constituted through organisms, forces, energies, materials, desires, thoughts, etc.’

54 See Law (2009b; 147) in particular, for a detailed explanation of the binaries of human/non-human, big/small and social/technical.
When they do exist, and are treated as separate, real and knowable phenomena, binaries become politically motivated effects which necessitate certain predetermined actions (Suchman and Bishop, 2000). Further, they harbour and conceal the controversies that foster innovation and the ‘boundary-making’ practices of the policies that define them (Fenwick et al., 2011).

‘Spatiality’, the third fundamental concept in ANT, challenges Euclidean understandings of space as a container in which objects are transported, and regions as areas to be divided (Law, 1999: 6). Where educators are conventionally understood to teach in a benign space that has no effect on their practice, space for ANT scholars is not a ‘container in which action takes place’, but is something that is ‘done’ (Mulcahy, 2006: 58) and that shapes and influences pedagogic practice. As McGregor-Wise (2011: 93) writes, we do not simply occupy space, we claim territories that are continually being made and unmade in networks of practice.

ANT predicates the existence of network space or spaces as performed through a network. Such networks are spatial configurations of heterogeneous actors brought together in an active relationship (McGregor, 2004: 353).

By paying close attention to spatialities, ANT dissolves the notion of ‘context’, while retaining the concept of ‘situatedness’ (Gherardi, 2000: 218). Actors are therefore thought to retain their ‘spatial integrity’ by virtue of their position in a set of relations (Law, 1999: 6). Latour (1987: 228) elaborates.

Most of the difficulties we have in understanding science and technology proceed from our belief that space and time exist independently as an unshakable frame of reference inside which events and place would occur. This belief makes it impossible to understand how different spaces and different times may be produced inside the networks built to mobilise, cumulate, and recombine the world (ibid., emphasis in original).
The fourth and more contemporary tenet underpinning after-ANT analyses is the concept of performativity mentioned earlier. Performativity views social reality as fluid and messy practices that are ‘full of competing social projects’ (Hamilton, 2013: 41). The concept draws on Foucault’s understanding of the performative nature of power and is used in ANT to explain how social projects become institutionalised in everyday practice (ibid.: 43).

In a performative world, nothing is fixed or sacred (Law, 2009b: 148) and realities are not made but done (Law, 2009: 6, emphasis in original). Therefore, once innovative pedagogic practices stop, so do their realities. The idea that reality takes many forms challenges the relativist assumption that one ‘all-consuming’ reality exists (in which there are many different perspectives). The concept of multiplicity fits with the constructivist paradigm of this study (Denzin and Lincoln, 2008: 24) and is explored further in the following section.

**Sociology of translation: Then and now**

Emerging through the work of Bruno Latour, John Law and Michel Callon in the early 1980s, ANT challenged traditional framings of scientific practices as a set of rational activities that exist outside social practices (Gad and Jensen, 2009: 61). Traditionally, sociologists would look for stable and ordered social interactions to study and then explain their stability using ‘macro level’ explanations of ‘structure, cultural norms, or class and gender differences’ (ibid.). Two distinct domains are evident in this approach – reality on the one hand and the knowledge of reality on the other (Law, 2007: 5, citing Latour, 1993).

In contrast, studies undertaken by Latour (1987), Callon (1986) and Law (1986) investigated what happens when human and non-human actors are induced to coexist in scientific networks (Latour, 1997). These early formulations of ANT, known as ‘sociology of translation’ (Callon, 1986: 224), set out to explain,

... what others say and want, why they act in the way they do and how they associate with each other.
Callon’s (1986) study of marine biologists as they attempt to arrest a decline in a specific scallop population in France, describes the complex web of interrelations that unfold as the biologists negotiate with other actors (fishermen, institutions and scallops) in order to convince them to comply with their plans. The web of relations shifts and changes in precarious processes of negotiation, translation and betrayal until, in the end, the scallop conservation project fails. As Law (2009b: 144) explains, to translate ‘is to make two words equivalent’.

But since no two words are equivalent, translation also implies betrayal: traduction, trahison . . . All it takes is for one translation to fail, and the whole web of relations unravels (ibid., emphasis in original).

From this study, Callon (1986: 223-224) concludes that translation is a process that transforms actors in certain ways to produce certain results, before it is a result. In other studies, Latour (1987) similarly resolves that people need other people, objects and materials to transform (or not) an idea or concept into a fact or innovation.

Four ‘moments of translation’ characterise Callon’s early work and early formulations of ANT. Known as problematisation, interessement, enrolment and mobilisation, the four moments (or stages) all must be realised if translation (innovation) is to succeed. A ‘moment’ infers a freezing of time that allows a researcher to scrutinise an event, and the ‘fulcrum of forces’ around which an event turns (Hamilton, 2013: 45). In particular, Callon (1981: 209) was interested in how forces create and sustain a precarious balance in the relations between them.
The translation process starts with ‘problematisation’, or problematic situation (Callon, 1981: 209), which defines who and what is involved in a network, and who and what is excluded from it (Hamilton, 2013: 45). A network begins when an ‘obligatory passage point (OPP)’ presents which frames an idea or problem in a particular way (Fenwick and Edwards, 2013).

An OPP in VET might be a unit of competency, or a quality indicator for example, that requires all actors associated with it (teachers, lesson plans, tools, administrators, supervisors, learning resources, facilities, quality regimes and so on) to come together, to abide by its rules, and ‘pass through it’ (Fenwick et al., 2011: 100).

An OPP not only defines the problem, it is indispensable to its solution (Callon, 1986: 204). Further, as each actor enlisted in the problematisation can agree or not to the plan, or redefine its goals ‘in another manner’ (ibid.: 207), it is a dual process of construction and deconstruction (Callon, 1981: 209).

The second stage in the translation process, interessement, describes the actions taken by an actor (an innovative educator for example) to ‘lock’ enlisted actors (learners) into their roles in order to stabilize the network (Callon, 1986: 208). The actors’ interests are made visible (Latour, 1987: 108) during this process as attempts are made to interrupt competing interests and associations in order to further consolidate relations (Callon, 1989: 211).

Interessement devices might be used during this stage to seduce the actors’ interests (such as using social media to engage young learners in VET programs). Interessement is successful when the network has settled, the validity of the initial problematisation is confirmed and the third stage, enrolment, is achieved.

OPPs or ‘nodes’ or a ‘nexus’ in a network can illuminate what is happening – particularly the workings of power and network development (Hamilton, 2013: 43).
The process to reach this point takes much negotiation, ‘trials of strength’ and ‘tricks’ by the principal actor (innovator) to strengthen alliances within the network and translate the actors in a particular direction (Fenwick et al., 2011: 100).

Further skill is required to convince actors to perform their new roles (Hamilton, 2013: 46) which not only tests new and fragile identities as they emerge, it requires a number of actions to stabilise new settlements. Gherardi and Nicolini (2000: 35) explain the precarious nature of the process.

Each of these actors may behave in a different way; it may ignore the thing, alter it, deviate its path, traduce it, supplement it, or appropriate it. With each passage, the translated item acquires energy that carries it further forward, and in this chain each actor modifies and adapts the item according to its own interests, and uses it for its own purposes (ibid.).

Once the settlement (network) has stabilised and the actors are ‘habituated into their roles’ (Bigum and Rowan, 2004: 220), and act as a ‘unified whole’ (Latour 1987: 131), the innovation/idea can be extended into other locations (Fenwick et al., 2011: 100). This signifies that mobilisation, the fourth stage of translation, is underway whereby actors in the network become representatives of the innovation/idea in other networks that are removed from the original translation process.

When mobilisation occurs and a fact, a technology, an idea, a product or practice is made durable and lasting, it is understood to be ‘black boxed’ and no longer innovative (Latour 1987: 131). Therefore, for an innovation to be successful:

1. Others have to be enrolled in its construction so they, ‘believe it, buy it and disseminate it’ over space and time; and

2. Their behaviour must be controlled in order to make it predictable which then allows the innovation to be moved along. If their behaviour is not controlled, other actors may sequester the idea, transform it beyond recognition to suit their needs, and claim it for themselves (ibid.: 108-109).
While a convincing theoretical explanation, the four moments are criticised in the literature for being too fixed and deterministic, for distorting and purifying the complexity of innovative practice and for ‘sedimenting’ theoretical frames on the data (Fenwick, 2013: 105). Despite these criticisms however, the moments prove to be highly useful in the four case studies following this chapter for tracing and analysing what happens in critical moments of innovation and change.

Equally useful is Latour’s (1987) concept of ‘immutable mobiles’ for understanding the effect of VET discourses on local pedagogic practices (Fenwick and Edwards, 2010: 23). Immutable mobiles are exemplified in Law’s (1986) study of Portuguese maritime voyages where the ships (immutable mobiles), as key actors in the network, hold a constant shape as they travel across space and time. The ships are not distorted or transformed in the translation process (Latour, 2005) as other actors are and as a result, work to stabilise inscribed work (and knowledge) and allow it to travel unchanged (McGregor, 2004:365).

Fenwick and Edwards (2010: 18) elaborate:

In effect, they [immutable mobiles] function as the delegates of other networks, extending the power of these networks by moving into new spaces and working to translate entities to behave in particular ways.

Two further concepts, ‘intermediaries’ and ‘mediators’ (Latour, 2005: 39), are also employed in the empirical analysis. An intermediary is a ‘thing’ that performs certain functions in a network without changing or acting on others, but which helps in the translation process (Fenwick and Edwards, 2010: 11). A textbook for example is an intermediary that transports ideas without transformation, but manages to embody and perform certain ordering arrangements (Gherardi and Nicolini, 2000: 335).
In contrast, a mediator transforms, translates, distorts and modifies the meaning of the elements it carries so, in effect, its input is never a good predictor of its output (Latour, 2005: 39). A pedagogic practice, a technology, or ‘anything that creates possibilities for connections’, can be a mediator (Fenwick and Edwards, 2010: 11).

Referred to as ‘tokens’ in earlier versions of ANT, mediators are of particular interest in this study as potential sources of innovation and transformation (Blok and Jensen, 2011: 171). As Mifsud (2014: 4) writes,

\[\ldots\ \text{mediators are entities which multiply difference and which should be taken up as the object of study.}\]

Later ANT approaches (after-ANT) reject the linear and structured processes in sociology of translation approaches in a shift to the language of performativity. In a performative view, innovating practices are understood to take place ‘day by day and minute by minute’ as they are generated and reproduced in practice (Law and Singleton, 2000: 775).

Innovative pedagogic practices are thus highly specific and multiple performances that produce different realities every time they are performed. Therefore, one educator’s reality may be completely different to another’s, depending on their specific settings and associations. The ‘turn to performativity’ in ANT shifts the interest in this study from epistemology (how knowledge is created) to ontological questions about what is real, and how reality is achieved (Mulcahy, 2013: 83). It also challenges key tenets of constructivism (or by default social constructivism).

56 A token, as Gaskell and Hepburn, (1998: 65) explain, constructs a network and is transformed by it. It is a product of the negotiations and the strengths of the links it has with other actors and the actions they take to shape and translate it to meet their different interests.

57 Social constructivism is also associated with centering human processes (consciousness, intention, meaning, intersubjectivity and social relations) (Fenwick et al 2011: vi).
While a constructivist (Blok and Jenson, 2011: 138), Latour (2005: 129) became increasingly critical of ‘constructivist’ metaphors for their inference of permanent and fixed structures (such as technology networks). These metaphors imply that an innovation is transported without any acknowledgement of the perpetual negotiations, compromises, trade-offs, persuasions and translations that happen along the way (Bigum, 2000). As Law (1999: 2) writes, a constructivist view portrays ANT as a ‘fixed, pinned down, rendered and definite’ methodology.

Latour (1999: 19) also criticises assumptions by social constructivists that one ‘province of reality’ exists as represented in macro explanations of culture, structure and context. The social, Latour writes, can only be explained as ever changing ‘circulations’ with ‘no zoom’ from macro structures to micro interactions. This understanding ‘entirely bypasses’ social constructivism and the realist/relativist debate (ibid.: 22).

The work of feminist scholars, such as Donna Haraway, Karen Barad and Anne Marie Mol, affirm that multiple realities exist instead of one single and comprehensive reality (Law, 2008: 637). Mol (2002) in particular, was instrumental in challenging the assumption that processes of translation generate a single coordinated network and a single coherent reality. Reality, Mol (1999: 75) concludes,

\[
\ldots \text{does not precede the mundane practices in which we interact with it, but is rather shaped within these practices.}
\]

According to Harman (2013: 2), what this means is that learning (innovation) is ontologically different depending on where, and how, it takes place. Practices of learning and innovation do not therefore take the same form.
Callon’s (1999: 193) study of strawberry markets in France affirms the concept. In this study, Callon finds that theory (economic theory in this case) is not real until it is ‘enacted’ in practice and when it is, the practice of buying and selling strawberries turns out to be very different to what theory assumes it will be. In order to understand how markets really work, Law (2009b: 151) writes,

\[\ldots\text{we need to trace how the heterogeneous material and social practices produce them. It is these that are performative, that generate realities (emphasis in original).}\]

‘Assemblage’, a word derived from the French word ‘agencement’, is adopted in after-ANT studies as an alternative term to ‘network’\(^{58}\) in order to capture the ontological concept of performativity, or the process of ‘becoming’ (McGregor Wise, 2011: 91). An assemblage is likened to Deleuze and Guattari’s (1987) rhizome (Latour, 1999: 15) with its unstructured and free flowing schema (Figure 3.2).

\[\text{Figure 3.2: A rhizomatic schema}\]

The rhizomatic schema contrasts with the hierarchical inverted tree or lattice structure of the arborescent schema (Figure 3.3).

\(^{58}\) Although Mulcahy (2012: 24, n2) notes that the two terms can be used interchangeably.
Network metaphors based on arborescent schemas cannot adequately explain how relations ‘assemble and disassemble’, and take form and change (Anderson and McFarlane, 2001: 125). Arborescent schemas exert power by situating entities in hierarchical relation to one another, ‘some near the trunk, others out on the edge, and in so doing, position(s) subjugation and domination’ (Arnold, 2007). Modernist organisational and management theories (and computer system designers) tend to be guided by an arborescent conceptual framework (ibid.).

The rhizomatic schema however ‘is what it does, and what it does is structurally underdetermined’ (ibid., emphasis in original). There are no points, positions or hierarchies in a rhizomatic schema. Further, multiplicities are by nature unstructured so an assemblage, with its rhizomatic schema that changes shape and nature ‘as it expands its connections’ (Deleuze and Guattari, 1987: 8), is a fitting metaphor.

*The concept of assemblage shows us how institutions, organisations, bodies, practices and habits make and unmake each other, intersecting and transforming: creating territories and then unmaking them, deterritorializing, opening lines of flight as a possibility of any assemblage, but also shutting them down* (McGregor Wise, 2011: 101).
In this study, the term assemblage is utilised to capture the complexities and multiple determinations of pedagogic innovation and related concepts of chaos, indeterminacy, turbulence, flow and so forth (Venn, 2006: 107). It would be exceedingly difficult to capture this complexity using an arborescent schema. Thus, a performative ontology and rhizomatic view are preferred in this study to the representational and arborescent approaches (Fenwick and Edwards, 2013: 50) that characterise much of the current research and policy practices in VET.

Defending the methodological approach

If as Hillier (2009) writes, pedagogic innovation in VET consists of many complex and surprising interactions, a positivist, science-based approach would clearly not be suitable for this study. As mentioned earlier, positivist leanings provide a way to get at the truth and explain the world well enough to predict and control it (Goulding, 2002:43). Positivism is evident in the received view (Mulcahy, 2000: 236), in the ‘category-based’ approach to research that informs VET policy (Rowan and Bigum, 2000: 2), in VET’s consuming interest in technological innovation (Tatnall and Gilding, 1999: 956), and in the way educators are judged in terms of their innovative capability (Fenwick, 2003b).

The problem with fixed universal theories, and the single truths of positivist approaches, is that they cloud perceptions of what is really happening (Pickering, 2008: 6). By not seeking universal theories and truths, ANT gives freedom to the researcher to modify the line of inquiry as new understandings and practices emerge. The interpretivist mindset allows the researcher to stay ‘close to the data’, and gives licence to participants to describe their experiences and have a say in defining and ordering the social (Latour, 1995: 23).
A subjectivist epistemology (where researcher and researched co-create understandings) (Denzin and Lincoln, 2008: 24) makes it difficult for a researcher to hold to hegemonic preconceptions about what is happening and to predict what might be discovered. As Hodkinson (2005: 118) writes,

... one way of understanding research is as a specialist form of learning – either learning something new about a phenomenon, or learning new ways to understand it. This places many of us in what I would term a non-realist and certainly non-positivist position.

The objectivist paradigm of VET policy is disrupted by constructivist challenges to VET educators being understood as ‘keepers of a universal knowledge (and skills) base’ and ‘apolitical and non-interventionist’ facilitators of learning (Skattebol, 2010: 75). Innovating educators are instead framed in ANT analyses as active mediators who are working with other heterogeneous mediators in complex, changing and political assemblages (Latour, 2005: 217).

ANT thus contests the humanist and cognitivist philosophies underpinning VET policy and research and learning theories including Behaviourism (Skinner, 1953), Cognitivism (Ausbel, 1963, Bruner, 1960, Gagne, 1965, Piaget, 1955) and Social Constructivism (Vygotsky, 1978). Humanist and Cognitivist philosophies are familiar in discourses in VET of personal autonomy, independent learners, self-directed learning, reflective practice and learner centred pedagogies. Cognitivism, in particular, associates learning with knowledge acquisition (Harris et al., 1995: 16) and is evident in the way VET policymakers seek evidence to make rational decisions about reform (Sørensen, 2009). Both philosophies

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59 It should be noted here that both co-creators of knowledge and understanding in the research process (researchers and researched) referred to here are equally at risk of holding to hegemonic assumptions that might skew the data.

60 Objectivist views contend that individuals are affected by, but are not fundamentally part of, their environment, and that they learn by constructing, circulating and consuming knowledge in independent and autonomous activities (Fenwick, 2001: 245-246).

61 I acknowledge in this statement that, as Behaviourism recognises that it is individual consequences of behaviour that can act to reinforce it, it might be claimed that this does actually sit within the tenets of ANT.
assume learning is an individual activity and underpin both education and innovation theory (Hellstrom, 2004).

Behaviourism (the theory of ‘operant conditioning’) is visible in VET’s ‘doing’ and ‘using’ approach to learning, the breaking down of work into atomised tasks, the use of formative assessment (where behaviours are shaped through feedback) and the disclosure of outcomes of learning before learning occurs (Harris et al., 1995: 16). Demonstration, observation and reinforcement are behavioural pedagogic strategies (Chappell, 2003: 2) where the goal is to transmit intact (as an intermediary) the intentions of the objective’s (policy) design (Hodge, 2014:12).

ANT gives license to challenge these theories and pursue the unexpected. ANT’s qualitative approach sanctions the researcher to know ‘something’ about the subject under question without claiming to know everything about it (Brady cited in Denzin and Lincoln, 2005: 960- 961). The constructivist paradigm of case studies (Stake, 2010, Yin, 2009) also supports the ‘close-up’ collaboration between researcher and participant and is, accordingly, highly suited to this study.

**Criticisms of ANT**

The most significant criticisms of ANT’s methodological approach focus on the tendency to follow the main or ‘big’ actors (Fenwick, 2012: 105), and large powerful networks such as educational policy (Hamilton, 2012), at the expense of less visible actors and smaller networks that may have agency. The practice of following the main actors not only sits in tension with the concept of a ‘decentred assemblage’ (Gad and Jensen, 2009: 58), it renders actors that do not fit a researcher’s assumptions about reality, potentially uninteresting or irrelevant and invisible (Fenwick and Edwards, 2010: 148). The effects of these actors on the practices under scrutiny are then erased or concealed from view.
Known as ‘Othering’ (Law, 2009b: 149), the possibility of rendering actors absent and unacknowledged is a significant risk to qualitative research findings. The point at which one enters an ANT study, and the point where a researcher ‘cuts’ the network (Strathern, 1996) to contain the size of the research, are decisions vulnerable to Othering.

Indeed, Yin (2012: 2) cites examples in early ANT studies where marginalised actors with agency were either ‘caught’ in between networks, or did not fit a standard ANT scenario. There are clearly difficulties in deciding which action to follow, where to stop following an actor and what might be missed as a consequence in an ANT approach. As Miettinen (1999: 181) argues, the infinite number of potential actors in a network makes these decisions almost impossible.

Decisions are also problematic when researchers ‘adopt the categories of their subjects, in order to frame their research’, as Fenwick and Edwards (2010: 104) explain.

Such choices presume that the thing under study already exists as a particular object with inherent attributes, causalities, consequences, and so forth. The ensuing research, then, will simply confirm the boundaries defining this thing rather than engaging in precisely what ANT is more interested in: exploring the micro-links and rivulets flowing within and across what we take for granted to be this thing or that (ibid.: 148).

Further critiques target early ANT’s tendency toward managerial, functional and gendered approaches to research which, according to Law (2009b: 149), are ‘often military in character’. The power that innovators need to translate the interests of others in order to innovate implies Machiavellianism, or human intentionality (Miettinen, 1999: 182). This not only muddles ANT’s principle of symmetry, it highlights the difficulties one has when accounting for human actors when using ANT analyses (ibid.). This difficulty plays out in the four empirical case stories following this chapter.
Case study methods

The choice of case study methods for this research is not surprising given that STS and ANT are grounded in empirical case studies (Law, 2007: 141). Case studies are an effective way to explore the ‘how’ and ‘why’ questions of ANT particularly in sites where the researcher has little control over the events under investigation (Yin, 2009). As Law has it, ‘theory is done in the form of case studies’ (2008: 630) as data are collected and analysed. And, as Mol (2008: 8-9) writes, case studies increase our sensitivity.

*It is the very specificity of a meticulously studied case that allows us to unravel what remains the same and what changes from one situation to the next. They do not lead to conclusions that are universally valid, but neither do they claim to do so. Instead, the lessons learned are quite specific (ibid.).*

The strengths in this approach, according to Yin (2009), lie in the close proximity between ‘researcher and researched’ and in the variety of evidence collected. Close up collaboration with participants can a prevent blind spots in the research and enrich a researcher’s learning (ibid.: 223), although being too close to participants can compromise the research’s integrity (Sørensen, 2009).

While case studies are useful for clarifying issues behind a given phenomenon, they are sometimes unsuitable when collecting large amounts of data (Yin, 2009: 229). Indeed Yin highlights how case studies can take too long and end in lengthy and often unreadable documents. Yin also warns of the danger (in randomised field trials in particular) of establishing a causal relationship between a particular educational intervention, and its effectiveness.

The validity of case study methodology is also at risk of researcher bias (that is the subjectiveness and arbitrary nature of a researcher’s judgement), and the potential for the researcher to subconsciously look for, and visualise, a particular phenomenon, particularly after reviewing the literature (Gustavsson, 2007: 69).
Flyvbjerg (2006: 223) argues however, that more often than not, case researchers find their initial preconceptions about a phenomenon are challenged by the empirical case material. Risks also lie in the tendency to draw generalisations from a single or limited number of cases (Flyvbjerg, 2006) and, as case studies often extend ideas through controversies, the potential for misunderstandings and misinterpretations of case data (Law, 2008: 7).

Like Lather (2006: 47) however, I view controversies as opportunities to locate myself squarely in the midst of the tensions that characterise particular practices. Hence, despite their potential shortcomings, case studies were selected for this study, firstly as they are integral to ANT methodology and more importantly, for the way they ‘inspire theory, shape ideas and shift conceptions’ (Mol, 2008: 8). The risks associated with this decision are discussed further in the following section.

**Selection of cases**

Five cases were originally selected for this study based on a small, multiple case design (Yin, 2009). The rationale behind this decision was to allow enough time to delve deeply into innovating experiences and to ensure sufficient diversity in case sites, within the study’s constraints. Diversity in cases can ‘head off’ duplication of data across similar educational settings and provide the opportunity to compare and contrast cases (ibid.).

When recruiting the participants in each case, managers and colleagues in the Victorian VET sector were emailed and telephoned to request their recommendations for educators with a reputation for pedagogic innovation. This approach avoided reliance on the researcher’s subjective knowledge and the risk of personal favouritism and bias in the selection process.

From the twelve recommendations received, five cases were purposively selected to ensure sufficient diversity in location, type of institution, industry discipline and pedagogic delivery. A purposive approach, according to Flyvbjerg (2006: 230), avoids cases being coincidentally similar as might occur when they are selected randomly. The final selection was made according to the criteria in Table 3.1 and the potency of each case with regard to the research questions.
<table>
<thead>
<tr>
<th>Type of institution</th>
<th>Type of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classroom</td>
</tr>
<tr>
<td>1. Large public VET institution</td>
<td></td>
</tr>
<tr>
<td>2. Adult and community education institution</td>
<td></td>
</tr>
<tr>
<td>3. Industry Association</td>
<td></td>
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<tr>
<td>4. Enterprise training institution</td>
<td></td>
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<tr>
<td>5. Private training institution</td>
<td></td>
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</tbody>
</table>

Table 3.1: Matrix of case selection

To ensure the educators had sufficient knowledge of VET practice and policy contexts, participants with more than five years’ experience in VET, and who were willing to participate in the study, were selected. The educators were initially contacted by telephone to ascertain their interest. Four of the five educators approached agreed and were sent an email with a Plain Language Statement (Appendix 1) outlining the study and what was required of them and a Participant Consent Form to obtain their written permission (Appendix 2).

The email also requested details of a manager or supervisor who could be contacted to obtain their organisation’s permission. The supervisors were contacted by telephone and sent a Plain Language Statement and Consent Form (Appendix 3 and 4 respectively) by email. It took some time to secure the fifth participant (from a private training organisation) due to sensitivities around the confidentiality of commercial information. Gender and age were not considered in the selection criteria.
The five confirmed cases are outlined below in Table 3.2.

<table>
<thead>
<tr>
<th>Location</th>
<th>Industry</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Large public VET institution</td>
<td>Education</td>
<td>Certificate IV in Training and Assessment</td>
</tr>
<tr>
<td>2. Community and adult education</td>
<td>Adult and community education</td>
<td>Certificate in General Education for Adults</td>
</tr>
<tr>
<td>3. Industry Association</td>
<td>Plumbing</td>
<td>Certificate IV in Plumbing and Services</td>
</tr>
<tr>
<td>4. Enterprise training institution</td>
<td>Construction</td>
<td>Licence to Perform Dogging</td>
</tr>
<tr>
<td>5. Private training institution</td>
<td>Hospitality</td>
<td>Certificate II in Commercial Cookery</td>
</tr>
</tbody>
</table>

Table 3.2: Confirmed selection of case studies

The cases are not considered to be representative of ‘good’ innovative pedagogic practice in their specific setting, or innovation generally across the broader VET sector. The phenomenon under study (unit of analysis) in each case is the innovative pedagogic practice of VET educators.

**Data collection**

The five educators were asked to participate in an online survey, an individual interview, an observation of practice and a focus group. However, as the dispersed locations of the participants made the focus group difficult to implement, it was abandoned toward the end of the data collection phase. The data obtained from the survey, interview and observation were deemed more than sufficient to address the research questions.

The data were enriched by relevant documents, records and artefacts including policies, diary notes (researcher), project reports, curriculum, learning resources and company, government and VET institution websites. Multiple ways of collecting data and different sources of evidence are typical of case study methods and provide validity in the data collection (Yin, 2009) through triangulation and corroboration of phenomena (Yin, 2006).
The online survey (Appendix 5) was designed to collect general data about the participants’ innovating practice and work environment. Each participant completed the survey in their own time prior to the interview. This preliminary survey shortened the time required for the interview and provided an opportunity for the participants to reflect on their practice in preparation. The individual interviews were guided by a series of protocols (Appendix 6) and open ended, and focused, interview questions (Appendix 7) based primarily on Yin’s\textsuperscript{62} (2009) level 2 questions (the ‘how’) to obtain ‘good answers’.

The interviews were semi-structured to allow the assumptions (by all parties) to come to the fore and enable negotiation about how these assumptions might affect the study. The interviews were recorded (with permission) and then transcribed before being analysed using qualitative methods as described below. On completion of the interview for the fifth case, the data indicated that the case site was unsuitable and would be too limited to address the research questions.

In the four remaining cases, interviews were followed by direct observation of each participant’s innovative practice. Detailed field notes were made during the observations to capture the conversations, actions, facial expressions, bodily reactions and actions of people and materials as they unfolded. Photos were taken as further data which proved critical to the analysis process. Students were asked to complete forms granting permission for their photos to be taken when required.

Once collected, a preliminary analysis of the field data was undertaken to determine if additional data might be required. Particular attention was given to the possibility of Othering to lessen the risks inherent in cutting the network (Strathern, 1996, cited in Gab and Jensen, 2009: 77) and ceasing data collection. Notes were made about where and why these specific actions were undertaken.

\textsuperscript{62}Yin (2009) identifies five levels of questions: (1) for specific interviewees, (2) the individual case, (3) questioning the pattern of findings across the cases, (4) questioning the entire study beyond the case evidence, and (5) normative questions about policy recommendations and conclusions.
When data collection was completed, each case was written up in a narrative ‘case story’ capturing in detail the rich and complex performances of pedagogic innovation. In some cases, incidents, gestures and facial expressions came to view as the cases were written that were not recorded when the data were collected. The data collection and note taking activity was so busy at other times, there were inevitably incidents and instances overlooked and missed altogether. As McCoy (2010: 618) writes,

There is always something else, something is left out, many somethings decidedly there working meaning-making and defying meaning, (un)making sense and creating, emanating, inhibiting, and inhabiting sensation.

The case stories following this chapter capture my experiences in the data collection process. In the most memorable instances, I was drawn into the innovating assemblages as a participant (Sørensen, 2009: 25) and actively contributed to the action as it unfolded. These experiences are narrated with all this complexity in a ‘conversation’ between theory and data (Hamilton, 2012: 40). A draft of each case story was provided to the participants to check that their practice was adequately captured. In the final version, place locations and names of teachers and students were altered as requested to ensure confidentiality.

Data analysis

The analytical work commenced as the data was being collected in order to enable theory and practice to be explored together (Law, 2008: 625). This was not, as Barad (2007: 51) writes, a matter of ‘gazing on something as a neutral spectator’, as much as an iterative process of becoming ‘one with the data’, or reading the data ‘diffractively’. Hultman and Lenz Taguchi (2010: 537) explain.

Reading the data ‘diffractively’ activates the researcher as part of the event of reading and becoming-with the data and analysing what is produced – not uncovering what happened in an event (ibid.).
The process of ‘becoming-with’ the data (Barad, 2007: 88) is an enriching and defining feature of this study. As Jackson and Mazzei (2012: 115) write, diffraction ‘moves us away from habitual normative readings’ to patterns of difference. A researcher then becomes,

... part of and a performative agent in an event where her/his bodymind perceptions and sensations move like a wave flowing in-between different qualities: the researcher is trying to say something about the entwined relationship and mutual transformations in this flow of encounters taking place, rather than trying to reveal and incarnate a specific phenomenon or quality of ‘being in the world’ (Hultman and Lenz Taguchi, 2010: 537, emphasis in original).

After being written, each case story was interrogated using Perillo’s (2007: 74) simple question: ‘what is this a case of?’ followed by Bigum and Rowan’s (2004: 220) question, ‘how did it get like this?’ and finally, ‘what does the case say about the four research questions?’ The analysis paid close attention to the social, discursive and material practices in order to investigate how innovating practices take shape, how they got to be what they are, how they compare with discourses of VET pedagogic innovation and how they might be fostered and sustained.

A semiotic\(^{63}\) method of content analysis was used to track the interrelationships between actors and the patterns they formed (Law, 2009). A comparative analysis of the four cases was made toward identifying common patterns with respect to practices of the social, discursive and material. In the first two cases, moments of translation were frozen and analysed in terms of what happens to bring about a transformation (Mulcahy, 2012: 15) in pedagogic practice. These moments were taken to be ‘nubs’ of innovation which can harbour new and surprising ideas and practices.

\(^{63}\) Law (1999: 4) describes ANT as a ‘semiotics of materiality’ where semiotics refers to the relationality of entities, and the notion that they are produced in relations between the social and the material, and not just through language alone.
Transcripts of interviews and observation notes were read a number of times in conjunction with workplace documents, project reports, policy documents, organisational websites and curriculum material. Due attention was paid to their accuracy and subtle bias (Yin, 2006). Once the cases were written, they were read ‘against one another’ as ‘contrastive case examples’ (Perillo and Mulcahy, 2009) in search of commonalties and differences. Looking for repeating patterns in the data highlights actors in common (such as power, for example) and, as Latour (2005: 23) writes, moves the analysis ‘one step further into abstraction’.

Mol’s (2008: 8) ‘logics of practice’ were utilised to analyse how some innovating practices appear to ‘hang together’ in particular and more coherent ways. This analytical approach does not discount the many differences and contradictions or potential tensions between the different pedagogic practices in the cases, as much as acknowledge that different practices materialise in different and complex ways (Law, 2009: 13). Interim interpretative notes were made at the end of each case story to inform the discussion chapter (chapter 8).

Limitations of the study

Efforts to categorise patterns of innovating activity might be viewed as an attempt to find essentialist descriptions of innovation which would clearly contradict the poststructuralist research framework of this study. Barad’s (2007) principle of ‘reading diffractively’, or ‘seeing with the data’, was utilised throughout the research process to mitigate this limitation.

The small number of cases might also be considered limiting to the findings. It is however, not the intention of this study to find definite solutions or conclusive answers to the research questions, or to identify an overarching theory about pedagogic innovation in VET. Alternatively, the small number of highly detailed case stories might be deemed to be suited to this study’s pursuit of emergent understandings of innovative practice and ‘interpretations of my own’ (Mol, 2008: 10).
Nevertheless, as Denzin and Lincoln (2005: 961) write, methodologies that allow me to ‘have plenty to say’ as a situated and subjective speaker also give rise to a potential for bias, subjectivity and arbitrary judgement that can impact on the validity and reliability of the research (Flyvbjerg, 2006).

**Issues of trustworthiness**

Indeed, many of the assumptions I brought to this study were tested by participants’ feedback and practices of reflexivity. Reflexive practices, as Perillo (2007: 39) reminds us, acknowledge that a researcher has ‘habits of the mind as well as habits of method’ and thus can be an active constructor of data. Schwandt’s (2001: 73) advice for researchers is to take into consideration the reasons why actions are taken and to be aware of the ethics, epistemic premises and politics entangled in the research process.

Accordingly, in the data chapters that follow, I give consideration to different perspectives in the analyses including the emic (how the participants view the phenomenon), the etic (the viewpoint of the researcher as an outsider with interpretations of the participants’ perspective) and the negotiated (the perspective which is settled between these two) (Drew et al., 2008).

The etic view – my assumptions as a researcher and how I am positioned in the research – had the greatest potential to limit this study. As Green (2013:1) warns,

> . . . what stories we are told, how they are relayed to us, and the narratives that we form and share with others, are inevitably influenced by our position and experiences as a researcher in relation to our participants.

Case studies, according to Flyvbjerg (2006), are no less rigorous than other research methods in this regard. One of the advantages they provide is the opportunity for close collaboration between researcher and participant which

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64 While acknowledging the importance of reflexivity in qualitative research, I am aware that the concept has human-centric assumptions that sit in tension with the sociomaterial perspective of ANT.
allows participants to tell their stories and researchers to better understand the participants’ actions (Lather, 1992, cited in Baxter and Jack, 2008). Indeed, one might argue that a researcher’s assumptions, and the methodological ‘moves’ they make (most particularly when collecting and writing up data), are integral to effective qualitative research.

Sørensen (2009: 21) however, cautions against a researcher becoming too close to participants and assuming the role of an ‘observing participant’ with an ‘immersed engagement’. While Sørensen argues that close engagement can achieve an ‘everyday’ quality to a study, her reflections on her own study reveal that immersed engagement by a particular researcher established a ‘certain pattern of relations’ which narrowed the researchers’ perspective and limited the overall view of the phenomena under study.

In Sørensen’s view, researchers need to maintain a delicate balance between ‘participating and observing’, while focusing on ‘what is happening’. If the distance is too great, Barad (2007) writes, there is a risk of an epistemological gap between knower and known. If the distance is too small, the data can be skewed in the researcher’s favour.

This risk of ‘immersed engagement’ is particularly true for the ‘insider-researcher’, which I am to an extent in this study. An insider-researcher is one who studies his or her social group, organisation or culture and who shares identities and ‘profound experiences’ with the community under study (Green, 2012: 2). Conversely, an outsider-researcher does not belong to the group and has relatively little experience of the research setting or practice.

Clearly I hold prior knowledge and understanding of VET and VET teaching practice gained through many years’ experience in teaching and management roles in the sector. However, the considerable time I have spent out of direct contact with teaching practitioners since then has afforded a degree of detachment and distance from the participants in this study. This makes me, as Chavez (2008 cited in Green, 2013) writes, a ‘partial’ rather than full insider, or full outsider-researcher.
Green (2013), Hanson (2013) and Unluer (2012), all of whom have experience as insider-researchers, describe a number of advantages in undertaking insider-research. Insider-research is particularly beneficial when designing an educational study, when accessing research sites and data and when defining the researcher’s role to participants (Unluer, 2012: 10).

Insider-researchers tend to speak the same insider language, have an understanding of local values, knowledge and taboos and are better able to navigate formal and informal power structures (ibid.). Being in close proximity to participants, and the action as it unfolds, also provides opportunities to collect data at any time in spontaneous and informal interactions.

Indeed, my insider knowledge enabled me to orientate myself quickly to the research settings without creating too much disturbance or distraction (Green, 2013: 3). Furthermore, my familiarity with the demands and perils of innovative practice prompted ‘meaningful questions’ to participants and enhanced my capacity to ‘read non-verbal cues’ (Green, 2013: 3).

However, notwithstanding these advantages, and an acute awareness of the risks associated with being too familiar with the setting, making assumptions skewed by past experience and projecting my views onto participants or the data analysis, I found it difficult to maintain a suitable distance between observation and participation.

Clearly, as the narratives reveal, I was inextricably drawn into the relations and practices which must have influenced what the participants disclosed and the way in which they delivered the information (Green, 2013: 10). For example, I experienced a greater degree of familiarity with the participants in the first two cases in comparison with cases three and four. The familiarity promoted greater trust between researcher and researched which, as Unluer (2012: 1) claims, is more likely to promote ‘the telling’ of truth. The close positioning contrasts with the ‘awkward position’ (Green, 2013: 10) I found myself in case four in regard to sensitivities about my safety as an outsider and the disclosure of commercial information.
The varied positioning I experienced as a researcher resulted in considerable doubt and uncertainty during the narration of the cases and analysis of the data. Reoccurring questions challenged the process: are the participants telling me what is really happening or what they think I want to hear? Do they think I am judging their performance? How might this influence the way they are telling their stories? Am I colluding with the participants (in the first two cases in particular) rather than critically interrogating their stories? What assumptions do I bring to this research setting?

My doubts reflect the challenges of a ‘dual identity’ that can be associated with insider-research. The uncertainty, as Hanson (2013: 391) explains, is not unusual in qualitative research,

... many insider researchers writing about their experiences illustrate the fluidity of their role and the impossibility of adopting an absolute position of being either insider or outsider.

Thus, I concede that insider bias exists in this work. However, as Green (2013: 4) asserts, bias can be a source of insight as well as a source of error or doubt. Furthermore, the risk of bias pertaining to incorrect perceptions and assumptions on my behalf could also exist if an outsider-researcher undertook the same study. Indeed, I have argued that bias has existed in VET when researchers have been positioned too far from the socio-material setting of VET educators and have held to long standing assumptions about what educators do as a result.

Nevertheless, I took significant steps to reduce the risk of being positioned too far from the participants or, at the other extreme, ‘going native’. Practices of reflexivity and diffractive reading of the data (Barad, 2007) were engaged to safeguard and ensure the trustworthiness of the research. Reflexivity, according to Green (2013: 5), involves identifying and recognising similarities and differences that I might have with the participants in this study and,

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65 ‘Going native’, a term associated with anthropology, participatory research, and ethnography, occurs when a researcher adopts the traits of people around them and of those under study (Green, 2013: 5, citing Sikes and Potts, 2008).
The sharing of elements of the research with my supervisor and colleagues strengthened this process. I was compelled through their feedback to critically analyse how my assumptions might skew the analysis.

One significant assumption was my positivist desire to present conclusive findings from the data. Indeed my wrestle with positivist leanings throughout this study posed a significant risk to the trustworthiness of the research. Like McCoy (2010: 616), when I commenced the research, I had a misguided certainty about what I expected to find. The risk was that my ‘take’ on the data would ‘mutate into an unproblematic truth’ (Gab and Jensen, 2009: 77).

McCoy’s (2010: 621) description of research as a ‘geological encounter with terrain that is always in the process of becoming’ was a catalyst in challenging this assumption. As McCoy (2010: 618) explains,

> Entering through the cracks, I am struck by where things are already breaking up and interested in unhinging thinking from usual habits to consider what our explanations of addiction produce and to chart different territory, creating different possibilities for insight and action.

‘Cracks and fissures’ in VET pedagogic practice became an allegory for the research and for major epistemological and ontological change. Other methods employed to address ethical issues of confidentiality and the credibility, dependability and security of data (Denzin and Lincoln, 2008: 24) are summarised in Table 3.3 below.

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66 McCoy’s use of the metaphor ‘cracks and fissures’ is set in the context of her study of alcohol and drug addiction.
<table>
<thead>
<tr>
<th>Ethical Issue</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confidentiality</strong></td>
<td>• Informed consent was obtained from participants and their organisations;</td>
</tr>
<tr>
<td></td>
<td>• Participants and their organisations are not identifiable unless requested.</td>
</tr>
<tr>
<td><strong>Credibility</strong></td>
<td>• Voluntary participation by educators;</td>
</tr>
<tr>
<td></td>
<td>• Purposive sampling of cases.</td>
</tr>
<tr>
<td><strong>Dependability of data analysis</strong></td>
<td>• Sufficient time was allowed in each research situation to allow the researcher to orientate;</td>
</tr>
<tr>
<td></td>
<td>• Multiple sources of data were collected;</td>
</tr>
<tr>
<td></td>
<td>• Multiple readings of the data;</td>
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<tr>
<td></td>
<td>• Diffractive reading of the data (Barad, 2009);</td>
</tr>
<tr>
<td></td>
<td>• Regular consultations with my supervisor;</td>
</tr>
<tr>
<td></td>
<td>• Feedback on draft chapters as they were written.</td>
</tr>
<tr>
<td><strong>Confirmability</strong></td>
<td>• Reflexive methodologies;</td>
</tr>
<tr>
<td></td>
<td>• Feedback from participants on case stories.</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>• A secure case study database;</td>
</tr>
<tr>
<td></td>
<td>• Raw data and data reporting and analysis kept separately within a file for each case;</td>
</tr>
<tr>
<td></td>
<td>• Data were securely stored in locked files (electronic and hard copy) to be destroyed according to the University of Melbourne protocols.</td>
</tr>
</tbody>
</table>

*Table 3.3: Methods to ensure the trustworthiness of the research*
The rich, emergent, qualitative and interpretive approach of ANT plays out in the following data chapters. The cases are not taken to be representative of innovative pedagogic practices as much as examples of what is potentially ‘acceptable, desirable or called for’ (Mol, 2008: 8) in particular VET settings. Each case stands as an exemplar of both innovative and ‘good’ pedagogic practice. The distinction between the two warrants further discussion about what counts as innovation in each case and how this might differ from standards adopted in Australia and internationally that specify how VET should be practiced. The distinction is discussed in Chapter 9.

At this point however, without empirical evidence the actors in the four cases of innovative assemblages are yet unknown, so it is impossible to anticipate how the practices will unfold (Gad and Jensen, 2009: 76). The richness in this approach is ‘not knowing’ what new and surprising insights are to be discovered in the fissures, cracks (McCoy, 2010) and ‘still undecided controversies’ (Latour, 1987: 132) of (pedagogic) innovation.
Chapter 4: Innovating through problem based learning.

The education industry at work

Introduction

The first case story in this study tells the tale of an innovative VET educator using problem based learning (PBL) to teach other VET educators in a traditional classroom setting. Based on real world problems, PBL is recognised as an innovative pedagogy that promotes self-directed learning (Mitchell et al., 2003: 2) and problem solving skills in learners (Mossuto, 2009: 7). Problem solving is clearly linked with innovation in the literature (see for example, Kanter, 1984, Drucker, 2004, Fenwick, 2001, Hillier and Figgis, 2011). Fenwick (2001) in particular refers to innovation as a ‘way of being’ in continual problem solving activities.
In this case, Callon’s (1986) four moments of translation are used to analyse innovative practices ‘in the making’ and uncover moments of innovation as they emerge. Under investigation is the ‘who and what participating in the learning’ (Sørensen, 2009), and the mediators making ‘other mediators do things’ (Latour, 2005: 217).

With criticisms of Callon’s moments of translation in mind, I heed Fenwick and Edwards’ (2010: 104) advice to avoid ‘slavishly’ imposing the moments on the data, toward appreciating that ‘translation is ongoing, iterative and disorderly’. To avoid Othering, I view the networks as a ‘field of forces’ until the processes and relations have unfolded and the actors have come fully into view (Sørensen, 2012: 118-122). Only then, Sørensen writes, can one analyse how the actors have contributed to the experience. In relating the cases, I take my lead from Hamilton (2012: 40) who holds a ‘conversation between theory and data’ when using the four moments.

**Locales and controversies**

The locale for this case story is a large metropolitan VET institution in Melbourne, Victoria, where Thomas, an experienced educator, is teaching other VET educators as they upgrade their teaching qualifications from a BSZ40198 to the Certificate IV in Training and Assessment (TAA). The latter qualification is the minimum requirement for VET educators in Australia, as stipulated by the Australian Quality Training Framework (AQTF) in the ‘Essential Conditions and Standards for Initial Registration and Continuing Registration’.

Teaching qualifications in VET are a contentious issue in Australia. Debate rages over the adequacy and intrinsic worth of a Certificate IV as a minimum qualification for educators (Clayton, 2009, Guthrie, 2010, Wheelahan and Moodie, 2011). The qualification’s predecessor, the BSZ (also a Certificate IV), developed a reputation for highly variable quality and, being primarily designed for workplace trainers, was deemed unsuitable as a generic teacher.

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67 The BSZ40198 is now an outdated training package for VET educators (Guthrie, 2010: 10).
68 The Australian Quality Training Framework comprises the national standards for VET institutions to operate in the system.
qualification (Guthrie, 2010: 10). The Certificate IV TAA, its replacement, is also under scrutiny for a lack of focus on pedagogy and an excessive focus on instrumental aspects of CBT (Wheelahan and Curtin, 2010: 35). Given all VET educators must have this qualification, these are troubling issues for policymakers, training providers and educators; most particularly for highly experienced and qualified educators.

This was precisely Thomas’ problem (atatisation). Many of the educators in his class have higher qualifications (degrees, Masters and PhD’s) and are reluctant to undertake a Certificate IV. Their reluctance, as Thomas observes, is due to being forced to undertake the upgrade without recognition of their many years of teaching experience in VET and other educational sectors. Engaging these teachers for three days is a challenging task.

Another challenge, common to educators in formal educational settings, is how to make the learning experiences authentic, or real enough, to reflect the skills and knowledge required for work. Thomas uses PBL as a scaffold for a range of other spontaneous pedagogies to overcome these challenges (and the educators’ resistance) and engage them in the learning experience.

The class is being delivered in the vocational education arm of a dual sector university69 which has a strong focus on work integrated learning (WIL). WIL is a pedagogic approach increasingly adopted in higher education in response to employer demands for work ready graduates and student aspirations for employment (Patrick et al., 2008). The University’s WIL policy promotes ‘learning by doing’ (in context and with feedback) in so-called real and simulated contexts where students work in teams on structured activities70 with their relevant industry and community.

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69 Dual sector universities have substantial numbers of students in both VET and higher education, and also undertake research (Moodie, 2010: 4).
70 WIL activities might include workplace projects, work placements, internships, field education, industry and community projects, cross disciplinary projects, work with clients, role plays, industry mentors, product research and development for clients, competitions, and research (Patrick et al, 2008).
A tale of mirroring industry

Antecedent tales of Thomas’ teaching career provide insight into his innovative practice. Coming to VET from an advertising career, Thomas commenced teaching an Advanced Diploma of Business (Advertising and Public Relations) to marketing students but soon found the delivery styles at the time did not ‘sit well’ with his industry experience.

*It was so teacher centred. I was supposed to be the fountain of all knowledge. It was as if I was saying to the students, you are here to learn what is in my brain and I’m going to tell you.*

Thomas admits his understanding of pedagogies was limited at the time. However, through formal educational studies he ‘discovered’ PBL and, by ‘playing round’ with PBL pedagogies, soon found they resonated with his advertising practice and identity.

*All of a sudden, I didn’t have to have one way communication with students. I could engage them by questioning and setting particular problems which is exactly what I was doing in industry. I was mirroring industry to give the students a real perspective.*

Something happened at that time that made a difference for Thomas and produced an ‘effect’ which altered the course of pedagogic events and his pedagogic practice. A series of articulations, or transformations, stuck with him over his teaching career and became ‘indelible’ (Nespor, 2012).

Thomas introduced PBL by questioning his students, putting different problematic scenarios to them, and challenging them to work together to find solutions. Over time, his practice changed from ‘disseminating information’ to facilitating collaborative, participatory, experimental and exploratory learning. He invited representatives from industry (advertising agencies) into the classroom to pose real problems for his students and provide feedback on their performance.
It was high level stuff. This was not a classroom; it was industry. The students were not reporting to me; they were reporting to a client. So it’s real. I made it real. I brought the outside world in. I reflected advertising. I was advertising.

Thomas observed his students slowly develop the capability to think analytically as they searched for solutions to his challenging and ill-defined problems. As their understanding of the problem advanced, he found they could hypothesise about a range of possible solutions and, in doing so, identify what they needed to learn. The experience, Thomas argues, gave them the skills, and industry relevance and currency they needed to become ‘job ready’ graduates.

I influenced them, pushed them to take risks in a relatively safe environment. I let them make mistakes here so they didn’t do it out there.

Thomas continued to learn PBL theory in a Masters of Education and enriched his practice as he progressed in interplay between theory and ‘what was most applicable to the learners’. There were many actors entangled in this process – academic work, policy (WIL, VET and institutional policies), competency standards, quality requirements, students, problems, pedagogies, industry networks, and so forth. Some of these actors are visible in the empirical data, others are implied and all had effect on his innovative practice.

In ANT terms, the action is ‘a conglomerate of many surprising sets of agencies that have to be slowly disentangled’ (Latour, 2005: 44) if one is to fully understand the practice and the forces impacting on it. Some actors bring larger and more stable networks to the local settings such as the AQTF, training packages, educational qualifications and the University’s WIL policy which, having remained largely intact over time, are immutable mobiles in the network’s activities (Latour, 1987). Also at play are a myriad of other less durable networks such as those involving industry, educators and students.

In effect, Thomas had assembled a range of actors and held them together long enough for translation to occur. By bringing industry into the classroom, Thomas
extended his network beyond its original boundaries and, by so doing, reconfigured the existing web of relations. This action was successful because it met the University’s interest in WIL, industry’s interest in obtaining work ready graduates and the learners’ interest in obtaining employment once they graduated. Through complex and multiple negotiations, translation work was happening between the ‘outside’ world of industry and the ‘inside’ world of the classroom.

By linking learning directly with work, Thomas’ pedagogies were thus practice-led (Fenwick and Edwards, 2010: 41) and innovative in the way they pushed and tested the strengths and boundaries of traditional pedagogic networks. Throughout the process, Thomas, his students, industry and the course itself were co-evolving into something new; new knowledge, new pedagogies, new relations and new identities. Consequently PBL was central to Thomas’ dual identity as educator and industry professional.

*Industry knew me and looked for my students. They respected that I challenged the students to think – not around the norm, but around the abstract because there are so many different variables that will come into what they do in their new work.*

Thomas’ innovative practice was seeded in 2004 and well established by the time this research was undertaken in late 2012. The process of becoming a PBL ‘expert’ however was long and difficult. In the beginning Thomas felt his innovative attempts were threatening to his peers ‘because they were new or at least new to them’ and disrupted the normal way of doing things. The tension remains the case in his current practice where ‘a lot of them still see me as threatening’. While no longer working with marketing students, Thomas’ challenge now is to teach VET educators in the qualification upgrade which unfolds in the following section.
Innovation in motion

Seven educators from a range of disciplines (architecture, electrical, sound engineering, cookery, screenwriting and professional writing) are undertaking the qualification upgrade. To achieve the Certificate IV, the educators need to successfully complete a number of units of competency in a three day program by demonstrating a skill in a short training program, producing a portfolio of evidence and completing a work based project when they return to work. The group convenes on day one of the program in a classroom setting which, on first impressions (Picture 4.2), promises a traditional educational experience.

Picture 4.2: The politics of classroom spaces

Thomas commences the day with an overview of CBT, training packages and VET policy in a traditional delivery style. Standing at the front of the classroom, he outlines what the educators are required to do to successfully complete the program, and steps them through a comprehensive set of print and electronic resources he provides to support their learning. At this point, a tenuous network has formed where the actors - the ‘who and what’ in the network - have largely been identified (Hamilton, 2012: 45). It might be said that Callon’s (1986: 204) first moment of translation, ‘problematisation’, is underway.
An obligatory passage point\(^{71}\) (OPP) (Latour, 1987) has presented (the compulsory qualification upgrade) where Thomas and a range of other actors are now indispensable to the solution. According to Hamilton (2012: 43), OPPs are of particular interest for the way they illuminate workings of power.

Power is understood here as both a productive force that enables the formation of the network, and a constraint in the way it defines the problem, and its solution, in a particular and potentially polarising way.\(^{72}\) The compulsory upgrade is but one powerful and political actor in play. Indeed Thomas is embroiled in highly complex political entanglements involving educational policy, institutional compliance and the varied expectations (and reluctance) of the educators.

A less visible, but equally powerful, actor is Thomas’ desire to persuade the educators to bring about change in their educative practice. His view, similar to the policy prescription, is that the educators’ need to continually improve how they teach. As he reflects,

\[
I \text{ don’t want them to change the world; I just want them to improve one aspect of their practice. And if they do – I have succeeded.}
\]

While policy, curriculum and university rules lend force to Thomas’ innovating network (Fenwick and Edwards, 2010) and are shaping relations as they form, the strength of relations in the network is yet to be tested. The scene is set for a series of ‘trials of strength’ that will determine the solidity of the problematisation (Callon, 1986: 207) and the ultimate success of Thomas’ innovating efforts.

\(^{71}\) An OPP frames an idea or problem in particular ways as a network is established (Fenwick and Edwards, 2013). In this context, the OPP (training packages, the upgrade) requires all networks associated with it (such as teachers and their lesson plans and tools, administrators and supervisors, learning resource developers and so on) to pass through it (ibid.).

\(^{72}\) This statement draws on Foucault’s notion of power as something that is exercised and not a latent capacity or possession (Law, 1986: 16).
**Tenuous beginnings**

Problematisation is tenuous and precarious work. The educators' reluctance is evident in their body language and overt challenges to the proposition put by Thomas that their practices need to change. Early on, one participant argues that with a PhD, the class will be a waste of time. ‘Why are you going to assess me when I have been doing this for 20 years?’ she demands. As a mediator in this moment, resistance is impeding both the learning process, and the second stage of translation, ‘interessement’ (Callon, 1986). Otherwise, the educators would be accepting Thomas' framing of the problem and ‘want what he wants’ (Latour, 1987: 108). Instead, they are looking for the most expedient way to obtain the qualification upgrade.

The space is thick with conflicting interests and tensions as each actor selects what, in their eyes, will help them attain their goals. The work for Thomas is to ‘displace’ or interrupt these interests and allow the translation process to proceed (ibid.). He introduces the work based project to the educators which requires them to design a training program for an industry client. He starts by posing a problem and, without an ‘outside world’ to bring to the classroom, takes the role of the industry client.

The educators break into 'pods' to work on the project. Thomas circulates between the pods answering questions with more questions and prompting, and challenging, each group’s thinking.

> They say to me, how do I do this? I ask them ‘well – what do you need to know?’ That starts the conversation about why we are doing this and sets the tone.

To design a training program, the educators need to determine their client’s business needs and then ‘unpack’ and repackage units of competency from relevant training packages. The work is unfamiliar and creates unease amongst the pods. Thomas continues to challenge with more questions.

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73 Unpacking refers to separating the components within units into discrete skills that might then be repacked with skills from other competencies to cater for specific work tasks.
Who are the learners? What do we need to know about them? How do you tap into their knowledge and experiences? How can you use what they currently do to enhance the learning?

Through his questioning, Thomas is teasing out the educators’ misconceptions, misunderstandings and misgivings about the task. In an informal and non-threatening way, he is surfacing the attitudes and assumptions that may be causing resistance (and mediating the learning) so they can be debated and understood by the larger group.

He works hard to engage the educators by physically lowering himself to a squatting position to lessen the traditional power differential between teacher and learner (Mulcahy, 2006: 57). It is critical, he says, that the educators are fully engaged in the learning process as this will profoundly affect what they do when they return to their everyday teaching work.

Thomas continues to negotiate with the educators to ‘seduce their interests and strengthen the links in the network’ (Gaskell and Hepburn, 1998: 74). A range of technologies, materials and teaching resources are involved in the negotiations. At one point an argument erupts and Thomas is summoned to answer a question. Rather than answer the question directly, he refers the educators to the learning resources that he brings in as mediators in the argument.

The texts are regarded here as ‘trustworthy inscriptions’ of facts (Blok and Jenson, 2011: 44) that transport knowledge, facts and meanings from distant networks (Gherardi and Nicolini, 2000:335) and bring an authorisation to the negotiations. As such, they support Thomas’ proposition and order the learning and innovating in a certain way that leads the negotiations further toward his goal (Fenwick, Edwards and Sawchuk, 2011: 109).

The units of competency in the Certificate IV are also mediating Thomas’ innovating practice. Indeed, the units are non-negotiable and powerful actors that present further OPPs, as he explains.
I took my new PBL practices and aligned them to the units of competency I was teaching; ‘Media planning’, ‘Develop a media campaign’, and ‘Production elements’.

By modifying his innovative pedagogic practices (when teaching advertising students) Thomas makes these practices ‘fit’ the units of competency. In effect, he makes the units work for him as he changes and modifies his practices in order to obtain the best outcomes for students. Thus both Thomas’ pedagogies and the units of competency are mediating the learning and innovating and are being mediated in return. As Mulcahy (1999) describes, the units of competency are not just applied specifications as much as resources that are recreated on the job.

Competency standards thus take on different identities in different pedagogic settings and emerge, as a result, in ‘ontologically variable performances’ (Mulcahy, 2007, 2011). They are discursive mediators of pedagogic practices which may not always result in the predictable outputs (Latour, 2005: 39) that training packages and policy makers assume.

Other mediators circulating throughout the day include policy and institutional discourses of innovation, student-centred learning, flexible delivery, industry-led curriculum, meeting employer needs, quality practices and WIL. All are reinforced through materials – texts, presentations, online resources and curriculum – and have significant effect on Thomas’ innovative practice and the educators’ learning experiences.

Unfolding relations

As the day unfolds, the educators slowly respond to Thomas’ efforts. As the pods work, an animated buzz fills the room. Interessement, Callon’s second moment, is underway as the educators start to ‘buy-in’ to Thomas’ proposition and become ‘locked into place’ (Law, 1986: 15-16). According to Edwards (2012: 27), this process involves building barriers between what is part of the network and what is not. Thomas is intuitively stabilising a ‘new alliance’ by interrupting the educators’ links with traditional alliances and ‘competing associations’ (Hamilton, 2012: 45).
Much of the learning is happening at this point as controversies, debates and discussions pervade the educators’ work. It is an interactive and co-constitutive learning experience (as distinct from a transmissive and passive one) where Thomas ‘thinks out loud’ with his students, models the practices he wants them to adopt and adjusts his practice as things change. For example,

There might be a change in the dynamics, a comment made and I can’t go there anymore. I say to myself ‘I need to get out of this hole’, and when I do – that is the ‘a-ha’ moment for me. That’s when I learn.

The following morning, a sense of ‘being there’ (Sørensen, 2013: 115) permeates the room. As I arrive, the educators are immersed in the day’s activities without active attention to the learning experience. Interests have changed (to varying degrees) to align more with the scheme devised by Thomas (Law, 1986: 16) and other discursive actors in the network (VET and university policies and units of competency). The network has strengthened due to the ‘coming together’ of the disparate actions, debates, discourses and resources circulating as forces (Latour, 1987: 119).

The nature of the educators’ new roles emerges during the second half of day two as they design their short training programs for presentation the following day. Each pod has a designated presenter, observer and learner and each member of the pod take a turn in each role. Not surprisingly, the presentations strongly embody the educators’ specific industry discipline (Edwards, 2012: 32) and professional identity. For example, an electrician demonstrates how to roll an electrical cable to his pod (Picture 4.3).
It is a messy business. The ‘stuff’ of vocational teaching is everywhere – food, cables, computers, technical drawing equipment, iPads, coffee cups, paper planes, toothbrushes – strewn across the room, in the nearby kitchenette, in the hallway and on the floor and playing an active role in the innovating process. Fenwick and Edwards (2010: 6) explain the effect:

Novice cooks, electricians, nurses or managers, for example, explore the nuances of how all the tools and substances of their work behave, what they can produce, and how these things act upon them as much as they act with them.

While the presentations are captivating in themselves, of greater interest are the conversations unfolding alongside, such as what to do when a student has serious mental health problems, the pitfalls of using social media to engage young people, how to teach complex tasks to learners with learning difficulties and the frustrations of working in learning spaces designed by architects.

The conversations continue into the tea break (in the hallway, kitchen and outside) triggering rich descriptions of everyday educational problems and everyday ways of solving them. Solomon et al. (2006: 7) similarly find that spaces outside classrooms (such as tea rooms, cafes, libraries, gardens and vehicles used to travel to work) are potential sites of innovation and change. This is largely due to these spaces being bounded and regulated differently because they are beyond the scrutiny and control of authority figures and/or peers (ibid.).
In Callon’s (1986: 211) terms, ‘enrolment’ (the third moment of translation) is underway so, accordingly, the difficult process of interessement might be said to have succeeded. Levels of resistance in the group have lowered enough for new ideas, new relations, new practices and new spaces to evolve spontaneously, informally and ‘on the fly’ (Fenwick, 2001) with surprising results. Mostly, these results are not predetermined or prescribed by competency standards.

However, the temporary stability is disrupted as anxieties bubble to the surface during the third morning. One student leads with the comment:

_The challenge in this course is the assessments. Like yesterday, you said do this, then that. I was trying to keep up and I think everyone got different information about your expectations. I am concerned this will happen again today. I need to be sure I am very clear on what I have to do when I leave and where I (will) find the information rather than you just leaving me to struggle with it. There are real challenges in that for all of us._

The group quickly unite behind the complainant, echoing her sentiments and becoming increasingly agitated as they speak. Another student adds:

_The outcomes are confusing. There are so many of them. The problem is that, as teachers, we don’t have resources and there is no one there to help (second student)._  

Thomas attempts to (re)stabilise the network by listening attentively to the concerns and reassuring the educators he will support them in their work based projects. He opens a new, more personal space for the group to share and reflect on their concerns.

_How do you feel? What have you learned? How have you learned? What stood out for you as a teacher from the past three days? How different is it? What was the muddiest point – what worked and what didn’t work?_
An animated discussion ensues about how it feels to learn through PBL, why the pedagogy works or doesn’t work, what it means for learners and how the educators can introduce PBL in their pedagogic work. It is clearly insightful for the educators (as learners) to experience firsthand the challenges, anxieties and uncertainties of learning with new and emergent pedagogies and to take part in (rather than read about) the process.

The group talks openly about the difficulties of changing from traditional classroom delivery to new and innovative practices. ‘We need more than three days to change,’ a third student comments. A fourth adds:

> We don’t realise how difficult it is to deal with emotionally sensitive issues in the classroom when you do different things and push learners to learn.

A significant moment emerges toward the end of the program when the educator who had continually remonstrated and challenged Thomas over the three days acknowledges, ‘I didn’t know all of this. I had no idea.’ This was an ‘ah-hah’ moment of translation for her and for Thomas. For others, the process was not so complete. A less vocal student reflected, ‘PBL is easy. In my field [architecture] we solve problems all the time’. Thomas tests this proposition by asking:

> How engaged are your students in what you do? Are you part of them or do you sit on the outer?

The educator replies, ‘I am their teacher, not a learner.’ ‘What if there is a problem you are both not seeing?’ Thomas rejoins. Thomas later reflects that ‘sometimes in a group, you have no idea if they get it or not’. Translation in this case is a tenuous process that can be contested at any time, can be understood very differently by actors and is never complete (Callon, 1986: 15). Visibly exhausted at the end of the three days, Thomas concedes that his innovating performances are difficult to sustain.
I do this because it challenges me to think about who I am, what I do and how I can improve what I do for the benefit of my students. I want the teachers to put their own identity on it too so they own the practice. There are people in every group that go back to their workplace and implement changes around a better way of doing things. I am happy if they take one aspect of my practice into theirs because it sows a seed for new practice.

It is difficult to predict if the educators’ practice will change when they return to work. While they have little choice in attending the training program, they do have a choice as to whether or not to ‘buy-in’ to the deeper, ‘higher order’ thinking and learning involved toward changing their practice. If they do change, then mobilisation (Callon’s fourth moment of translation) might occur. Those who don’t ‘buy-in’ will return to their workplaces as intermediaries (Latour, 2005: 39) who transport ideas without transformation so that meaning, understanding, and the direction of things, remain the same.

**Interim interpretive notes**

This case provides the first view of innovative pedagogic practices entangled in a field of political forces and heterogeneous actors. Thomas’ relational, material, and messy innovating practices have evolved over years of tinkering and learning through trial, error and research and inquiry. His innovating is complex and elusive and is continually changing in the moment to suit specific circumstances. Thus it is difficult to codify, as he explains.

> I get to a point, go back, go off on a tangent to another point where, sometimes, I go too far and need to come back because I can see the students aren’t with me. If I think a particular path will be beneficial, I take them down it. Then I might say, ‘hang on, this is not right, how do I bring them back, where do I go now to get where I want to go?’

Thomas knows it is working when it ‘feels right’ and there are perceptible ‘ah-hah’ moments of learning and change in learners.
As the data reveal, this involves many tense and difficult negotiations. The real difficulty, Thomas reflects, is knowing when to provide guidance for students, and what level of guidance is appropriate in the moment. Each moment is full of uncertainty, unexpected errors, anxieties and ambiguities, as befits the nature of innovation.

There is a noticeable sense of good common sense and determination in Thomas’ practice that allows him to sum up a situation very quickly and, if people are feeling threatened, to back away and ‘change tack’. He is highly attuned to the learners’ level of resilience, and adapts and modifies his practice in response.

*It’s about throwing everything up in the air and saying what do I need now – right there in that moment? It can be very confronting. It does not always go well. I am getting them to reflect on who they are and what they do and if there is a better way ... It pushes them out of their comfort zone.*

Thomas describes his practice as ‘normal’ because it deals with everyday problems in everyday pedagogic work with students. This case reveals the immense effort in practices of pedagogic innovation to overcome resistance, to ‘bolster the breakages’ and ‘counter the subterfuges’ (Fenwick and Edwards, 2012: xiii) involved with everyday innovative work.

Thomas’ story portrays a fraught and complex process of ‘seducing’ (Latour, 1987) the interests, desires and goals of learners to bring about a transformation in thinking and practice. This challenging work is occurring in the spaces ‘in-between’ the ‘outside’ world of work and the ‘inside’ world of the classroom and may end in a momentary achievement, a partial translation, transformational learning, or no translation at all.
Chapter 5: Innovating through caring work

The community education sector at work

Introduction

This second case study tells a story of an innovative educator in the adult and community education (ACE) sector who is teaching technology skills to people who have experienced homelessness. Building on the effect of policy discourses in the first case story, this case re-renders discourses of social equity and inclusion in VET (currently constituted in terms of a marketised system) that attempt to align social values with the economic imperatives of workforce productivity. As Bretherton (2011) writes, policy initiatives aimed at raising skill levels among those ‘marginally attached to the labour market’ are mostly concerned with reducing the number of people on welfare.
In this case, Callon’s (1986) four moments of translation are again put to work in a ‘scaled up’ account of networks being stabilised through articulations between policy discourses and local practices. The actors in this case are not seen as micro or macro but as ‘included or excluded’ in pedagogic networks as relations form in specific places and moments in time (Gad and Jensen, 2010: 62).

The term assemblage (Deleuze and Guattari, 1987: 91) is used instead of network to acknowledge a slight shift in methodological focus to the emergent nature of pedagogic innovation, although as (Mulcahy, 2012) writes, these terms can be used interchangeably. This is not a radical shift. Assemblages, like actor-networks, consist of heterogenous actors in relational patterns that move practices across space and time (Fenwick and Edwards, 2010: 103).

A tale of social equity

Cameron and Rosie work at an ACE institution in Melbourne that provides accredited and short unaccredited VET courses for adults who are either completing their secondary education, or beginning (or changing) their careers. Funded by the Victorian Government, the institution provides courses such as the Certificate in General Education for Adults (CGEA) and English language programs, among many others. Like most ACE institutions, the educational setting provides for disadvantaged learners. The institution, a registered training organisation (RTO), is bound by state and federal legislation related to social equity, and principles of access and equity are front and centre to its mission and operations.

Access and equity is a long espoused value in Australian VET discourse where ‘equity gaps’ in work and education have been a consistent concern for policy makers. It is widely held that participation in education by disadvantaged social groups results in economic and social gains for both individuals and communities. Indeed, most OECD (2008) nations have set targets to raise participation in education and educational attainment by equity groups in order to move people from welfare to employment and, ultimately, raise workforce productivity.
Australia’s ‘National Partnership Agreement on Homelessness’, launched in early 2009,\textsuperscript{74} is one such initiative that committed all states and territories to strive for fewer homeless people, to provide more assistance for those at risk of being homeless and to improve their participation in education and employment.

Also established in 2009, Australia’s National VET Equity Advisory Council\textsuperscript{75} (NVEAC) categorises individuals experiencing disadvantage (and for whom VET offers a ‘second chance’) into six groups including indigenous Australians, people with a disability, people from culturally and linguistically diverse backgrounds, people living in remote areas, people with low socioeconomic status and women. The learners in this case are members of one or more of these groups.

The two educators recommended for this study, Cameron and Rosie have long histories working with disadvantaged learners. For Rosie,

\begin{quote}
It is all about access and equity – about individuals accessing education – finding ways to connect with them and for them to connect with education. That is why I love community education.
\end{quote}

For Cameron,

\begin{quote}
I can see this divide in the community between those who have access and the ability to ‘hook up’ with technology and the future, and those people who are completely missing that opportunity. I feel it doesn't need to be like that and I can be a link.
\end{quote}

\textsuperscript{74} This Agreement expired in June 2013 and was replaced with a one year transitional National Partnership Agreement on Homelessness for 2013-2014. See: http://www.fahcsia.gov.au/our-responsibilities/housing-support/programs-services/homelessness/the-transitional-national-partnership-agreement-on-homelessness Access date: September 2013.

\textsuperscript{75} While in existence at the time of this case study (April 2014), COAG recently agreed to dissolve NVEAC as part of current neoliberal reforms to streamline and simplify governance arrangements for VET.
Cameron teaches work education programs, such as the Victorian Certificate of Applied learning (VCAL) and the Employabilit-E project, to disengaged learners. The Employabilit-E project assists learners experiencing homelessness, or at risk of becoming homeless, to obtain a set of ‘e-literacy’ skills through a program based on the CGEA.

The project is a collaborative effort between the ACE institution and three not-for-profit community organisations that provide supported housing and other services for people experiencing homelessness. The Employabilit-E project emerged after an evaluation of a course, the Personalised Computer Class, identified that learners need further support to ‘take the next step’ to obtaining a qualification. Led by Rosie, the Employabilit-E project is funded by the Australian Government through the National E-learning Strategy. Obtaining the funding was not easy. It required three attempts to secure and, at the time of this research, was guaranteed for only one year.

Learners living in supported housing are invited to join the program. They start by undertaking the Personalised Computer Class and then progress to complete five computer-based units of competency:

1. Develop and document a learning plan and portfolio
2. Operate a personal computer
3. Develop keyboard skills
4. Operate a computer to produce documents
5. Participate in job seeking activities.

The program runs over six months and requires learners to attend classes at the institution twice a week. Classes involve ‘one-on-one’ learning, classroom-based activities, and online learning tasks accessible at the institution and the supported housing environments. To develop basic computer skills, learning commences with a series of online games such as using a computer mouse (Picture 5.2) that are played in the open learning space (Picture 5.1).

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76 VCAL is an accredited secondary certificate that provides an option for Year 11 and 12 students in Victoria with more practical and work-related learning experiences.

The games are followed by structured learning tasks that each participant works through in their own time. These tasks are mapped to the units of competency. Typically a day starts with a group lesson in a classroom followed by semi-structured activities from the online task bank (Picture 5.3).
The students have a wiki site where they can access information such as project updates, a diary of each week’s sessions and engage in ongoing communication with class members. Stories from past students recorded in video clips are featured on the front page. Assessments are undertaken at regular intervals during the program using a range of assessment methods. Each student has an Individual Learning Plan and is required to build a portfolio of evidence throughout their studies. On completion, learners receive a Certificate of Attainment and can elect to receive an International Computer Driver’s Licence as part of the program.

**Emerging assemblages: problematisation**

The arranging, organising and fitting together of a range of actors (McGregor Wise, 2011: 91) has formed a ‘loose assemblage’ in this case that includes national policies and regulations, funding bodies, project designs, educators, partner organisations, curriculum, project teams, disadvantaged learners, learning spaces, resources, technologies, administrators and a wide range of interests. Political interests are clearly present.

*Tuesday saw the Minister visit the class. The class was a bit shy at first but after chatting with everyone realised everyone was there simply to listen to the stories of the students and see how they can help improve the program (student wiki, week 11).*

The political interest lies in ensuring policies aimed at improving the work prospects of people from vulnerable housing backgrounds are translated into measurable outcomes.

Herein lies the problem(atisation) in this case. The learners have typically been homeless for some time and have experienced significant barriers to education and employment throughout their lives. On average they have an educational level of Year 7 with some achieving Year 10. Most have past working lives, some with successful careers and have difficulties adjusting to formal learning settings. Rosie explains:
It is a very big conceptual leap for them. They had to overcome a lot of psychological barriers.

Convincing these learners to engage in formal education is highly problematic for the project team who face the constant challenge of ‘getting them here’ and ‘keeping them here.’ This challenge is different for each learner. For example,

To assist one of the learners with vision impairment having difficulty with a task, the teacher had to think quickly. The solution came moments later and the Interactive Whiteboard was set up so the learner could navigate the internet, type documents and view images (student wiki, week 2).

To convince the learners to attend the course, information sessions were held at the supported housing organisations to allow the learners to ‘get to know’ the teachers in familiar and less formal settings. The sessions involved a range of negotiations to appeal to the learners’ interests. For example,

One lady learnt that through attending the e-literacy class she could learn the skills to help her to research specific topics. After a demonstration she was confident enough to enrol in two classes (CAE 2012: 4).

Eleven people turned up on day one of the program, as recorded on the wiki.

Beginning on a range of tasks and activities such as setting up an e-mail account, arranging windows, creating folder structures on their USB stick, and learning to search effectively with Google, the students appeared to enjoy themselves. Then it was time to debrief over another cup of tea and a couple of biscuits.

However, despite positive feedback from those involved, only a small core of learners regularly attends the program which is clearly disappointing for the project team.

This week the numbers fluctuated again with only five students attending both days . . . Still, we will endeavour to follow up with each
Sporadic attendance, endemic with these learners, is due largely to their preoccupation with immediate and more pressing day to day problems (CAE, 2012: 5). These might be emotional, social, educational or financial problems and are highly complex (Bowman and Callon, 2012: 19). Fear, a lack of confidence and ‘a feeling of being out of their comfort zone’, are common reactions (ibid.). Also, according to Dickson and Fpearson (2007: 30), many disadvantaged learners are not motivated by the prospect of attending educational institutions, or achieving a certificate, as a measure of success.

Issues of non-attendance flow into difficulties in scheduling classes, maintaining continuity in the learning and convincing broader government and partner networks of the project’s success. Indeed, as success is measured in terms of attendance and the retention and achievement of learners, sporadic attendance is ‘a serious sore point we are looking at very closely’ (wiki excerpt, week 8). The learners clearly have not bought into the project’s broader plan. Rosie provides an explanation.

*Initially I underestimated the huge achievement it was simply for the learners to attend the class. I had not fully grasped how disconnected these learners are from any educational environment.*

There is a mismatch (Latour, 1987: 108) here between the interests of the learners (anxieties and other priorities) and other actors in the assemblage (assumptions about learners and project outcomes and measures).

To address the problem, the project team set about escorting the learners to class from their accommodation, leaving ‘sorry we missed you’ notes if they were not at home. These caring ‘interessement devices’ were designed to disrupt competing interests that might be preventing the learners from attending class in order to create and shape new alliances (Callon, 1986: 211).
Cameron also experimented with different ways to appeal to the learners’ interests.

I was experimenting with different ways to get the program across to them and started using e-learning tools to create flexibility in how they access the learning. We realised they don’t have to be here to access it. They could be online somewhere else with our support.

Using a Latourian (1987: 112) framing, the boundaries between the VET institution and learners’ homes were renegotiated in order to appeal to their interests (first translation). The interessement devices convinced the learners to change the way they engaged with education (second translation) and seduced them to approach the problem of learning in other ways (third translation). Once the learners’ interests and goals were ‘seduced’ and replaced with new interpretations (fourth translation), they started to enrol in the original proposition.

Indeed, most of the learners found the online learning option highly attractive because they believed it suited their needs. Bowman and Callan (2012: 40) similarly found that disadvantaged learners generally respond well to interacting through technologies which makes e-learning technologies highly effective interessement devices in community education settings.

**Keeping actors in line**

With learners now in attendance (albeit sporadically), and a strengthening of tentative relations, there is now enough stability in the assemblage to pursue the research.⁷⁸ I attend a class Cameron is teaching at this delicate moment in the assembling process. The class had commenced when I arrived with six people engrossed in a discussion about the use of Dropbox (an online document sharing system).

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⁷⁸ I do not mean to infer here that unstable networks, or networks that fall apart, cannot be researched. In this instance, stability infers that there are enough actors in place in the network for the class (and research) to proceed.
As I enter, Cameron asks the group, ‘If I want to upload a document to Dropbox, what would I do next?’ A chorus of answers erupts. A dialogue box disappears from the smartboard screen at the front of the room and Cameron asks, ‘What is happening now?’ Again a chorus of answers fills the room and the dialogue box reappears. I am immediately captivated; not by the subject as much as the level of interest and engagement in the room. Cameron stops and introduces me to the group.

One member of the group, who is intently focused on the lesson, is using Dropbox to upload photographs for his grandchildren who live overseas. At his request, Cameron has introduced Dropbox as a topic in the lesson. Another member of the group is interested in genealogy software to trace her ancestry; a third is a political activist involved in community action and is interested in participating in online forums and debates. A fourth member is seeking to update her computer skills to establish a small secretarial business.

In ANT terms (sociology of translation), new actors have come into view – the affective ties of family, business aspirations and political persuasions – that are dynamically shaping and mediating the innovating and learning experiences. Interessement is unfolding as Cameron surfaces the learners’ interests and appeals to what they want to learn in order to meet their needs and further both his interests and those of other actors in the assemblage (Latour, 1987).

Cameron explains:

> I find something each person is interested in. I give them activities that get them to do things without them really realising it is a class. In some ways it is very structured but they don't ever feel locked in.

In educational terms, Cameron is looking for the ‘things’ that individual students are good at, or interested in, in order to build their confidence with him, the program and the institutional environment. This is a recognised pedagogic approach for disadvantaged learners (Bowman and Callan, 2012, Smith and Dalton, 2005).
In Latour’s (1987: 116) terms however, the process is a ‘progressive drift’ whereby learners believe they are moving along a straight line towards achieving their goals while being unwittingly enrolled in Cameron’s (and the broader project’s) plans.

To keep the learners enrolled, Cameron suppresses any reference to formal education by tailoring the learning as it unfolds to the requirements of the units of competency. This is a discrete process of negotiation between the curriculum and each learner both as the learning unfolds and after the learners have finished for the day.

*I am trying to look at what that document [units of competency] is trying to do so I can find out ways to do it differently.*

Cameron commences a discussion about Facebook. ‘What would you like to know?’ he asks. ‘I'll show you my Facebook account so we can see how it looks.’ He sparks an animated conversation in which the technologies (smart board, software programs and the internet) are interessement devices that are working to actively enrol the learners and stabilise the assemblage (Callon, 1986). They are also shaping the learning spaces, the lesson content, relationships between learners and Cameron’s pedagogies and bring to the assemblage a complex range of other actors (web companies, technical support staff, and so on) in order to do their job (Fenwick and Edwards, 2010: 71-78).

What is striking about Cameron’s pedagogic work at this point is the effort he makes to disrupt the learners’ thinking and push them out of their comfort zones. There is no ‘mucking around’, or taking it easy in this class.

*If I allow the learners to treat the learning environment like a casual drop in service they are less likely to take the course seriously and this has the potential to lower attendance and overall outcomes (CAE, 2012).*
According to Latour (1987: 108-109), there are ‘two things’ that need to happen for an innovation to be successful. First, actors need to be enrolled through processes of translation in an idea or innovation. Second, their behaviour needs to be controlled in order to make it predictable so the idea can be spread (mobilised) in the intended way. The second step is playing out in this moment as Cameron exerts control and places boundaries around the learners’ behaviours and expectations. While this might be construed as managerial in approach (as criticisms of early ANT highlight), it illustrates how Cameron controls the situation in order to stabilise the assemblage (ibid.: 122).

The class moves to the computer terminals in the open learning space where the learners assume their seats and log onto the internet. Cameron sits with each learner and assists them to log on and complete the online tasks.

_I don’t tell them how to do things. They will try to get me to do it for them if they can. I try to transform concepts into terms that are understandable and get them to do it._

I observe moments of intense engagement as Cameron listens, learns, translates, customises, adapts and negotiates the tasks to fit each learner’s interests. He works hard to retain their cooperation (Latour, 1987) and maintain and strengthen the assemblage. While the learners believe they are directing their own learning, Cameron is quietly corralling and cajoling them along the desired educational path. He describes this process of ‘interesse’ as keeping the learning ‘real’ so it leads to ‘deep feelings of curiosity, excitement and empowerment.’

To the onlooker, interessement is unfolding; evident in the ‘take up’ by the learners and their willingness to engage with the tasks in front of them (Callon, 1986: 211). Comments from the learners affirm this observation.

79 In early or classical version of ANT, the formation of networks or assemblages tended to be seen from the standpoint of the innovator or manager.
I’ve learnt a lot about word processing, file management, e-mail, blogs, social media which has given me a lot of confidence to establish my business.

I like this way of learning. I like to do it at my own pace. Cameron is very good like that – he is very patient with me.

I lost touch with computers in the 1990s which excluded me from training and employment. Without this I would be struggling to overcome my technophobia.

Negotiating boundaries

Later in the morning, the group adjourns to the tea room for coffee and cake. This regular daily session allows for informal conversations and sharing of experiences outside the formal learning setting. According to Cameron, it is an essential part of the learning process.

It is a really great space to share stories outside their normal environment, to talk about their lives and where they have come from. They meet people from similar situations, which is great. They often think they are the only ones.

The discussions over morning tea range from weekend social activities to politics. Suddenly an argument erupts as political views collide and a heated debate ensues. Some in the group enter the debate and others remain quiet. For a precarious moment, the argument becomes personal between two members and teeters on conflict.

Cameron quickly intervenes and reasons with both parties to consider the views of others but it takes a few minutes to impose boundaries and diffuse the tension. The air is thick with competing interests as members vie for Cameron’s (and my) attention and that of the wider group. Cameron diverts the attention to me to bring the focus back to the program.
It’s a shame you just missed Keith, he has just gone to China. He is a real success story. Keith was a property developer and printer in a previous life and lost everything. He is a really smart guy who was down on his luck. He learned computer skills so he can teach in China. We taught him Skype so he can keep in contact.

Morning tea is clearly hard work for Cameron as he encourages and then mediates highly unpredictable conversations, behaviours and actions and skilfully redirects discussions away from potential ‘hot spots’. At the same time, he maintains an atmosphere of care and belonging (the first of Latour’s two steps), and control and discipline (the second).

Echoing the first case, innovating here is a process of negotiating in the moment what happens next, reshuffling competing interests, opening up opportunities for new conversations while adeptly maintaining the focus on learning. Informal spaces are used to invite people’s private lives (seemingly irrelevant to the stated learning objectives) into the learning process.

Disrupting the accepted boundaries of public/private, personal/impersonal, formal/informal, fact/feeling, Cameron’s boundary breaking work clearly creates unexpected and controversial disturbances. By deliberately blurring boundaries, Cameron creates new ‘in-between’ spaces for learning. Like Thomas in the previous case, his experimental boundary pushing results in spontaneous, embodied and experiential learning experiences. Further, Cameron is highly attuned to ‘what the bodies, machines, food stuffs, and other relevant actants are doing’ in the moment (Mol, 2008: 56). Affect clearly plays a role in this setting, and is critical to the innovating process.

The group returns to the open learning space and technologies resume their role of mediating learning, ordering the pedagogies and translating policy discourses, project ambitions, curriculum objectives and individual interests.

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80 Affect is understood here as broader than human emotions. It is a tangible, embodied force that operates between people and adds complexity to relationships (Skattebol, 2010: 78).
Technologies are also doing boundary work as they extend the program beyond the classroom to external actors (through the wiki for example) and change the spaces, places and times when learning can be done. The wiki for example conveys tasks, conversations, rules, values, assessments, events, histories, and commentaries across different spaces and times. Known as boundary objects (Star and Griesemer, 1989: 393), technologies not only make connections (articulations) possible across social and physical boundaries, they express new relationships ‘between’ actors (Fenwick and Edwards, 2010: 51). They are also stabilising devices (Callon, 1999) that ‘synchronise’ meanings and actions between heterogenous actors and coordinate their actions from afar (McGregor, 2004, Sørensen, 2009).

Like Thomas, Cameron makes the units of competency work for him in precarious articulations between institutional quality processes that hold him to account to national standards and new and indeterminate pedagogic practices. He explains the difficulties inherent in these articulations:

*When I do project based learning, I have to write a unit outline to match what the students are doing – but I can’t fill it out until they do it. So when I go to show that document to the quality people, it looks as if I don’t know what I am doing. Because I am vague about it – it doesn’t meet the quality assurance [QA] processes. So much so I have to go to a QA meeting this week to explain what I am doing.*

**Collective caring work**

What is immediately striking in this case in comparison with the first is the close, collaborative work between Cameron and Rosie. Where there is little reference to other institutional actors (such as managers) in the first case, in this case Cameron and Rosie are working closely together daily to perform innovative pedagogies. Discussions about what to do next are embedded in everyday work rather than being planned ahead.
Careful consideration of what is best for learners is worked out in ongoing formal and informal discussions between them, ‘in the passage or over a cup of tea’ or ‘in our weekly meeting,’ as Cameron explains.

_We work out what to do. It is really important for me to be able to talk with someone with the knowledge and experience when things aren’t working. We both accept failure as a natural part of the innovation process._

The collaborative and caring nature of this work means that value judgements and positions are not formed in private (Mol, 2008: 75), but are shared. Cameron and Rosie do not categorise learners as ‘homeless’ or ‘disadvantaged’ but, instead, redefine each learner according to the tasks they are interested in such as ‘those who want to learn social media’, or ‘those who want to use Dropbox.’ This categorising does not precede practice but emerges as relationships strengthen and interests are determined through mutual adaptation (ibid.: 66).

Like Thomas, neither Rosie nor Cameron regard the program, or their pedagogies, as particularly innovative. Both agree what they do is part of everyday professional practice ‘in the daily dealings with students.’ Cameron reflects on what this practice involves:

. . . being creative, thinking laterally to improve things, exposing yourself to new ideas, reflecting on what you are doing, undertaking research so you know what is going on. It is about seeing possibilities and being open to them. The opposite side is that you are trying all these great things in the classroom but don’t understand what you are doing or how to do things differently - then you and others are always left wondering.

According to Dickson and Frearson (2007: 9), collaborative networks that support disadvantaged learners are fundamental to improving educational outcomes. Several factors cited by Dickson and Frearson are evident in Cameron and Rosie’s innovating work including:
• Strong relationships between providers of training and support services;
• Identifying the interests of learners to shape pedagogic practices;
• Providing open access to the internet not always tied to accredited learning;
• Providing one on one sessions to support people back into structured learning;
• Taking learning outside formal institutions to more familiar settings; and
• Creating a relaxed, friendly and non-judgmental learning environment.

Crane and Livock (2012: 48) also affirm that effective pedagogies for disadvantaged learners locate people in their broader contexts, appreciate something of their complex and unique everyday world and provide them with evidence that they have standing as a person rather than as an educational or other category.

The final report on the Employabilit-E project indicates that for many of the learners involved, Cameron and Rosie’s innovating practice, precarious as it might seem, improved the learners’ attendance, knowledge retention and confidence in using technology and overall engagement in education (CAE, 2012:7).

**Interim interpretations**

This case illustrates the importance of principled and caring work to innovative pedagogies in the community education sector. Pedagogic innovation is ‘tied up’ in assemblages of care, discourses of access and equity, unpredictable behaviours and emotions, morning teas, technologies, curriculum requirements, intermittent funding, politicians, changing policy settings and relationships with other organisations. The pedagogic practices involve listening, experimenting, boundary pushing, negotiating, cajoling, and appealing to the interests of learners in the moment, while propelling them along a specific educational path.
Success in this case is due to the collective assembling by Rosie and Cameron of many heterogenous actors in order to realise or ‘make real’ the Employabilit-E program. Rosie and Cameron bring actors together, connect and strengthen the ties between them and then hold them together long enough for competing interests to be translated, and the lives of disadvantaged learners improved. To translate policy, both educators work in the spaces in-between equity/inequity, personal/impersonal, formal/informal and fact/feeling.

Logic of care (Mol, 2008) emerges as a patterning effect that shapes how innovative pedagogic practices play out in this case. Care, however, sits in tension with current discourses of competition, accountability, and control that are underwriting current VET policy reforms and managerial practices.
Chapter 6: Innovating through space and place

The plumbing industry at work

Picture 6.1: Demonstration Green House

Introduction

The third case story describes the implementation of an innovative online learning program for plumbers by ‘Master Plumbers’\(^{81}\) at the Plumbing Industry Climate Action Centre (PICAC) in Melbourne. Established in 1891, Master Plumbers is Australia’s largest plumbing industry association and is recognised for its strong commitment to innovation and environmental sustainability. The effect of space and place on innovative pedagogies comes to the fore in this case as physical and social boundaries are again disrupted to make space for new pedagogic practices.

\(^{81}\) Masters Plumbers is the Master Plumbers and Mechanical Services Association of Australia.
Spatiality is used as an analytical tool (Fenwick et al., 2011: 11) in this case which draws on Latour’s (1987) understanding that space and time co-evolve in networks. It also draws on research in cultural geography\textsuperscript{12} where ANT is often deployed to signal that space is performed or enacted in practice (Mulcahy, 2006: 58), rather than being self-evidently given.

There is growing interest in the effect of space on educational practices (see Nespor, 1994, Morgan, 2000, Edwards and Clarke, 2002, McGregor, 2004, Mulcahy, 2006, Solomon et al., 2006, Fenwick and Edwards, 2010, Duhn, 2012), on the relations among pedagogy, spatiality and identity (Mulcahy, 2006), pedagogies of place (Duhn, 2012), the hidden role of the physical environment (McGregor, 2004) and how pedagogies shape space, and are shaped in return (ibid.).

This case ‘scales up’ the analytical framework to cast a wider net over multiple networks that come together with effects on local pedagogic practices. Less attention is paid to the ‘local’ moments of translation with the focus directed instead to the way innovating practices are performed, and caught up in, ‘spatially extensive’ (McGregor, 2004: 359) assemblages. While the terms space and place can be used synonymously (Solomon et al., 2006: 5), the concept of place is recognised as being more ‘tied up’ with subjectivity, familiarity and a sense of territory (Duhn, 2012: 101).

**A case of multiple networks**

Established as a ‘world first’ in sustainable plumbing practices, PICAC represents a collaboration between plumbing and related industry associations, peak bodies, unions and training providers. The Centre is a ‘5 Star Green’\textsuperscript{83} rated building and a working example of sustainable plumbing technologies and practices. It won the ‘Plumbing Industry Training Award’ for Innovation in 2012.

\textsuperscript{12} Although with different theoretical roots, human geography is a field in which sociomaterial approaches to research have been taken up (Fenwick et al, 2011: 7).

Registered plumbers, pre-apprentices, employee and employer groups, building owners and managers, industry partners, governments and service groups use the facility. Funded by the Commonwealth Government and the plumbing industry, PICAC’s role is to align government discourses of environmental sustainability with local plumbing industry practices and to ensure an adequate supply of ‘green’ plumbers into the future. All members of PICAC\(^{84}\) are RTOs in their own right.

To establish PICAC, a range of interested allies including governments, industry bodies, employer groups, unions, sustainability experts, training institutes, architects, engineers, discourses of sustainability and so forth were gathered together in one place. Discourses of sustainability, fundamental to PICAC’s formation, are linked to VET through COAG’s ‘Green Skills Agreement’ (2009)\(^{85}\) which seeks to build ‘skills for sustainability’\(^{86}\) through closer collaboration between employers, employees, the VET sector and community organisations.

The Agreement brings socio-historical and political interests (Latour, 2005: 124) to the assemblage such as the current politically charged debate about climate change and global warming. Other policy levers with the potential to affect the assemblage include the recent mandating of ‘skills for sustainability’ in all national competency standards.

\(^{84}\) Members of PICAC include the Master Plumbers, the Communications, Electrical and Plumbing Union (Plumbing Division Victoria), the National Fire Industry Association, the Air Conditioning and Mechanical Contractors’ Association, and the Plumbing Joint Training Fund.

\(^{85}\) The change to a conservative Coalition government (September 2013) signals a shift away from sustainability as a policy priority. This was confirmed at a COAG meeting (September 2014) where Ministers agreed priorities for VET are apprenticeship harmonisation, revised standards for training providers, a review of training packages and streamlining data and other reporting for training providers. [http://www.industry.gov.au/AboutUs/Pages/COAG-Industry-and-Skills-Council.aspx](http://www.industry.gov.au/AboutUs/Pages/COAG-Industry-and-Skills-Council.aspx) Access date: November, 2014.

\(^{86}\) These skills are broader than technical skills and involve the higher order thinking and problem solving capabilities associated with innovation and change.
PICAC is an example of how policy narratives can be ‘black boxed’ and reshape the behaviour of an industry and its practitioners (Latour, 1987: 131). The interests of all allies have been enrolled in the assemblage and are now mobilised to a point where they collectively act as one (ibid.). While the trail of negotiations to reach this point is not visible in the data, the process has clearly framed the problem and choreographed the solution in a particular way (Hamilton, 2012: 55).

For example, the agreements reached between PICAC members about who delivers training for each industry is indicative of the complex political negotiations that transpired. The negotiations continue as Michelle, the manager of the training arm of Master Plumbers, explains.

*The Union does OH&S and high risk and site based induction training. Fire does fire stuff. AMCA [Air Conditioning and Mechanical Contractors Association] focuses on commissioning and balancing training. We do the green training, pre-apprenticeship and post-trade. There is a whole range of interesting dynamics between the organisations – how that works, who runs it, who is going to pay, what is the commitment, and what will they bring to the table.*

While government policy has been well and truly mobilised at this point, the strength of the relations in the network is continually being tested. Adding to the complexity of PICAC’s operations is the rapidly changing VET policy environment and the commercial interests of industry allies. For example,

*While PICAC was set out to be a world first collaboration to deliver training and research not delivered anywhere else, we are not doing any formal research at the moment except for fire protection. We had interest to look at energy efficiency in the solar panels . . . but the manufacturers did not want to participate due to commercial sensitivities. We have issues with the utility provider too – they won’t allow us to feed power back into the grid.*

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87 An idea is black boxed when it becomes an established fact or unproblematic object and is no longer considered to be innovative (Latour, 1987: 131).
PICAC’s identity as a centre for plumbing innovation is thus shaped by complex assemblages of buildings, physical spaces, materialities, technologies, people, organisations, government policies and funding, equipment, artefacts, politics, and plumbing related practices. On entering PICAC, one is immediately struck by the materiality of plumbing, such as the ‘Demonstration Green House’ (Picture 6.1, page 123) which is a working model of sustainable domestic plumbing technologies, a mobile hospital for specialised training on medical equipment, a fire protection centre, solar panels, exhausts and air-conditioning equipment on the roof, and rooms of pipes, pumps, pits, gauges and gadgets to demonstrate water conservation practices. Space and work at PICAC is clearly defined by materials and their function.

Training to be green plumbing contractors

The principal educator at Master Plumbers, Steve, is a working plumber who trains plumbers part time and runs his own plumbing business. He and Michelle, his manager, have been instrumental in introducing online learning to PICAC and are highly committed to sustainable practices in the plumbing profession. As we tour PICAC, Steve proudly boasts the building’s green credentials.

*The plant room provides power, heating and cooling for the building through solar power units on the roof and a co-generation unit [a generator which uses natural gas to produce electricity]. We even have the capability to supply the surrounding factories as well.*

Master Plumbers provides accredited programs for qualified plumbers including ‘Green Plumber Environment Solutions’ and a Certificate IV in Plumbing and Services. The latter, the subject of this study, entails four business units of competency\(^{88}\) that are required by qualified plumbers to obtain a plumbing license and registration with the Plumbing Industry Commission. The qualification is designed to train plumbers who want to ‘go out on their own’.

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\(^{88}\) The four units in the Certificate IV in Plumbing and Services are ‘Estimate and cost work’, ‘Carry out work-based risk control processes’, ‘Produce 2D Architectural drawing using CAD Software’ and ‘Establish legal and risk management requirements of small business’.
One of the units of competency, ‘Estimate and cost work’ is delivered over five sessions through a mixture of classroom and online delivery. The plumbers have a choice of attending class in the evening at PICAC, or attending online using web based conferencing technologies (also known as virtual classrooms). While not new in education, these technologies are new to the Master Plumbers and to the other training providers at PICAC, as Steve explains:

*While the building is considered to be innovative, from our point of view, the online delivery is the innovative bit ... it is innovative in the plumbing industry that’s for sure. Most other providers are delivering with notes and assessments available online but not using web based conferencing. The difference is that this is live . . . it is the same presentation that the student sees sitting in the classroom.*

The original idea, according to Michelle, emerged in response to calls from working plumbers for more flexible ways to access training.

*It started when I had a member contact me from Colac. Comm Geelong wasn’t offering the training at a time that suited him. Most of these guys have to do this at night because they are working during the day and have to do the units for their licence. He asked if we could “Skype it or something”. So we started the discussion and talked to our IT people. They said Skype won’t work but other systems that will.*

The problematisation emerged –how training might be available ‘anywhere and anytime’ for plumbers – which then determined which actors were to be assembled and the actions that followed. Michelle describes the process.

*I did the research to see which option was best for us [and] we could afford. We played with the technology before we started – at home*

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89 Colac is a small regional city in Victoria, approximately 150kms south-west of Melbourne.

90 Geelong is a large regional city approximately 75kms south-west of Melbourne.

91 Skype is a web based telephone system that allows communication between people using a microphone, webcam, instant messaging and chat.
and in the office and in different spaces and using different microphones. After many discussions, we settled on this system so plumbers, who can’t attend – those who are sick, have children to look after, or who want to sit at home with a beer – can still participate. It’s all about meeting their needs.

After much debate and negotiation between PICAC members, a pilot project was approved and funded to test the idea. A process of experimentation and trial and error led by Michelle and Greg ensued that raised many issues and questions. For example,

Can the plumbers see the video the same time as other students, can they see when we link to external websites, and are they disadvantaged by being at home? (Quote from Michelle).

Slowly, through a ‘chaotic’ process of resolving technological, social, and funding arrangements, the original idea materialised into a recognisable, approved, and working online training program. The process was, however,

. . . a bit more difficult than we envisaged. The very first day, we thought we had done all the testing and then the speakers didn’t work. People at home couldn’t hear. It turned out to be a setting at our end. The teacher was disappointed and we were frustrated. It’s like a lot of these things – you are very reliant on the system working (quote from Michelle).

The technologies in this instance were actively mediating the experience by slowing the process down, and focusing the pedagogic action on how to solve the problems in order to speed it up again (Nespor, 2012: 1). By failing, the technologies disrupted the translation process for the plumbers at home, immobilised Steve’s online pedagogies in the classroom and placed an aura of uncertainty over the program. Michelle speaks to the uncertainties in this way:

I was conscious it was a challenging task. Was I asking too much? It’s a huge impost [for teachers] to step out of their comfort zone and walk around with a microphone on their head for three hours, as well as being conscious of people in different places and teaching new
subjects. Plus it took us about nine months before we got enough learners to run the classes. It is a word of mouth thing with plumbers.

And Steve thus:

*It was pretty daunting to begin with. I don’t have the IT skills to sort out problems on the run. This runs in the back of my mind all the time. How am I going to deal with an outage and keep the class going? You are a hair’s breadth from a fall at any time.*

The two narratives highlight the power technologies, or ‘translation devices’ (Nespor, 2012: 5), have in creating a problematic situation (Callon, 1981: 209) that disrupts and unsettles innovative pedagogic practices. The way relations are configured in this emerging assemblage needed to change.

**A firsthand account**

I joined Steve’s ‘Estimate and cost work’ class as an online participant not long after the technology failed. Prior to the class, Michelle had forwarded instructions for me to log into the Online Learning Centre (Figure 6.2) to obtain course materials and how to use virtual classroom technologies at home.

*Figure 6.2: Master Plumbers Online Learning Centre*
The Online Learning Centre is a secure space for plumbers to access learning anywhere and anytime, as Michelle explains,

*It encourages them in off weeks or downtime to complete sections before they come to class so they become self-directed learners – especially those who are used to being spoon-fed in face to face delivery.*

A modular approach to training, the program is broken into ‘chunks’ of learning that can be completed and accumulated into a qualification over time. This approach reconfigures the traditional times and spaces of learning and poses significant challenges for plumbers as a result. Echoing Michelle’s comment above, Steve explains that plumbers generally prefer face to face delivery where they can,

*... make eye contact, see the body language, ask questions and talk to peers. When it comes down to it, they are very comfortable in their traditional way of learning.*

Providing ‘good quality’ online learning experiences is thus problematic for plumbers when there is an absence of affective charge and the ‘natural corrective’ of face to face interactions (Harteis et al., 2006: 127). Affective interactions between students and educators can dispel misunderstandings, conflicts and arguments as they arise, and foster transformational learning, as is evident in the first two cases. When affect is missing, communication then depends largely on the efforts of remote learners which makes it even more difficult for educators to ‘elaborate a conceptual position’ (ibid.).

I log into the second online class for this subject. Sensitivities and anxieties about the technology failure are circulating as the plumbers and other actors assemble. I chat with Steve online as the plumbers arrive in the classroom. To add to the tension, this is Steve’s second only experience teaching online and in the classroom simultaneously. In this part of the data collection, I am an affective actor in Steve’s assemblage, as he indicates:
You will have to bear with me. I am not sure what will happen tonight. But at least I know what the experience is like and what might happen. I had the opportunity to experience being in a classroom from home and got a feel for it as a learner.

A plumber joins me online. As other plumbers arrive in the physical classroom, Steve assists the online plumber with his audio in an offline/online performance as he greets the plumbers face to face and talks seamlessly to both spaces. During the interaction, Steve is bringing the spaces together by loosening the boundaries between them (Leander et al., 2010: 334). When the class commences, there are 17 plumbers in the classroom and one online with me.

As Steve introduces the lesson, the smartboard screen and the online plumber come into view but I cannot see or hear the plumbers in the classroom unless they move directly into the camera’s view. As an online participant, I can join in discussions orally and in a chat room (Picture 6.3) although, while the plumbers can see our written conversations on the big screen in the classroom, only Steve can hear what we say. After introducing me, Steve recaps the previous week’s lesson on the smartboard.

*Picture 6.3: Researcher’s view of the online classroom*
From the beginning, even for a non-plumber, the lesson is highly engaging. Potentially a dry subject, Steve makes the content of ‘Estimate and cost work’ highly relevant for the plumbers by framing it in terms of how to be a successful green plumber businessman and drawing on his plumbing experience. Immediately, there is ‘interesse’ in Steve’s proposition. The plumbers want what he has; business experience, knowledge and acumen. Knowing how to cost work in a small business to avoid financial ruin renders the subject a compelling interessement device (Callon, 1986: 206).

Using examples from his plumbing business to mediate the learning, Steve loosens the boundaries between learning and work.

*Once I broke a pipe that was not due to my work – as it turned out the pipe was worn but I absorbed the costs for PR [public relations] reasons. It cost me four hours’ work plus the materials. What would you do?*

When convinced the plumbers have grasped the previous lesson, Steve moves to the evening’s subject – the cost of insurances, taxes, licences, regulations and industrial relations. ‘Give me two things that result in a bad scope of work,’ he asks. A hum of indiscernible discussion ensues. As online participants, we are experiencing a different learning reality to that occurring in the classroom. Excluded from the social activity, our online learning space is affectively charged in a different way.

Steve looks into the camera (as if making eye contact) to check we are still online and engaged in the class. Both of us answer in the affirmative. Because we can’t engage in the discussion, Steve relays our comments back to the group and, in the process, reunites the learning and social spaces. Similarly, he repeats the jokes and asides emanating from the classroom to the online plumber, adapting and modifying his pedagogy to the spaces (Mulcahy, 2006: 67) in the process.
Reminiscent of problem based learning (chapter 4), Steve uses questions to stimulate discussion and test the group’s comprehension of the topic. The realism of the problem – what happens when you break a pipe for example – sparks a lively debate in which materials have effect in shaping plumbing problems, discussions, solutions and learning processes (Bennett, 2010).

As in the first case, Steve’s innovating is emerging in the spaces ‘in between’ learning and work as he ‘brings as much realism’ as he can to the training and transforms the plumbers’ ‘mindsets’ about how they work.

*They are quite green and new to it. A lot of these guys have 3-10 years industrial plumbing experience, but don’t realise the most basic principles of costing and estimating – what it really gets down to. For them, I have to take them down a pathway so that, in the end, working as a contractor will be an everyday occurrence for them.*

Further, the plumbers need to develop independence in their learning and work.

*This takes them to a higher level where they have to think, plan and work ahead. The learning in the program is a microcosm of that world so first they have to get back to the basics and then think ahead to direct their work in all sorts of environments. They don’t understand that, so I have to take them on that journey.*

Steve challenges the plumbers to assume responsibility for their learning in a combination of innovative and traditional teacher-led pedagogies. Performing the roles of teacher, trainer, moderator, facilitator, coach, participant and technical expert, he works hard to break the mould of ‘a strongly embedded vocational culture’ (Simmons and Thompson, 2008: 614) by pushing the plumbers beyond traditional norms, meanings and values associated with the trade. This is important, he says:

*The trade is changing – the days of 16 year old boys doing apprenticeships are behind us. There are females now and a greater range of ages and experiences than times gone by. They all have their individual needs and baggage and I try to manage it from that*
point of view. I'm really conscious of their different personalities and needs, and always do what I think is best at the time.

Transforming the way the plumbers think and learn is clearly challenging for Steve, as it is in many traditional industries (see for example, Smith and Dalton, 2005, and Colley et al., 2007). Colley et al. (2007: 485) in particular found that working with students who are working in industries oriented toward instrumental approaches to learning has a significant effect on how innovative pedagogic practice plays out.

I became increasingly intent on observing Steve enrolling the and in this potentially transformational teaching-learning experience. However, the online connection failed one hour into the session and left the two of us online disconnected from the class and unable to re-join. For a second time, the technologies intervened to shape the flows and spaces of learning and mediate Steve’s innovating efforts. Although not unexpected in this experimental phase of the program, the abrupt interruption highlights how space and place can become political through exclusionary practices (Duhn, 2012: 102).

Nevertheless, I observed from a distance how Steve’s responsive pedagogies shape social and spatial boundaries and how space, place and technologies shape and reshape learning and innovating experiences. Innovative pedagogies emerge in this case as fluid practices that are ‘constituted through action’ (Mulcahy, 2010: 58-59).

I also observed a third case of innovative practice involving the skilful generation, seduction and translation of the interests of others (Latour, 1996: 13), made all the more difficult in this case by the multiple learning spaces, places and times and unpredictable actions of technologies.
Postscript

When I visited PICAC a few weeks after the class to interview Steve and Michelle, Steve reflected on the technology failure.

*I didn’t have a formal plan about how I was going to deal with that night’s issues. When you dropped out, I emailed the plumber (online) to make sure he was OK, and to see what he needed. I guess when doing something new, at least I can say we had a go and learned a lot that we can use to increase our knowledge and improve what we do. If it doesn’t suit our learners or isn’t working, we’ll stop. Just because it is innovative doesn’t mean it is right for our learners.*

Despite the newness of the program, and all the associated uncertainties and technical glitches, Steve and Michelle’s assemblage has now achieved a degree of durability. Like PICAC, the online plumbing program has been translated into a recognisable, if precarious, innovation that can be mobilised across space and time (Latour, 1987: 131). A temporary new order (Hamilton, 2012: 46) has emerged with plans afoot for further mobilisation.

*Now the program has become a service and is no longer innovative – it opens up opportunities. We are planning to record the sessions so if someone misses the session altogether, they can watch it at their leisure to catch up. This will extend the flexibility and scope further. . . We could be broadcasting to the world. We have a learner in Western Australia who wants to do our green skills program, and we are thinking of linking with the US (Quote from Michelle).*

According to Law and Callon (1992: 46), the success of a technological project depends on three factors:

1. The construction of a global network that provides resources of various kinds in the expectation of an ultimate return;
2. The construction of a local network that uses these resources to offer a material, economic, cultural or symbolic return to actors in the global network; and
3. Imposing itself as an obligatory passage point between the two networks.
The empirical evidence suggests that the first factors have been achieved in this case. The third factor will require further evidence, although plans to expand globally will, in all likelihood, establish this innovative program and practice as an indispensable actor in future actions. Success of the innovation alone, however, is not the sole motivating factor. For Michelle:

*If it gives us good feedback, it is worth it. If it provides access for learners who would have been otherwise left behind, it is worth it. But if we are just using it to say yes, we are using innovative technology and there is no one on the other end, then there is no point.*

In Steve’s view:

*I enjoy being at the cutting edge of what the industry is doing. For me that is a big part of it. That attracts me to this environment – to be involved in something that is not being done anywhere else. It challenges me constantly and my skills are always out there. If all the dynamics of the parties involved can be worked through, I believe it is the best model. For me that ticks the box.*

**Interim interpretations**

There are multiple forms of space and place ‘moving in and around’ (Fenwick and Edwards, 2010: 108) the innovating assemblage in this case. Geographic locations, classrooms, work, home and social spaces inhabited by families, leisure activities, ‘downtime, ‘our end’ and ‘comfort zones’, suggest that space-time boundaries are constantly moving and changing.

Spatialising imageries such as learning journeys, learning pathways, learning ‘anywhere and anytime’ and remote learners also suggest that, while located in specific places, innovative pedagogies are spatially extensive networks (McGregor, 2004). Indeed, innovating pedagogies in this case render physical and social boundaries both fluid and permeable as new learning spaces and practices unfold. As Mulcahy (2006: 55) writes, pedagogies are threshold practices that constantly weave ‘to and fro between spaces and selves’.
A spatial view affords understandings of innovative pedagogies as practices that are co-produced with spaces and places where each simultaneously shapes the other during the innovating process. The view allows one to analyse how technologies participate in pedagogic practices by forming different patterns of relations (Sørensen, 2009: 27) and ‘contouring’ learning spaces (McGregor. 2004: 348).

These interim findings affirm suppositions in the two earlier two cases that space, place and time have significant effect on innovative pedagogic practices. Further, they suggest that:

- Innovation is about creating differences in spaces and places (Leander et al., 2010: 341). Differences in learning spaces lead to new learning experiences and pedagogic practices, as the online plumber and I experienced;
- Specific spatial assemblages can constrain or foster learning and innovation (Duhn, 2012, Nespor, 2011). The co-constitutive performances of Greg and technologies clearly fostered new pedagogic practices, and constrained them when the technology failed;
- The production of space (Morgan, 2000: 278), and space-time relations (Solomon, 2006: 5), at PICAC are enmeshed in expansive networks of power.
Chapter 7: Innovating through embedded learning

The construction industry at work

Introduction

The fourth and final case in this study is located within a large construction company that provides labour and equipment for large infrastructure projects across Australia. Embedded within the company is an Enterprise RTO\textsuperscript{92} that allows the company to deliver national VET qualifications for its workforce. The workplace in this case is the site, place and space for pedagogic work affording examination of the network effects of direct relationship between VET and work. The learners are full time employees known as ‘doggers’, or ‘dogmen’, who load large concrete structures used in civil engineering projects (such as bridges) onto trucks and who are learning to conform to safe work standards in high risk work environments.

\textsuperscript{92} An Enterprise RTO is a training division of a company that is typically embedded within an organisation, and has a direct role in business operations (Enterprise RTO Association website: \url{http://ertoa.org/} Access date: 10 April 2013.)
The doggers, and all employees in this company, are involved in guided processes of work based learning where,

. . . the workplace is a place of learning and that this learning has academic validity, but that this validity can only be demonstrated if the learner produces appropriate evidence that learning has occurred (Mumford, 2013: 89).

Safety in high risk industries, such as construction, is well documented and highly regulated. Governments, organisations, managers and workers share the responsibility for workplace safety.

The empirical data in this case were collected in two phases: an interview with Max, the Chief Executive Officer of the Enterprise RTO, at the company’s head office in Melbourne, followed by a visit to a concrete production site in New South Wales (NSW) to interview the workplace trainer, Darren. However, on arrival at the production site, it was deemed too unsafe for me to enter the site to observe Darren’s training in action.

While an unexpected turn of events, this interruption to the data collection reflects ‘normativities’ in this workplace regarding safety rules and is important data in itself. From the outset, the experience was mediated by rules, regulations, and business imperatives.

With limited observational data in comparison with preceding cases, I pay closer attention in this case to spoken accounts of innovating pedagogic practice and documentary data such as safety plans, policy documents, artefacts, and learning materials. Accordingly, the following account does not capture a day-by-day, minute-by-minute account of pedagogic innovation but tells a tale of innovative performances that are mediated by workplace safety and other regulatory discourses.
A case of necessity

The company’s RTO was established in 2006 in response to a lack of available training for civil construction workers at the time. The skills required to drive and maintain heavy earth moving equipment (such as bulldozers and scrapers) in particular, were in high demand across multiple worksites and in short supply. The imperative (problematisation) was to lessen the impact of these skill shortages on business profitability and ensure compliance with safety and other regulations. According to Max, these pressures remain to this day.

*We are here to return a profit to the company by continually up-skilling our people to achieve minimum safety incidents, increase productivity and decrease wear and tear on the plant and equipment. Safety is number one priority for us, number two is increased productivity and number three is minimised or eliminated damage to equipment, often worth $2m and above. We follow WorkCover like a bible.*

Workplace safety is the number one ‘organisational competence’ (Gherardi and Nicolini, 2000: 333) in this worksite and, as a result, drives much of the RTO’s training activities. This is the case in all high risk work environments (Toner et al., 2011: 20) where employers use vocational qualifications to meet legislative, regulatory, or licensing requirements.

Max’s mandate when he joined the company was to ensure better alignment between the Enterprise RTO and business needs. With more than 1,500 people employed as foremen, supervisors and engineers, and more than 2,000 employees (from leading hands down) employed across the country, the RTO plays a critical role in ensuring workplace safety, increased productivity and business profitability. ‘Our business drives what is on our training scope’. As more than 1,330 workers can be enrolled in some form of work based learning at any one time, any time for training can be a major disruption to production.

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93 A training scope or ‘scope of registration’ is the list of VET qualifications that an RTO is registered to deliver by the Australian Skills Quality Authority (ASQA), the national VET regulator.
Max reports directly to a national learning and development committee that was established prior to his arrival to overcome RTO compliance issues and advise on the company’s skill needs. Only the committee can approve changes to the RTO’s scope. While currently delivering most of the company’s mobile earthmoving training, the Enterprise RTO is not assured of all of the company’s training business, as Max explains:

*If we have another provider who can deliver the training at a better rate and at a high quality, we bring them in.*

Max is involved in writing major tender submissions nationally to ensure that training needs and strategies are defined and costed in all new work activities and that they meet the requirement of safety regulation.

Accountability for safety is mandated by the NSW Workplace Health and Safety Act 2011 (the Safety Act) which requires any persons conducting a business or undertaking,

. . . to ensure, so far as is reasonably practicable, that workers and other persons at a workplace are not exposed to risks arising from the business or undertaking and that all workers are adequately trained and supervised.

Specific clauses in the Safety Act require enterprises to identify ‘reasonably foreseeable hazards’ in work sites and to manage associated risks. The training programs developed by the Enterprise RTO translate the Safety Act into safe work practices according to the company’s policies and procedures. For example,

*All Operators of Plant including subcontractors must hold a high risk work licence where that license is required by legislation. Where no such requirement to hold a high risk license is required then the following structure must apply:*

- The operator must hold a Certificate of Competence from a Registered Training Organisation, where that is not available; and
• The Operator must hold a Statement of Attainment for a Registered Training Organisation.\textsuperscript{94}

Stiff penalties apply for safety breaches which makes safety training an obligatory passage point (Latour, 1987) at this work site. No one can work without safety training and, in many cases, without a professional licence.

The Safety Act is highly visible in workplace signs, instructions and equipment and in the presence of Occupational Health and Safety (OH&S) officers who enforce the rules, along with company auditors and government authorities. Safety knowledge is institutionalised through work policies and procedures, safety instructions, training programs and codes of conduct that tightly govern work practices and behaviours.

By necessity this site is a tightly regulated, closely bounded and controlled environment where safety is a form of expertise situated in a system of work that is mediated by many heterogeneous actors (Gherardi and Nicolini, 2000). There is little toleration of risk taking behaviours outside the stipulated safety procedures and safety culture. In this case, pedagogic innovation, paradoxically, works to standardise and reduce variance in work practices.

**Embedded innovation**

With a construction trade and VET background, Max is a key innovator in the company.

\begin{quote}
I’m the ideas man. I came up with the e-learning platform to bring online learning to remote sites all over the country. I help and support the trainers to be innovative in their delivery where I have the educational knowledge and they have the technical skills. The innovation is in how we continually work together to adapt to meet the needs of the business.
\end{quote}

\textsuperscript{94} Company policy: ‘Plant Operator Instruction and Assessment.’
Max and his team introduced a number of innovative programs including the Certificate IV in Civil Construction (Supervision) which aims to develop supervisory skills for ‘foremen and upwards’ without formal qualifications. This program is delivered through a combination of formal one on one instruction, learning on the job, learning in the classroom, mentoring and recognition of prior learning. As he comments,

_The program has been really successful. The participants even hand out sections of the learning materials to their teams._

Obtaining evidence of competency is a strong focus throughout the RTO’s operations. All training programs commence with an assessment of an individual’s skills and knowledge (mechanical reasoning skills in particular) against an online ‘vocational indicator’ that is mapped to the Australian Core Skills Framework.\(^95\) The assessment is followed by a comprehensive evidence collection process including oral and written assessments, work portfolios and feedback from workplace mentors.

_We also take video evidence on the job with helmet videos . . . Then I meet with them (the learners) and they sign that this is a true account. We then verify/validate this with their work supervisor._

A second training program was developed in response to an urgent need for skills to ‘move and test’ heavy earth moving equipment before maintenance procedures were undertaken. A specific competency did not exist in the construction training package\(^96\) at the time and the work was a significant OH&S issue for the company.


\(^96\) The Construction, Plumbing and Services Training Package.
We needed it urgently and couldn’t wait for industry endorsement so I worked with our plant department to develop an internal competency based on the national unit structure. Heavy earth machinery is not classed as high risk by WorkCover but we class it as high risk so we do a risk assessment. Now, no one can hop on these machines without formal training and a statement of attainment or completion.

The ‘technological’ discourse of safety is clearly mediating the innovating activities of Max and his team (Gherardi and Nicolini, 2000: 338). Broader OH&S networks (comprising engineers, physicists, planners, legislators, and producers of safety materials, equipment and learning resources) are also actors in the training assemblages. Similarly, discourses of productivity and cost reduction are translated through training, as Max explains.

We are now looking at ‘eco’ training like not being so hard on the pedal, or using the gearing rather than the brakes to help the business with emissions targets, and also the bottom line through fuel consumption, etc.

Much of Max’s innovating work involves negotiating with regulators, administrators, auditors, production schedules, national committees, and site managers in an environment where safety, compliance, cost, and ‘return on investment’ have currency. Success for the RTO is often contingent on this process.

While I have corporate money from each region’s budget, I try to prove how training saves money for them in the long run. We are now looking at how we can embed the costs as normal parts of operations, for example in the maintenance of machinery.

The Australian Skills Quality Authority (ASQA), Australia’s VET regulator, is also controlling and shaping everyday training practices. Compliance with ASQA is a high priority for the RTO, according to Max.
When the RTO started, there were a lot of compliance issues but we worked hard to set up compliant administrative systems. I don’t muck around, I make the hard calls pretty quickly. I have to be really tight and vigilant with the quality. I’m worried people might think we tick and flick.

Like safety, this quality work goes ‘hand in hand’ with innovative practices and involves complex negotiation processes. For example,

The biggest trouble we have in the auditing process is how we demonstrate industry consultation. They [ASQA] want external industry consultation. How do we do that when we are part of a company? I had to really negotiate a few things there.

Despite the complexities, the commercial environment is one Max clearly enjoys.

Here I can be really innovative about how to support the business to make money. I have had to be everything – quality, student records, data, and program design. But it is worth it. A colleague from NSW rang to say it is the first time someone has spent time with him to help him understand the educational process and evaluate his skills. He told me, “I can’t thank you enough”.

Problematising safety work

To observe Max’s innovative ideas at work, I travelled to a pre-cast concrete production site in remote NSW. Visible from a distance, massive cranes were busily producing and moving large concrete slabs as I arrived. Large safety signs on the gate, along the driveway and on fences, greeted me with warnings that personal safety gear must be worn on site and that entry for non-authorised personnel is not permitted. Darren, the site’s onsite trainer and OH&S Officer, had to meet and escort me to the site office to undertake the interview. Although he has limited training experience, Darren has many years of experience working in the OH&S field in construction and mining sites and in factories.
Darren started his working life as a production labourer and, after completing two Certificate IV qualifications – one in Workplace OH&S and one in Training and Assessment – moved into his current combined role of OH&S and Environmental Officer, Training Coordinator and Workplace Trainer. While he oversees and coordinates all training at this site, most of his pedagogic work is training new workers to do dogging work. Doggers are manual labourers who load and unload precast concrete structures from cranes weighing up to 80 tonnes using ‘slinging techniques’ (Picture 7.2).

Picture 7.2: Slinging techniques

Most doggers are placed in the company by local labour hire companies through work placement programs. While some have trade backgrounds, many are general labourers who have been long term unemployed and have low levels of language, literacy and numeracy skills.

As dogging work is contingent on reading safety policies and procedures, workplace documents and learning resources, as well as working out load calculations and writing in log books, many doggers require significant learning support to complete their training. Numeracy skills in particular are of concern due to the ‘surprisingly large number of complex load calculations’ involved in dogging work. The challenge (problematisation) for Darren and Max in this case is to engage doggers in the training, retain them in the job and produce productive and safe workers.
This is not an easy task. Plus, skilled and unskilled labour in this low socio-economic region has been in short supply for some time. Adding to the problem, the male dominated nature of work such as dogging (Billett and Somerville, 2004: 312) leads to a culture of competitiveness and risk taking behaviours, such as not wearing protective clothing to avoid being seen as weak (Somerville, 2006: 42). The stress in dogging work, and in training doggers, is exacerbated by the pressures of tight production schedules.

As dogging work is deemed a high risk vocation by WorkCover,\(^7\) doggers are required to have a high risk work licence, unless they are undergoing training as they work. Training for licences can only be conducted by an RTO approved by WorkCover, which as the regulatory body, undertakes external assessments as a validation measure before issuing licences. WorkCover also issues regular safety alerts about the dangers of dogging work. For example,

> WorkCover recently responded to two incidents where doggers were seriously injured during crane operations. In the first incident, a 1.2 tonne I-beam was lowered into a storage position, where it rested on its flange atop timber packers. The beam, however, rolled forward crushing the dogger’s lower leg. In the second incident, a dogger walking a load during a pick-and-carry operation suffered crush injuries to both legs when he was struck by the moving crane (Safety Alert issued by WorkCover NSW, April, 2013).\(^8\)

The safely alerts relay details of the incidents, the actions taken in response and the measures put in place to prevent the accident reoccurring. Reminders about the Safety Act are always prominent in these alerts.

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\(^7\) WorkCover is the safety authority in NSW.

To address frustrations with traditional training arrangements for doggers, Darren and Max integrated training into the doggers’ everyday work. Prior to this initiative, the doggers spent eight to ten days offsite at training programs. Both educators were keen to decrease this ‘down time’ and increase the number of skilled doggers onsite. There can be up to 50 doggers working at any time so the combined effect of more trained workers, and training on the job, was potentially significant to the company’s bottom line, as Darren explains:

*Now we don’t have to wait until the guys are fully trained before they start working, and we don’t have to wait for a trained dogger to blow the whistle. There is also a stronger learning culture and an increased skill base.*

To obtain their licence, the doggers must complete the unit of competency, ‘Licence to perform dogging’. They can then work their way up four levels of training customised to their skill levels, safety requirements and pace of learning. The licence takes approximately two to three months to complete in the workplace (instead of eight to ten days offsite) and commences with the assessment of the core skills mentioned earlier.

Prominent skill gaps are identified and addressed through short training programs before workers are allowed onsite. As Max explains, ‘because of the safety risk, nothing is taken for granted here’, so all workers are assessed prior to starting work regardless of their skills, qualifications and experience. ‘On the job’ learning involves a combination of one on one instruction as the doggers work and group classes held onsite after work on an ‘as needs’ basis. This can be up to four times a week, depending on other work commitments.

*The doggers let you know if they need to learn something. If I think they all need to know it, I will call them together after work and go through the theory.*

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99 The four levels include: - Group 1: Technical trade skills, Group 2: Higher technical skills, Group 3: Mobile crane operations, Group 4: Advanced crane operations.
The theory of dogging work principally covers the preparation and use of lifting equipment, how to calculate loads and workplace safety. Darren maintains a comprehensive matrix of the doggers’ skills and knows each dogger well. He interacts with them daily to monitor progress and works alongside them when specific training or encouragement is required.

The doggers are also partnered with an experienced mentor who supports the learning and notifies Darren when further training is needed. Darren then either demonstrates the skill ‘on the spot’, or uses devices such as iPads to show pictures or short videos of specific skills and techniques and collects practical evidence via videos, photos, documents and observation.

*If a person has learning difficulties, I put them at ease, do more training with them and use different assessment approaches. Training is based on each individual’s needs so if a trainee requires additional help, this is implemented straight away. Then I verify that the training has been understood.*

Darren’s innovating work ‘anchors learning into existing work systems’ (Fenwick, 2004: 239) through a combination of formal off the job training (theory, company policies and safety protocols), formal on the job training (one on one or group training), in the moment training (such as demonstrations), dyadic pedagogies (where more experienced workers mentor others) and informal interactions with doggers that occur in spontaneous and improvised ways.

**Mobilising safety knowledge**

Safety knowledge, a key mediator in Darren’s pedagogic work, is translated across this worksite through training programs, safety plans, policies and procedures, learning resources, audit regimes, building regulations, budgets, workplace discussions, equipment specifications, maintenance schedules, units of competency and so forth. They are the ‘visible’ results of external networks that mobilise safety knowledge to control work practices from a distance (Gherardi and Nicolini, 2000).
As immutable mobiles, textual artefacts (such as signs) in particular standardise what counts as safety knowledge at this site and how Darren and the doggers conceptualise, and do, safe work (Fenwick, 2008: 22). The artefacts embody safety knowledge and transport it across time and space to local work practices (Gherardi and Nicolini, 2000: 335). While most safety knowledge is codified in this way, learning about safety also happens in the ‘messy problems and tedious practices’ (Fenwick, 2003b: 128) of dogging work. With the threat of injury or death highly visible and always present, it is very much in the doggers’ interest to work safely, as much as it is in the interests of the company, legislators, insurance companies, government authorities, equipment manufacturers, safety investigators and so on.

Learning to do dogging work is thus an embodied experience which renders the body a mediator in the learning and innovating process. As Michelson (1998, cited in Fenwick, 2003b: 129) writes, in dangerous and threatening situations, the body acts ‘in the moment’ before the mind has time to catch up with the experience. Described by Somerville (2006: 49) as ‘embodied work learning’, an affective charge (fear) makes danger both tangible and familiar and leads to a ‘pit sense’ in the doggers that keeps the body safe. Learning in these locations is not just about acquiring a set of skills, it involves the ‘embodied subjectivity’ of the worker in quite profound and fundamental ways (ibid.: 38).

Drawing on Mulcahy (2000) and others, Somerville (2006: 40-43) explains how embodied knowledge is transmitted from one person to another through gestures, body orientations and expressions as people work together. Embodied learning experiences are also heightened by laws that require workers to be responsible for their own safety and ‘consciously aware’ of the safety of others (ibid.). Thereby, learning, working and performing safety are one and the same (Billett and Somerville, 2004: 310). The embodied experience of dogging work is, arguably, very different to the experience of workplace safety for managers, auditors, or legislators for example.
The difference lies in the real physical danger of work, as opposed to other dangers in the workplace such as litigation and financial penalty for breaches of the Safety Act. By placing himself at the front line with the doggers, Darren shares the embodied and dangerous experiences of dogging work in the moment. He also experiences safety in other ways as he performs the roles of OH&S officer and training coordinator.

The idea that different roles have a different reality of workplace safety challenges the assumption conveyed through safety discourses and competency based training (Somerville, 2006: 41) that one reality of safety applies to all roles and workplace settings. For example, as OH&S officer, Darren plays dual roles when training doggers. Firstly, he ensures their practices meet the safety requirements of the workplace and competency standards and, secondly, he ensures the workplace is safe. Each role is entangled in the other and has implicit power to enforce the company’s rules and regulations.

The roles are also fundamental to Darren’s work identity. The death of his ‘best mate’ on the job twenty two years ago had profound effect.

From that day on, I promised myself that this would not ever happen again at a place that I work. I was only a labourer - a jack of all trades then - so I started training and learning to do what I do now. This never stops.

The experience radically transformed Darren’s views of safety at work and his career. As a result, his innovative pedagogies continually question and research ways to improve workplace safety and practices that transform doggers into ‘safe workers.’ Echoing Steve’s attempts to transform how plumbers learn and think in Chapter 5, the process involves ongoing negotiations with the doggers to change their sense of who they are, what they know and what they can do (Somerville, 2006: 47). Darren’s comment is insightful in this regard:

Sometimes, the doggers act up. But this turns around when I change their way of thinking and the way they act. Once you show them why these rules are in place and they are really for them and their families, they see the bigger picture.
Changing the doggers’ practices is not simply a matter of imparting codified safety knowledge. It is an ongoing, situated and co-constitutive learning and translation process involving many heterogenous actors,

\[
\ldots \text{within a community (with its history, assumptions and cultural values, rules and patterns of relationships), with the tools at hand (including objects, technology, language) and in the moment’s activity (its purposes, norms, and practical challenges) (Fenwick, 2008:20).}
\]

Thus, through processes of translation, the doggers learn the language and skill of dogging work (Gherardi, 2000: 216) and, according to Darren, gain ‘a strong understanding of the safety standards we all as a site are trying to create’.

The training program, embedded in the work of doggers, is now black boxed at this production site. The networks have stabilised and the actors have done their job to translate safety policies and discourses into local practices (Sørensen, 2009: 54). Course evaluations indicate that the doggers respond well to this innovative approach to learning. From the company’s viewpoint, the program has had high use and immediate value (Mumford, 2013: 92) and significant flow on benefits of improved productivity and cost reduction. In this particular workplace, as Mulcahy (1999: 233) writes, when ‘competence, learning and innovation’ are defined in technical and economic terms, competency based training is the right training tool. Darren reflects,

*The program has not only given the doggers time to learn, it also has developed a culture within the workplace where we as a core group can create an injury free workplace . . . I’m talking to Max about bringing a similar approach to training on the job for working safely with heights and heavy lifting. While we are still in the early stages, the company is looking at it as a role model for other sites across Australia.*
Interim interpretations

At first glance, innovating in this case emerges as adaptive, embodied and problem solving activities occurring in an assemblage consisting of Max and Darren, doggers, safety and productivity discourses, safety rules and equipment, danger, cranes and chains, concrete beams, mentors, individual and social subjectivities, units of competencies, bodies, iPads and masculine affects (e.g. a ‘will to danger’). At this site, safety knowledge travels across space and time through ‘concrete’ carriers to assume many different shapes in local practices (Gherardi and Nicolini, 2000: 345).

Therefore, safety standards are ongoing, collective, and co-constitutive performances of people and materials that are coupled to a public narrative (Nespor, 2012: 7). They are not fixed, inert, and codified discursive objects. As, Gherardi and Nicolini (2000: 344) write, safety knowledge does not magically produce safety by itself. Innovation, for both Darren and Max, means ‘coming up with new ideas to do training differently to meet the needs of the business’.

Pedagogic innovation involves balancing and negotiating pressures for safe work with imperatives for improved productivity, profit and production rates. Innovative performances are entwined with performances of safety, learning, and changes in identity that co-evolve in reciprocal and interdependent ways (Billett and Somerville, 2004: 315). Multiple performances of safety legislation are being performed at this worksite, evident in:

- Max’s negotiations to embed safety in training and work contracts;
- Darren’s work to maintain a safe worksite and train safe workers;
- Administrative practices within the company (undertaken by auditors and safety officers) to monitor and report safety incidents;
- Preventative practices undertaken by cleaners and maintenance teams;
- Medical performances in response to accidents onsite and subsequent investigations, reporting and actions;
- Safety protocols built into equipment by manufacturers who interpret safety knowledge into operating instructions (Gherardi and Nicolini, 2000: 39);
• The work by government agencies to control workplace safety through rules, regulations, audits, punitive measures, and safety alerts.

Each performance enacts workplace safety in a different way and with a unique reality and materiality. The safety work of doggers is thus very different to an office worker, even though they co-exist in the present in the same work site (Mol, 1999: 76) and rely on each another (Sørensen, 2009: 83) in a highly practical and material way. It is the collective of all performances that enable safe workplaces (Gherardi and Nicolini, 2000: 332).

While Darren’s tailored and flexible work based pedagogies are recognised as being innovative in the VET literature (see Mitchell, 2013, 2003, Hillier, 2008, Toner et al., 2011, Billett et al., 2012), there is little mention of the ‘experiential’ (Fenwick, 2003b: 128), caring, embodied and transformational nature of this work. His innovative pedagogies thus run counter to the technical, rationalist views of VET because they are embedded in the hazardous reality of construction work.
Chapter 8: Patterns of innovating

Educational practice is not simply instrumental in the sense of figuring out how to get things done, but more importantly, it is social and political in the sense of deliberating about what to get done, why to get it done, who decides, and whose interests are served (Cochran-Smith, 2009: 121).

Figure 8.1: Patterning effects of innovation

Introduction

In this chapter, I discuss patterns of innovative pedagogic practice that are discernible across the case data. There is sufficient consistency in each case to claim that innovative pedagogic practice, while specific to its situation, is enacted in particular ways. Clues reside in points of commonality and difference in each innovative performance that can be used to articulate how innovation is done (Moser, 2005: 671). As Perillo (2007: 221) writes, looking for how difference plays out is a way of theorising innovating activity.

The aim in this chapter is not to seek a single and definitive explanation of these patternings (Moser, 2005: 684), or to ‘lose complexity in a process of labelling’ (Law, 1994: 5), but to determine which patterning practices are common across the four settings and how they are of consequence in VET. The assumption that pedagogic practices in VET might be patterned and organised differently is not surprising. As Toner et al. (2011: 38) write, different industries respond to skill development challenges in distinctive ways according to their needs, paces of change and types of workers.

These differences are clearly evident in the data and are central to the discussion, although not in the way Toner et al. might envisage. Using Moser’s (2005: 685) question, ‘what difference does difference make’, the following discussion is structured in response to the four research questions.

1. What counts as pedagogic innovation in VET?
2. What happens when VET educators innovate?
3. To what end is pedagogic innovation directed in the VET system?
4. How might innovative pedagogic practices be fostered and sustained?

Throughout the discussion, empirical examples from each case story are provided in brackets; for example case one (C1).

**What counts as pedagogic innovation in VET?**

The response to the first research question, what counts as pedagogic innovation in VET, depends very much on one’s purpose, location and concerns (Law et al., 2013), as discussed in Chapter 2. Clearly there are multiple ‘stakeholders’ in VET that conceive educational practices, and the conditions that foster and sustain them, in very different ways. The policy perspective offers one view that is commonly expressed in a means-ends language of ‘training markets’, ‘industry-led’ education and flexible training systems (Goozee, 2001). Education is a means that serves the ends (ultimate goals) of government, industry and the economy.
Innovation is also a means that ultimately serves these ends and is understood as unproblematic and linear processes of product development (the received view), or as situated, collaborative and contextualised activities in communities of practice and/or the workplace (the contextual view). Both views seek to manage innovative pedagogies in order to meet predetermined objectives of human capital.

Stories from the field, however, reveal accounts of messy and complex practices that do not fit these views, albeit some appear as recognisable pedagogies in the data (PBL and work based learning for example). While all four cases fit broad brush descriptions of innovation in the literature, and can be construed as front-end policy interventions (the technology project at PICAC, the doggers’ safety training program, the Employabilit-E project or the application of WIL through PBL), the case stories tell tales of relational, emergent and politicised practices that make these interventions work.

The innovation lies in the educators’ everyday practices and ‘artful integrations’ (Suchman and Bishop, 2000) in their dealings with students. This explains, in part, why the four educators do not regard themselves as innovative. Cameron (C2) for example reflects,

\[
\text{It might be just that I have the skills to use e-learning technologies that I am seen to be innovative. I think the innovation comes in the daily dealings with the students.}
\]

The stories affirm the materialities of pedagogic practice which, along with other actors, are mediating and translating the interests of others into something new (Latour, 1987). They also foreground the complexity, multiplicity and disruptive effect of innovative pedagogies that involve:

- Deliberate and risky experimentation that can end in mistakes. Thomas’ (C1) account of ‘throwing everything up in the air’ as he adapts his pedagogies into something new when he senses his ‘students aren’t with’ him is a good example;
• Creative problem solving. Cameron (C2) defines these practices as ‘thinking differently’, ‘thinking laterally’ and ‘trying new things’ to understand and fix a problem, while ‘accepting that everything is not going to work’. Problem solving is a consistent theme across the four cases;

• Precarious, spontaneous and uncertain practices. Steve (C3) describes the experience as being at the ‘cutting edge’ of the plumbing industry (Steve in C3) and being involved in ‘something that is not being done anywhere else’;

• A deep and unwavering commitment to students. Darren (C4) for example, puts doggers with learning difficulties ‘at ease’ by using different assessment approaches to make sure the ‘training has been understood’.

In their telling, the narratives disclose risky and arduous practices that evoke deep changes in how learners see the world and themselves. In the educational literature, double loop (Argyris and Schon, 1996), creative (Ellstrom, 2010), expansive (Engstrom, 1988), or transformative (Mezirow, 1991) learning are ways of expressing the experience. Notwithstanding their cognitive and humanist theoretical traditions, these theories are useful for articulating how innovating pedagogies are entangled with transformational change in the thinking, identity, actions, and behaviours of learners and educators. The literature is, for the most part, silent about the ‘mess’ and personal effort this process involves.
What happens when VET educators innovate?

As the researcher, I observed relational patterns of innovating occurring in highly specific social and material arrangements (Sørensen, 2009: 2). To innovate, the four educators assemble and reassemble tenuous networks of people, materials and affective actors into relationships of interdependence (Callon, 1999) and hold them together long enough for new practices and learning to transpire.

At the heart of their practices is improvisation, ‘on-the-spot surfacing’, experimentation, acting ‘in the moment’, or ‘on the fly’, and learning ‘to act amidst uncertainty’ (Fenwick, 2001: 254). Perillo (2007: 124) similarly describes pedagogic innovation in schools as practices embedded in the way teachers and their community learn to frame new meanings in unfamiliar and complex situations. This is not a linear process as much as a patchwork of ‘plays of difference’ (ibid.: 226).

The four innovating performances in this study, highly dependent on the effects of other networks, are therefore each generating their own unique reality (Law, 2009: 152). The performances of safety (C4) have a different effect to those producing equity and access (C2), green plumbing (C3), or authentic educative practices (C1). Four different cases would produce four very different innovative performances. What the cases have common, however, is a ‘knowing-in-practice’ (Fenwick and Edwards, 2010), rather than a specific category of pedagogy, educational product, program, or service. While these categories exist in each case, the innovating is more about disrupting, disturbing, and translating categories and existing patterns of learning and work. Among the many forces at play shaping innovating performances in each case, I argue that there are three coherent themes or ‘patternning practices’ traceable across the four cases:

1. Spatialities;
2. Affect; and
3. Distant policy discourses.

The three themes work in harmony in some cases, in tension in others and are clearly related and implicated in each other (Moser, 2005: 685).
In the following discussion, I explore the effects of these themes on innovative practice. The first two themes, I argue, are enabling conditions for innovative pedagogic activity in VET. The third, distant policy discourses, is less enabling in some instances, and calls into question the place of policy in fostering and sustaining innovative pedagogic work.

**Pedagogic innovation as spatialising work**

The first patterning practice to come to my attention is apparent in the multiple spatialising metaphors in the data, such as geographical locations, learning spaces, homes, ‘outside’, ‘comfort zones’, ‘pathways’, ‘learning journeys’ and so forth. The metaphors suggest that spatialities are mediating and shaping innovating practice either as ‘concrete realities’ (McGregor, 2004: 348), or as social and theoretical spaces (Law and Mol, 2003: 4). Concrete realities (physical spaces, buildings, classrooms and workplaces) are easier to identity in the data.

In Case 1, for example, the traditional classroom setup has surprising effect in reproducing traditional teaching practices through spatial arrangements (McGregor, 2004: 355). By positioning Thomas at the front of the room (Photo 4.2), the space is politicised in a way that sustains power differentials and norms and assumptions from the past (Sørensen, 2013: 121). As Nespor (1994: 15) acknowledges, the world ‘flows at times in very deeply worn channels’.

These effects are well documented in the literature (see for example, Sørensen, 2009, Perillo, 2007, McGregor, 2004), and are evident in Cases 2 and 3 in the way physical spaces keep people ‘in their place’, or exclude them entirely (Morgan, 2000: 278) as occurred when the technologies failed in Case 3. Of greater interest, however, is the way innovating educators continually disrupt and redefine physical spaces. This is evident in:

- Thomas’ (C1) efforts to push the educators out of the classroom into ‘hybrid’ learning spaces (such as tea rooms);

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101 Concrete realities refer to Euclidean (or regional) spaces that are defined in physical and geographical terms.
- Cameron’s (C2) extension of the classroom into social spaces, and the temporary homes of learners;
- Steve’s push (C3) through online learning into distant spaces and places, such as plumbers’ workplaces and other geographical locations;
- Darren’s (C4) drive to take learning out of the classroom into the other spaces and places at work.

In these empirical examples, physical spaces are directly complicit in shaping innovative practices and learners’ experiences in impromptu and co-constitutive ways. Equally, the spaces are being shaped in return. Thus, as Lippke and Wegener (2013: 11) suggest, the transformation of physical boundaries ‘suggests that other forms of concrete learning spaces can be established’.

The use of ‘hybrid spaces’ (where learning takes place formally and informally) in Cases 1 and 2, illustrates the recursive shaping process. In both cases, traditional social spaces become temporary places of work intermingled with learning and social activities. The intermingling gives rise to new and unexpected conversations, relationships and practices (Solomon et al., 2006: 3-7) as people work and socialise in spaces beyond the gaze of others. These spaces are bounded and regulated differently as a result (ibid.). Therefore,

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\text{\ldots anyone, or anything, in the right place at the right time [can] be a participant [in learning and innovation]} \text{ (Perillo, 2007: 201).}
\]

While seemingly fertile ground for innovation, Solomon et al. (2006: 6) caution that hybrid spaces are not as neutral as they might appear and can be ‘sites of contested, and at times less visible, disciplinary practices’ (ibid.). Nevertheless, the data clearly suggests that possibilities for innovation and learning lie beyond the physical boundaries of classrooms and institutions, particularly when technologies are involved as Cases 2 and 3 demonstrate.
Interstitial work

Less visible in the data is the way innovating is ‘caught up’ in the intermezzo (Deleuze and Guattari, 1987), or spaces ‘in-between’ learning and work. The traditional boundaries drawn between these spaces are clearly problematic for the educators, evident in phrases such as, ‘I make it [learning] real’, ‘I bring the outside world in’ (C1) and ‘I bring as much realism as I can to the training’ (C3). These phrases imply a need for action to ameliorate a binary, or ‘sharp cut’ between learning ‘inside’ the classroom and what happens ‘outside’ in the workplace. The tension created by these binaries compels the educators to tinker with ways to blur the boundaries and make their effects less troublesome.

As there are no a priori boundaries in ANT, the binaries of work/learning, industry/education and theory/practice in the data are of immediate interest for their imbrications (for example, work and learning can or does occur at the same time) and also for the ‘boundary-making’ practices and controversies they conceal (Fenwick et al., 2011).

Empirically, the intermezzo is the space where the four educators mull over troubling issues and controversies, where innovative ideas are seeded in response and where practices are shaped and reshaped to diminish the binary effect. This is evident in the work of Thomas (C1), Steve (C3), and Darren (C4) as they attempt to align learning more closely with work (to make it ‘real’) and, in Cameron’s (C2) case, to overcome binaries between social advantage and disadvantage.

As a theoretical concept, the intermezzo is understood as a site of creativity and innovation from which emerge new associations, new signs of identity and new practices (Bhabha, 2001, Mulcahy, 2006). The intermezzo is a space in the four cases where disequilibrium and contradictions dwell and where the educators find new ways to solve pedagogic problems. Full of ‘ambiguity and undecidability’, the intermezzo is where knowledge becomes a form of experimenting (Fenwick and Edwards, 2010: 31) and where ‘collaboration and contestation battle it out’ (Bhabha, 2001, cited in Mulcahy, 2006).
Also known theoretically as interstitial work (Mulcahy, 2011), working in the intermezzo is most visible, and problematic, in Case 1 where the traditional classroom setting is distant from the world of work. Not surprisingly, it is least visible in Case 4 where learning is embedded and embodied in the workplace. However, the intermezzo materialises in this case as a space where the initial idea for embedded learning on-the-job was formed in response to a disconnection (at the time) between offsite training for doggers and onsite workplace safety and productivity.

Other less perceptible binaries can be inferred in the data. For example, I infer from Thomas’ (C1) comment that his innovating is ‘normal’, that normal work is considered to be separate to innovative work. This binary, cemented in policy discourses, is highly problematic when innovation is understood by educators in this way which is often the case, according to Hillier and Figgis (2011).

In observations of VET educators, Hiller and Figgis (2011) found that, even though the educators were occupied in complex and highly creative problem-solving activities, they associated innovation with big, revolutionary changes that were disassociated from their practices.

Similarly, in the Netherlands, Stam et al. (2014: 252) found that teachers regarded large scale innovations as unfamiliar and unrelated to the problems and tensions they encountered in everyday pedagogic work. More disturbingly, this disconnect produced:

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\ldots \text{a ‘mindlessness’ that promotes habit, ritual, and compliance,}
\]
\[
\text{rather than learning, creativity and change (ibid.).}
\]

As Gherardi (2012: 228) argues, when innovation is understood as ongoing practices that are situated in every day work, this distinctive and troublesome binary disappears.
The affective\textsuperscript{102} and disorderly nature of innovative practices in the data also sits in tension with the objective and rational portrayals of educative practice in the literature. The binary effect of separating the ‘rational’ from the ‘emotional’ in educative practice is the distancing, and silencing, of affective actors (such as anger, fear, sorrow, desire, excitement and empathy) which, in the data, are squarely in the mix of innovating experiences. Darren’s (C4) experience of the death of his colleague is a powerful example, as are the accounts of anxiety, fear and exhilaration in Case 1:

\begin{quote}
I am highly anxious first up. I sum up the situation very, very quickly. Then I feed off them [the students] – the conversations, the actions, and the body language.
\end{quote}

Wheelahan et al. (2009) cite many unsettling and ambiguous ‘in-between’ spaces for educators in VET environments beleaguered by changing policy frameworks, training markets and unsettled sectoral relations (between higher education, schools and VET).

The ensuing turbulence flows down into shifting institutional priorities, changing institutional cultures and ambiguous priorities in local VET settings. While opportunities for innovation clearly lie in the disruptive and rapid change occurring in the sector, the educators who seek to innovate (agitate, unsettle and disturb ‘taken for granted’ boundaries) in this turbulent environment require considerable courage, ‘dexterity and commitment’ (Fenwick, 2004: 230).

\textsuperscript{102} Affect is understood here as both a psychological construct, and something that registers on the body and circulates in relationships. An affective dimension to innovation, as Perillo (2007: 224) writes, is not without considerable discomfort for those involved.
Boundary work

Innovative pedagogies in the data clearly involve deliberate and experimental boundary work (Lippke and Wegener, 2013). Further to the disruption of physical boundaries, boundary work is also evident in the way:

- Thomas (C1) brings industry professionals into the classroom to disrupt fixed institutional/industry and work/learning boundaries;
- Cameron (C2) experiments with boundaries between the private lives of disadvantaged learners and public education;
- Steve (C3) experiments with new modes of delivery with plumbers beyond traditional teacher-led pedagogies; and
- Darren dispenses with boundaries that delineate learning and work.

Entangled in this work are competency standards, technologies, texts, organisational documents, machines and other materialities acting as ‘boundary objects’.103

Recognisable in many VET settings, these objects are stable enough to mediate and support boundary pushing practices (Star and Griesemer, 1989: 393). The changing identities of learners and educators are also entangled in boundary work which suggests that the boundaries defining what it means to be an educator, and where education is practiced, are fluid and permeable in innovating praxis (Gherardi, 2012: 221). Understanding innovative pedagogic practice as boundary work in this way makes visible the territories or ‘sets of cultural practices’ that determine and preserve the way work is done (Seddon, 2009: 64). Drawing on Cooper (1998), Mulcahy (2011: 205-6) challenges the traditional concepts of boundaries as fixed ‘markers of difference’ with alternative descriptions of boundaries with the capacity to join, separate and shift.

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103 Boundary objects are understood as ‘stuff and things, tools, artefacts and techniques, and ideas, stories and memories’ (Bowker and Star, 1999, cited in Fenwick and Edwards, 2010: 51).
Lefebvre’s (1991) vision of a building assists in imagining structural boundaries in different ways. According to Lefebvre, a building is,

\[ \ldots \text{permeated from every direction by streams of energy which run in and out of it by every imaginable route: } \ldots \text{Its image of immobility would then be replaced by an image of complex mobilities, a nexus of in and out conduits (cited in Leander et al., 2010: 332).} \]

These alternative descriptions of boundaries render familiar metaphors in VET (such as learning transfer, knowledge integration and boundary crossing) problematic; firstly for their assumptions that boundaries are fixed and can be crossed, and secondly, that knowledge and skills are ‘things’ that can transferred across boundaries in predictable and unproblematic ways (see here in particular, Mulcahy, 2013).

The empirical data holds with Mulcahy’s (2011) view. Clearly, there are complexities and indeterminacies in boundary work that are contingent on how local sociomaterial relations play out. Indeed, knowledge is not transferred across boundaries in the four cases under study, but is translated in complex processes of connecting, loosening and dissolving boundaries. This is particularly evident in Steve’s (C3) attempts to bring online learning into the classroom. Here, as Lippke and Wegener (2013: 5) describe, ‘continuity and discontinuity unfold simultaneously’. Innovative pedagogic practices are therefore more about determining how boundaries are formed and connected (Gherardi, 2012) than making, breaking, or crossing them.

The constructs of situated learning theory, and communities of practice, again come under scrutiny for their underwriting of ‘container-like spaces’ (Fenwick and Edwards, 2010: 51) and fixed boundaries. Associated concepts of legitimate peripheral participation, boundary infrastructure and boundary objects (Wenger, 1998) also fail to account for the complex mobilities of innovative pedagogies as they ‘flow’ into other physical, social and network spaces (Gherardi, 2012: 221).
The fluid nature of innovative pedagogies is somewhat surprising, more so perhaps than the flow and movement of knowledge. Safety knowledge for example, clearly moves from distant policy to local dogging performances (C4) via a series of carriers (Gherardi and Nicolini, 2000: 345). Pedagogic practices, however, tend to ‘spread out’ (Mulcahy, 2006: 65) over different spaces, times and places and move and adapt as they spread. As boundaries are disrupted, disturbed and connected, the shape of innovative pedagogies changes.

Figgis and Hillier (2009: 13) similarly describe innovation in VET as a ‘flow activity’ that results in ‘optimal’ learning experiences. Citing Czikszentmihalyi (1991), Figgis and Hiller (2009) use ‘flow’ to describe how educators balance the challenge of an activity (such as achieving effective teaching/learning and assessment) with the ‘stretch’ required to achieve it. In their study, the stretch for educators to meet clients’ needs involved,

\[
\text{... skill, inventiveness, responsiveness, openness, experimentation - in a word, innovation (ibid.: 13).}
\]

The fluid nature of innovative pedagogies is most evident in the way Steve (C3) and Cameron’s (C2) pedagogies spread from the confines of the classroom to ‘somewhere else’ (ibid.) via technologies and other connections-in-action (Gherardi, 2012: 224). While the pedagogies derive from a specific physical location, place, space and time, they move, flow and spread into other tempo-spatialities.

This observation prompts attention to the issue of how innovative pedagogies acquire and maintain their form as they spread and flow. How can it be, Latour (2005: 31) asks, given the inescapable locality of their production, these practices can endure and travel over time and space and become consequential for subsequent actions in other places?

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**Fluid spaces, fluid pedagogies**

Law and Mol’s (2003: 6) concept of ‘fluid space’ explains how innovative pedagogies adapt to different locations, while retaining a recognisable shape and form. Citing De Laet and Mol’s (2000) study of bush water pumps in Zimbabwe, Law and Mol (2003) explain how the pumps, located in different settings, continue to perform their function while being continuously and spontaneously changed. As the pumps break down, different parts are added according to what is available in each local setting. Despite the differences that emerge in their look and shape, the pumps continue to work as pumps as they adapt to fit their local circumstances.

Law and Mol (2003) argue that *discontinuity* rather than *continuity* is an organising principle in the story where changing configurations strengthened the pumps through discontinuity. In practice, a standard and standardised pump is not necessarily required, as De Laet and Mol (2000: 225) conclude:

> . . . in travelling to intractable places, an object that isn’t too rigorously bounded, that doesn’t impose itself but tries to serve, that is adaptable, flexible and responsive - in short, a fluid object - may well prove to be stronger than one which is firm.

Applying this concept to the failure of technology in Case 3, Steve’s innovating network did not fail as a result of this failure, but adapted and evolved into something new. The class continued, the learning progressed for all concerned and the innovating network survived despite seeming failure on that evening. Similarly in Cases 1 and 2, the pedagogies adapt and change their shape as practices play out according to what, or who, is mediating in the moment.

The fluidity of innovative pedagogies thus allows practices to circulate in spatially extensive networks (McGregor, 2004: 359) and to co-evolve with space as patterns of relations form and change (Sørensen, 2009: 70-73). Thereby, fluid innovative pedagogies can inhabit fluid spaces and can change shape through discontinuity, variability, and adaptability as a ‘patterning with its own logic’ (Sørensen, 2009: 85). Further, the concept of fluidity,
. . . resonates with a world in which shape continuity precisely demands gradual change; a world in which invariance is likely to lead to rupture, difference, and distance. In which the attempt to hold relations constant is likely to erode continuity (Law and Mol, 2003: 6).

Drawing on Deleuze and Guattari’s (1988) ‘smooth’ and ‘striated’ spaces, Bayne (2004, 315) argues that smooth spaces (open-ended, amorphous and informal spaces) are more likely to present possibilities for learning and innovation than striated spaces (which are formal, closed and structured). The ‘smoothness’ of a space lies in,

. . . its openness, its instability, and tendency to metamorphosis, its resistance to regulation, its governing logic of access rather than possession, the unknowability inherent to its vastness, its unmappability (ibid.: 306).

It is problematic, Bayne contends, for teachers to create smooth spaces in striated contexts that have been appropriated by regimes of productivity, standardisation and efficiency. Cameron’s (C2) description of the complexities of project based learning (cited earlier on page 120), where he is required to write a unit outline for students to meet QA requirements but can’t complete the paperwork until the students undertake the project, is salient in this regard.

**Pedagogic innovation as affective work**

The second patterning practice in the data concerns the compelling affective dimension of innovative pedagogic work. An affective charge was clearly evident in the dialogue, bodily reactions and facial expressions I observed in all four cases. Indeed, the data quivers with the affective energy (Thrift, 2008, cited in Mulcahy, 2012: 20) of fear, anxiety, passion, sorrow, care, excitement, exhilaration and desire.
Cooper’s (1998, cited in Perillo, 2007: 224) description of boundaries as ‘fault lines’ that generate danger and anxiety attests to the stressful nature of innovation when understood as boundary work. Stam et al.’s (2014: 263) observations of boundary work involving negative and personally challenging experiences for innovative educators are also instructive.

*It is an energy consuming, emotional, and painful process, in which self-confidence, belief in one’s own capacities, and belief in the innovation itself are made to hang in the balance (ibid.: 260).*

So too are accounts of innovating experiences by the women entrepreneurs’ in Fenwick’s (2003) study who describe the experience as ‘managing inner fear’, and learning to minimise ‘extreme emotional highs and lows’.

In the empirical data, the art of pushing learners ‘out of their comfort zones’ provokes a range of similar and unpredictable affective, embodied, and emotional responses. Case one, for example,

*In a lot of cases, I deal with people’s apprehension and fear about change. Sometimes it gets to a point where I try not to threaten them in any way shape or form. If they are, I don’t challenge them as much as I normally would and change tack. It can be very confronting.*

Indeed, the affective engagements described in all the four cases are ‘intensely felt’ through the experience (Sørensen, 2013). They are impromptu, ‘generative and contagious’ effects that add complexity to relationships in innovative assemblages, most particularly those with learners (Skattebol, 2010: 78). Further, as the four cases demonstrate,

*... the affective force is unruly and unpredictable because other people’s affective responses and patterns transform the original affect (ibid.).*

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The affective dimension of innovative practice is most evident in the ‘embodied affective engagements’ (Mulcahy, 2012: 20) of the doggers (C4). In this case, there is a strong affective charge generated in, and by, Darren’s innovating work as the threat of physical danger heightens the doggers’ learning experience. The acute attention Darren pays to safety as a result of the death of his work mate makes danger both real, and present, for him and the doggers. Danger is reinforced through discourses, conversations, signage, textual artefacts, bodily gestures and expressions, energies, gestures, commitments, and daily routines (Mulcahy, 2012: 11-12) in the dogger’s work.

The anger and frustration in the body language of the educators (students in C1) provides further empirical evidence of the mediating role of affect in innovative praxis. Thomas (C1) elaborates,

\[ I \text{ know if it is working when it feels right, when I can see doubt and} \]
\[ \text{confusion, when I can feel resistance as a sign of engagement and} \]
\[ \text{when I can see comprehension by students.} \]

Affective pedagogic actions are connected with new comprehensions and change in learners, referred to empirically as ‘real’ learning, or theoretically as transformational, double-loop, creative and generative learning.

The affective connections in the data clearly bring about innovation and change in pedagogical practices (Mulcahy, 2012: 9). The affective and embodied nature of these practices challenges Cartesian separations between mind and body (Gherardi, 2000: 215) and, importantly for this discussion, render affects as ‘pedagogies in themselves’ (Mulcahy, 2012: 18). In this sense, affect encourages educators to attend more closely to relationships with students, and to ‘reinstitute’ care in their practices (Skattebol, 2010: 79).

Denying affect (as discourses of professionalism tend to do) can inhibit the ‘flow of feeling’ and the potential for innovation. As Zembylas (2007: 136) claims, the strict control of emotions in education stifles what might happen when passionate, affective and adventurous pedagogic practices are encouraged. It is important, Skattebol (2010: 78) writes, to appreciate the generative and
contagious nature of affect, and the ‘flow of feeling’ associated with shifts in ‘collective meanings’.

The addition of affect to the discussion broadens the analysis from a focus on the sociomaterial entanglements in pedagogic practice to the lived experience of educators when ‘entangled’ in innovating action (Sørensen, 2013: 13).

**Pedagogic innovation as identity work**

The link in the data between affect, innovative pedagogic work and the changing identities\(^{106}\) of educators and learners warrants further discussion. According to Scheeres and Solomon (2006: 88), the formation of professional identity involves workers becoming subject to, and subjects of, various organisational practices. Identity formation is linked with learning in the literature and, according to Tynjala (2013: 20), takes place in the tension between continuity and change. It is also associated with how individuals exercise their agency.

> At work, employees not only use their skills and knowledge but they also identity themselves with the work they do (ibid.).

The dual professional identities of VET educators – as industry expert and educator - are clearly complicit in innovative pedagogic work. Thomas’ (C1) strong identity as an industry professional, and the importance to him of industry ‘looking for’ his students, supports this observation. Further, his claims that, ‘I do what I do because that is who I am’, reinforce the idea that innovative practice involves identity work.

Thomas also infers that identity formation is shaping the educators’ (as learners) learning experience too through statements such as ‘they put their identity on it too’ and ‘own the practice’. Similarly Steve’s (C3) identity as a plumber, and his identification with PICAC as a centre of innovation, ‘attracts’ him to the environment and ‘challenges’ him constantly ‘to do what I do’.

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\(^{106}\) I adopt Scheeres and Solomon’s (2006: 89) explanation of identity as a position taken up by a person at a point in their working lives as they learn to become a type of person or worker.
Blom and Clayton (2002: 148) highlight the complexity for VET educators of working with dual identities with accompanying dual professional loyalties— one to an industry discipline and the other to education. Working at the intersection of the two identities creates problems and uncertainties for educators which, in turn, can shape new practices as they move in-between the two fields (Fejes and Kopsen, 2014: 266-269).

Adding to the complexities are the multiple roles that educators assume in pedagogic work. This is not uncommon for VET educators, according to Wheelahan and Curtin (2010: 24) who cite advisor, pastoral carer, student support, counsellor (as someone to talk to), guidance officer, administrator and safety officer’ as common roles educators fulfil. Most of these roles appear in the four educators’ description of their everyday work, most particularly in Darren’s (C4) role as OH&S officer, training coordinator, workplace trainer and counsellor.

As he moves between these roles, and adopts the identity of each, Darren forms new understandings of what constitutes work and what it takes to become a different kind of worker (Sheers and Solomon, 2006: 91). Indeed, Darren has developed a strong vocational identity through multiple roles and is, according to Fejes and Kopsen (2014: 275), better equipped to adapt to changing occupational environments as a result. The data reveal however, the uneasy struggles, tensions, pleasures, and pains involved in identity work (Mulcahy, 2006: 59).

In studies of early childhood teachers, Skattebol (2010: 83) found teachers became ‘profoundly unsettled’ when they experienced changes in identity associated with changes in pedagogic practice. The experience undermined their sense of professional expertise and led to uncertainty and a lack of confidence in how their practices were impacting on students. Stable identities, Skattebol writes, are associated with powerful discourses of self-esteem (ibid.) so any blurring or unsettling of identity brings about uncertainty which in turn, makes it very difficult for educators to unravel and make sense of complex webs of professional and personal discourses (ibid.: 84).
Yet in the literature, the multiple roles inhabited by innovating VET educators, and their ability to move between different roles and relationships, are assumed to be unproblematic and integral to innovating pedagogic practice (Harris et al., 2007: 4).

The learners in the four cases also experience identity change. The plumbers (C3) for example, are changing from employees to licensed ‘green plumber’ contractors with significant transformation in their understanding of what they know and can do. The disadvantaged learners (C2) are changing their understanding of themselves as learners and how they (re)engage in education and society. The doggers (C4) are (re)connecting with learning and/or work and forming new identities as skilled, safe construction workers. Identity formation in this case (and in Case 2) involves transformation in the way these learners care for their wellbeing, feel about their self-worth (Somerville, 2006: 44) and make sense of their experiences (Billett, 2006: 6).

In all four cases, identities are being shaped in particular ways by broader occupational and institutional discourses (Billett, 2006: 7) and by specific local assemblages (Mulcahy, 2011: 227). As Billett (2006: 7) explains, discourses shape the identities, thoughts and actions of workers in particular ways through the regulations, expectations and values they convey. Workplaces also satisfy and generate workers’ desires for ‘recognition, competence, participation and meaning’ (Fenwick, 2008: 22) and are powerful influences on learning and identity formation for both educators and learners.

**Steering from a distance: the place of policy**

The third, and more provocative, theme shaping innovating praxis in the data concerns the effects of policy discourses. In each case, the educators articulate strong associations with particular discourses (such as equity and access in Case 2) but create, and are caught up in, different discursive effects depending on their local circumstances. Discourses, according to Foucault (1979, cited in Danaher et al., 2000: 31-33), are ‘language in action’, or ‘the means through which a field “speaks” of itself to itself’. As Mol (2008: 8) writes:
In a discourse, words, materialities and practices hang together in a specific historically and culturally situated way.

The following discussion explores how policy discourses mediate the four innovative performances and control and align local work practices with broader economic (productivity and innovation), social (access and equity) and political (sustainability and safe workplaces) objectives. By regulating what can be said and done, the voice of government is shaping, mobilising and ordering the educators’ innovative practices, and everyone they work with, in certain ways (Edwards and Nicholl, 2006: 185). Rules and regulations, evaluation measures and standards (Fenwick and Edwards, 2012: 85) are mechanisms used by governments to exercise control on ‘unfamiliar events, places and people’ (Latour, 1987: 223).

Latour’s (1987) ‘centres of calculation’ provide insight into how this controlling is done. Calculation is an act of counting, controlling, and judging which typically follows three stages where:

1. Relevant things are sorted out into a single frame;
2. Then manipulated and transformed to show a relation between them;
3. To extract a result (a new thing, a ranking or decision) (Fenwick and Edwards, 2010: 123).

The safe work policy in Case 4 illustrates Latour’s concept. The centre of calculation (government) sends out simplified messages about workplace safety, then monitors what is going on (through audits and reporting mechanisms) before acting on the basis of the monitoring (ibid.: 109). Actions might be sanctions, fines and warnings in the case of safety breaches. The process occurs primarily through language (Billett and Somerville, 2004:312) in discursive artefacts such as policy documents, safety rules, training programs and materials, safety signs, safety alerts, workplace conversations, and so forth. As ‘immutable mobiles’ (Latour, 1987), these artefacts and practices convey and render policy messages visible in the workplace.
Indeed, workplaces effectively convey policy messages, and ‘regimes of truth’\(^{107}\) through ‘capillaries of power’ (Edwards and Nicoll, 2006: 181). From the beginning, workers engage in a professional language game (Gherardi, 2000: 216) as they learn to obey workplace rules and expectations. In the case of the doggers (C4), a number of mediators (such as sanctions for non-compliance) effectively discourage any behaviours and practices (Gherardi and Nicolini, 2000: 337) that might threaten the policy’s control.

This is not necessarily a negative phenomenon. Safety is clearly paramount in any workplace, and is more so when dangerous equipment and work sites are involved. The policy discourses shaping Darren’s (C4) innovating practice thus provide stability in his networks due to their legislative power and their loose, or ‘symmetrical’ (Gleeson et al., 2010: 446), alignment with business objectives and workers interests. Improved safety means healthier, happier workers, greater productivity, less litigation and reduced costs for enterprises and governments.

Similarly, policy discourses of innovation and environmental sustainability shaping the plumbers’ experiences (C3) are somewhat aligned with business imperatives. Here, I do not mean to conflate policy, work, innovation and learning and ‘flatten out’ their uncomplicated and problematic relations (Solomon et al., 2003: 11), but rather highlight the power of a ‘match’ between policy and practice.

This match contrasts with the ‘mismatch’ of relationships between VET policy and practice evident in the discourses of flexible learning, learner-centred practices, competition, innovation, quality and customer choice circulating in Cases 1 and 2, although to a lesser extent in the latter case. In these cases, policy discourses sit in tension with regimes of standards, audits, regulation and compliance.

\(^{107}\) Edwards and Nicoll draw on Foucault’s (1977: 131) notion that truth does not sit outside power or does not lack power but is produced by virtue of multiple forms of constraint. Each society has regimes of truth or ‘general politics’ of truth (types of discourses) which it accepts and makes function as true. These provide the mechanisms that enable one to distinguish true and false, and ‘the means by which each is sanctioned: the techniques and procedures accorded value in the acquisition of truth; the status of those who are charged with saying what counts as true.’
The rhetoric of student-centred learning for example, is almost impossible to enact in traditional educational institutions (Fenwick et al., 2011: 162), as is authentic learning as Case 1 intimates. As a result, Thomas (C1) is implicated from the very beginning in a power play between educational policy, institutional compliance and his and the learners’ competing interests. Neither the ‘calculative action of policy’ (Law, 1996), or the political framing (Law et al., 2013: 12) of VET, are sympathetic to this complexity.

In order to innovate, Thomas does not use policy as planned (Mulcahy, 1999: 244) as Darren does (C4) and as a result, runs the gauntlet of repercussions should his innovating fail. Bradley’s (2010: 13) study of VET policy reform captures the potential effects.

> Perhaps, the long history of certain sanctions being applied when seen as not complying with management directives has led to the decision [by educators] to simply accept changes rather than apply professional judgement and risk confrontation, disapproval and pressure to conform.

Gherardi (2000: 217) attributes the tensions between policy and practice at local levels to the ‘disembodiment’ of policy knowledge from the practices it shapes. By the time knowledge is translated into policies outside its practice domain, it has acquired a general and universal form shaped by the intent of distant strategy (Gherardi and Nicolini, 2000: 334). The problem, Bradley (2010: 13) writes, lies in the assumptions that underpin policies (and competencies) that then become truth due to the ‘accepted authority’ of government. Thomas (C1) in particular laments this situation.

> The gap between policy and practice is massive. The current policy environment is all about compliance, and that determines what we do. We need people not just looking at processes and administration but understanding pedagogy.
To theorise the gap, Mulcahy (1997: 245) draws on Cooper and Law’s (1995) concepts of distal and proximal thinking. Distal thinking, the ‘domain of policy makers’ privileges results and outcomes and emphasises ‘boundaries and separation, distinctness and clarity, hierarchy and order’ (ibid.). Proximal thinking, on the other hand, deals in the ongoing and unfinished; that is, 

... what is forever approached but never attained, what is always approximated but never fully realised (ibid.).

Proximal thinking better accounts for the local and indeterminate practices of the four educators under study who are intent on achieving the best possible outcomes for learners, regardless of distal demands. As Mulcahy (1997: 246-252) comments, distal thinking in VET policy has repressed and displaced the proximal and is particularly evident in the way VET educators are assigned roles as ‘implementers’ of training packages and diffusers of knowledge and skills.

The four innovators in this study are clearly not implementers or diffusers of the innovative ideas of others, as much as ‘creative designers’ who continually tinker and negotiate the proximal within the distal to translate two-dimensional policies, and their objects (competency standards), into multiple innovative practices. One might conclude that the reason innovation is not indigenous (Suchman and Bishop, 2000) to VET pedagogic practice is that, despite the efforts of local innovators, distal discourses prevail which ‘preordain’ how practices will work out (Law, 1994: 97) and appropriate any space and time educators might have for innovation for compliance and accountability.

**To what end is pedagogic innovation directed in VET?**

The practices of policy (e.g. targets and standards) are striving to control VET practices to meet specific social and political objectives. This is the end to which pedagogic innovation is directed in the Australian VET system. While it might be argued that tensions between policy and practice are enabling conditions for innovation, the discussion brings to view the constant efforts educators must make in order to innovate in this environment. These efforts, according to Gleeson et al. (2010: 446), are often ‘against rather than with students’.
Lasky (2005) similarly found teachers in times of reform struggling to remain faithful to a strong sense of purpose and finding it difficult to create trusting and caring environments with students (cited in Etelapelto and Sarinen, 2006: 165). Bradley (2010: 1) unearths evidence of quiet rebellion by VET educators who, while outwardly complying with policy discourses of innovation and change, continue to use pedagogies that have proven to work for students over time. Hodge (2010) attributes part of the problem to the privileging in VET of industry, and the economic interests of big business, which place ‘little weight’ on the meaning ‘of it all’ for students. This is clearly discordant with what educators say is most important and meaningful to them - their pedagogic relationships with students.

Discourses of ‘professionalism from above’ (‘organisational professionalism’) that ‘require a conscious alliance with the corporate aims of the institution’ open little space for these relationships (Bathmaker and Avis, 2013: 731-735). Indeed, organisational professionalism is more likely to produce a self-protective autonomy in educators and orientate their practices toward external regulation by appealing to their commitment and care for students (ibid.: 736). The flow on effect is a contradictory culture of ‘personal professionalism’ in which educators espouse flexibility and responsiveness to students (which can be interpreted as caring practices) in order to be seen to be responding to distal demands.

This can result in strategies of collaboration (and collusion) with students to achieve outcomes by whatever means necessary, in order to meet the performative requirements of the system, with ever less regard for what is being learned (ibid.).

The challenge for innovative educators in these environments is to negotiate their way through the effects of powerful distal networks to do new pedagogic work, and then defend their emergent, non-conforming and undefined practices when they do. The challenge for the system is to allow for the instability and unpredictability (Perillo, 2007: 238) of innovative work with enough freedom for educators to experiment without losing control to the point where everyone creates ‘their own rules’ (Jalonen and Lehtonen, 2011: 3). This, as Perillo (2007: 238) writes, is a significant dilemma for those officially responsible.
Finding order in disorder

How do the four educators manage to ‘slip in and move between’ the powerful forces (Moser, 2005: 668) that are urging on, or stifling, innovative practices? Mol’s (2008) ‘logics of practice’ are useful for analysing and theorising how innovative practices can ‘hang together’ in particular ways. While again cautious of purifying complexity (Latour, 2005) and ‘flattening’ out differences, I contend that a logic of care (Mol, 2008) subtends the mayhem of innovative pedagogic work.

Through care, educators find a ‘local, fragile and yet pertinent coherence’ that is not always obvious to them, or to others (Mol, 2008: 8). Care does not sit in a binary relation with policy discourses, it works within and against them (Shaw, 2012: 168). As opposed to policy discourses (where facts precede decisions and activities), care simply depends on what can feasibly be done in the moment (Mol, 2008: 12).

With care as a dominant logic, educators can sort out what is most achievable and appropriate to do, regardless of other powerful influences (ibid.: 45). Care shapes how they make their judgements, how they negotiate with other actors, and how they feel their way according to the nuances, hints and needs of learners and the materials at hand (Law et al., 2013). Care is fundamental to their identity, as David’s (2008: 16) study affirms:

\[
\text{It is clear . . . that the main attraction of their [educators] work and their most meaningful activity was supporting students through the learning process, and feeling that they had helped to transform their lives in a positive way. It is a journey that teachers are passionate about, and gives meaning to their professional lives.}
\]

A survey of VET educators, undertaken by Wheelahan and Curtin (2010: 24), similarly found that empathy with students and passion for teaching were fundamental to an educators’ sense of professionalism.
Case 2, where Cameron attends to the ‘whole life’ of his students, illustrates how care for disadvantaged students holds multiple networks (government, community organisations, education institutions, educators and disadvantaged learners) together in particular ways. In this case, Cameron’s caring practices echo Mol’s (2008: 46) findings in her study of diabetes that caring work does not set out to achieve pre-established targets prior to action, but searches for targets ‘while you act’.

This is clearly evident as Cameron (C2) attends carefully to what the learners tell him about their lives before acting pedagogically with the information.

_It is about pastoral care. I find something each is interested in._

_That’s where the innovation comes in – designing the tasks according to their wants as I sit with them one on one._

Cameron’s innovating co-evolves in relationships with learners because he is more concerned with taking care of them, than worrying about which equity group they might fit into, or which specific assessment tasks they are working towards.

While categorisations are important tools to work with (Mol, 2008: 63-66), when shaped by care, innovating practices are more an art of acting ‘without seeking control’ (ibid.: 28) that shape categories and learners together (ibid.: 63). Care thus functions as a counter narrative to neoliberal policy discourses that aggregate individuals into categories (markets) and then hold them responsible for their choices (ibid.:79).

Care does not try to determine what is good or bad or true or false, just what is best for learners in the moment (ibid.: 76). Gleeson et al. (2010: 453-56) found that VET educators working in neoliberal environments resolve tensions between policy and practice by building high trust and caring practices ‘in and against an audit culture’. Thus, the mediating effect of care (Sørensen, 2013: 122) assists the four educators in this study to make good practical sense of the mayhem.
This finding renders innovative pedagogies in VET both a ‘moral and technical phenomenon’ where the distal ‘language of technique’ (what is effective) tends to dominate the proximal ‘language of manner’ (that which is ethical, moral and caring) (Stengel, 2000, cited in Stephen, 2010: 26). Innovations, as Mol (2008: 77) writes, are never neutral:

\[
\ldots \text{they cannot be. Since they are made to contribute to improving lives, they incorporate some notion of what counts as an 'improvement'. What is more: innovations tend to be morally complex.}
\]

However, opportunities for pedagogic innovation arise when the distal and proximal meet and when logics of practice intermingle and ‘bump up against’ each other (Shaw, 2012: 202-203).

**Creating and sustaining pedagogic innovation?**

The discussion has reframed the final and fundamental question for VET: should innovation be fostered and sustained by asking educators to change their practices (as current VET discourses have it), or should the system itself, and the environments educators work in, be reformed? In arguing for the latter, Wheelahan (2009: 233) criticises VET policy for directing the focus to the deficits of educators, rather than reflecting on how the system might also change.

Clearly however, the conditions that foster innovation documented in the literature (see for example, Smith et al., 2012, Harris et al., 2007, Hillier, 2009, Fenwick, 2003) do not consider how educators might reconcile the effect of distal discourses with the relational, material and messy nature of local practices. In this regard, Bathmaker and Avis (2013: 734-744) argue for a ‘critical professionalism’ which involves VET educators in practices of inquiry that openly challenge and critique the modernising agenda of VET. Seddon (2009: 59) similarly argues for a culture of questioning and,

\[
\ldots \text{critical thinking, learning and researching, courageous actions and responsible use of power.}
\]
Practices of inquiry not only bring back the proximal voice to pedagogic and policy discussions, but also uphold the complexity of professional work and more democratic forms of accountability. Further, as Elliott (1985, cited in Clayton, 2012: 9) writes, the more educators learn, and the more they share what they have learned,

\[ \ldots \text{the more the common stock of professional knowledge is extended and enriched. And the more this common stock is developed in response to the changing contexts of professional practice, the greater is the individual's capacity to diagnose the problem situations encountered and respond appropriately.} \]

Pedagogic practices are then understood as the ‘locus of knowledge production’ and a ‘constant source of innovation’ (Gherardi, 2012: 220). It makes good sense that educators in VET know how to work with complexity, discontinuity, difference and uncertainty and are continually producing new knowledge and practices with their students. They then become ‘linchpins’ of innovation and change (Cochrane-Smith and Lytle, 2009) rather than technicians who have change imposed upon them and who diffuse and transmit the ideas of others.

**Enabling factors for pedagogic innovation**

Two further recursive (f)actors that are visibly enabling pedagogic innovation in the data warrant further discussion: time for educators to innovate and the role of leaders and managers. While the data concurs with the literature about the importance of time to innovative pedagogic praxis, it affords a very different interpretation about the role of managers and leaders.

Time for innovation, as Suchman and Bishop (2000: 332) write, enables the absorption of extra workloads that result from innovative activity, particularly in the beginning. With enough time, innovators can step back from the ‘daily grind’ and think, observe, exchange new ideas, tinker with different ways to do things and absorb new knowledge as it is generated (Nilsen and Ellstrom, 2012: 167). The data affirm these views.
Innovation is always happening but it takes time – not more work – to think, design, liaise, reflect, and do the extra (C2).

I need support – not by piling more teaching on me but by giving me time to explore and reflect on my pedagogy (C1).

Time in this sense is not linear. It twists and turns as unexpected problems emerge and as new problems arise that need to be integrated with everything else (Mol, 2008: 54).

Conversely, insufficient time means that educators do their problem-solving in their own time, which becomes ‘another kind of work intensification’ (Seddon, 2009: 56) and barrier to trying out new practices. With insufficient time, educators either ‘give up’ on innovation or suffer fatigue or burnout if they persist (Callan, 2004: 27). The data also support Callan’s view:

There are a lot of people who want to be innovative but because of time constraints, because they do not have the ability or resources or support, they don’t do it. If you want me to be innovative, give me time not to just look at processes and administration but to understand pedagogy (C1).

Time is thus an enabling condition to pedagogic innovation when available, and a major barrier (Smith, 2012: 175) when not. However, allocating enough time in itself is not enough (Fenwick, 2003). Understanding learning at work, and the extent to which learning is fostered in organisations, is more important (ibid.). Nevertheless, ‘time out’ as an enabling condition for pedagogic innovation in VET runs counter to current economically driven demands for increased productivity, cost reduction and control.

The second (f)actor, evident in three of the four cases (2, 3 and 4), is the close, connected work between innovating educators and their supervisors. Innovating in these cases involves more than one ‘heterogenous engineer’ in the idea play, experimentation, negotiation, learning and translation processes.
The close, connected nature of this work is so pronounced in the data that each story could not be written without the supervisors – Rosie (C2), Michelle (C3), and Max (C4). Each supervisor is deeply implicated and entangled in the innovating experience though in different roles to those of the educators.

Rosie’s (C2) role for example is one of ‘facilitating, guiding, and making it happen’, whereas for Cameron, innovating is more about ‘experimenting with different ways of getting the program across’. Through close, connected relationships, Rosie and Cameron share daily discussions, adjustments to their practices, mistakes, breakthroughs and the thrills, anxieties, fears and concerns that are generated in and by this work. Cameron explains:

We talk every day – in the passage, over a cup of tea, in the office. Rosie teaches me so much. She thinks very differently – she has an eye for how things will turn out in the future - and not everyone does (C2).


The three cases in this dataset suggest that sustained innovating practices rely far more heavily on loosened boundaries between hierarchical layers. They are practices in the making, not practices made (e.g. innovative cultures). There is little reference in the case stories to cultures, communities, or senior levels of leadership. While the three supervisors in the case stories are clearly granting time, space and permission for innovation, more importantly, they are actively and deliberately sharing in the shaping of new ideas and practices and in the inevitable uncertainties, anxieties, excitement and tensions that result. This is at the heart of innovating praxis in these cases. Otherwise,

People don’t go down this path because of the stigma of failure and blame from above. The fear will stop people doing it (C2).
The shared responsibility for pedagogic innovation disrupts and disturbs the power relations of everyday work and allows for new relations and new spatial and affective connections (Mulcahy, 2012: 9) that can potentially diminish barriers to innovation (such as lack of time, resources, or support).

This work may also render superfluous assumptions about how people innovate and alleviate the ‘risky spaces’ (Butler and Shore, 2010: 21) of pedagogic innovation. It also makes possible a new and pragmatic interest in how educators ‘cope’ with innovation (Wolcott, cited in Perillo, 2007: 239). According to Hillier (2009), inviting people to connect across organisational boundaries has huge potential for further innovation. Thomas (C1) concurs,

*Innovation is ‘infectious’: Giving educators the opportunity to get together to rub ideas up against each other, even just one aspect of practice, always sows the seed for new practice.*

The idea of close, connected innovative pedagogic work that flows across static and often impenetrable boundaries in educational institutions makes interventions imposed by distal managers and policy makers mostly archaic and unhelpful.
Contested truths and realities

Spatialities, affect, fluidity, interstices (Mulcahy, 2011), discontinuities and care have emerged as patterning practices across the four cases of pedagogic innovation. The binaries in VET between policy and practice, structure and agency, mind and body, innovation and normal practice, and manager and worker, have also come to view. The analysis of these binaries has displaced the way curriculum, spaces, materials, technologies, identities, educative practices, and learning processes are portrayed in accounts of a received and contextual kind. Humanist assumptions are rendered narrow and deterministic for their indifference to the effect of non-human mediators which are clearly mediating what VET educators know and do (Mol, 2008).

Diffusion accounts of innovation have also proved inadequate in accounting for, and theorising, pedagogic innovation. As the cases demonstrate, innovating practices are not ‘out there’ waiting to be discovered and diffused into the social environment. They are performed every day in circular (Fenwick, 2004: 240) and unpredictable movements within the relations that create them (Law, 2008: 6). The four innovators are not ‘implementers’ working to neutral ‘descriptions’ of skills (Mulcahy, 1999), or ‘faithful implementers of received knowledge and curriculum’ (Cochran-Smith and Lytle, 2009: 2), but caring mediators who problematise the nature of everyday work (Wheelahan, 2009: 232) in order to create transformational experiences for learners. It is not surprising therefore that Cameron (C2) says,

\[ . . . \textit{there is no such thing as innovation; ‘people just build on other ideas and connections as they go’}. \]

The following concluding chapter explores the implications of these findings for VET policy and practice.
Chapter 9: Breaking with tradition

Teaching is a hugely complex, highly skilled and deeply situated activity. It is simultaneously both a science and an art, requiring scholarship, rigorous critical inquiry, collective creation of educational knowledge according to collegial norms, on the one hand; and intuition, imagination, improvisation on the other (Saunders, 2004: 117).

Introduction

In this final chapter, I explore the implications for VET policy and education practice when pedagogic innovation is understood as articulated, sociomaterial and multiple activities. I argue that, through processes of innovative learning (Fenwick, 2003, 2004), creative learning (Ellstrom, 2010) and critical inquiry (Cochran-Smith and Lytle, 2006), VET educators can ‘unhook their pedagogic practices’ (Mulcahy, 2011) from discourses that privilege arms-length policy (and the needs of industry and employer-led systems) and make space for pedagogic innovation.

Implications for policy

If, as the data suggests, an innovator is a ‘system disturber’ (Fenwick 2003: 137) who brings about transformational learning and change, then learning to be an innovator must surely replicate the experience. Questions are raised in the data about how well educators are prepared for innovation:

The problem is this practice is risky and stressful. Teachers are not prepared for it. It requires a great deal of knowledge and understanding to deal with people’s apprehension and fear of change (C1).
In the literature, Reid (2004: 3) also questions how well educational systems (structures, process, and practices) prepare educators for the increasing uncertainty and ambiguity of ‘late modern times’. It is timely, Reid writes, to shift away from understanding educators as technicians who implement policy and curriculum products (ironically, this view has been reinforced in current reforms), to what the changing world means for educative work and how the capacity and agency of educators to do this work can be strengthened (ibid.: 3).


> It seems particularly out of place that an industry, whose very existence depends on other industries training their workforces through qualifications, seems to resist qualifying its own to an appropriate level (ibid.: 37).

Problems with the Certificate IV largely lie in the competency based approach to learning which, as argued in previous chapters, does not adequately account for the circumstances (social, material, discursive, and political) that shape educative practices (Mulcahy, 2012). Indeed, rather than preparing educators for uncertainty, CBT conceals mess and complexity by homogenising differences in the assumptions it conveys (Mulcahy, 2011: 240). The focus on instrumental competencies (teaching tasks) diverts attention from the complexity of innovation, and the difficult ‘personal transformations’ implicated in the practice (Mulcahy, 2011: 224).

Yet, the quest for consistency in pedagogic practice prevails in VET, despite the remote possibility that it will ever be achieved (Bigum and Rowan, 2004). The empirical data affirm this premise. As an organising principle, standardisation runs counter to the complex, emergent and non-coherent performances narrated in the case stories.
Indeed, it is difficult to find reference in the twenty-one\textsuperscript{108} competencies listed in the ‘Training and Education (TAE) Training Package’ to concepts of complexity or competencies intent on fostering pedagogic innovation, although they do exist in other training packages.\textsuperscript{109} Thomas’ (C1) remark is insightful in this regard:

*There is nothing in the Cert IV about pedagogic approaches and how to deal with them. There is no expectation of VET practice other than workplace training – nothing about engaging students; or generating excitement or challenging them with new ideas. The Certificate IV and the Diploma of VET do not give the level of skills and knowledge to be innovative.*

Further, as Hodge (2014: 7) highlights, the distinct lack of guidance in the Certificate IV about how to read, analyse and interpret units of competencies, leads one to infer ‘that the architects of the qualification believe that the process is straightforward’ (ibid.). The privileging of functional tasks in the Certificate IV in units such as ‘Participate in a quality audit’, ‘Plan assessment activities’, and ‘Assess competence’, affirms Hodge’s view.

In addition, Dymock and Billet (2009: 52) highlight the lack of a compulsory research unit in the Certificate IV which puts VET educators at risk of being ‘inadequately informed’.

* . . . there is also the prospect that they will not value research for their own professional development and for the benefit of their students (ibid.: 48).*

There is good reason to doubt that VET educators are ‘being carefully prepared to undertake the sophisticated work of interpreting competencies’ (Hodge, 2014: 9), let alone the highly complex, risky and unpredictable work of innovation.

\textsuperscript{108} http://training.gov.au/Training/Details/TAE40110

\textsuperscript{109} Sixty-two units focused on change and innovating exist in other Training Packages, some of which can be imported into the TAE under packaging rules. One Vocational Graduate Certificate in Innovation in Education and Training exists in Victoria.
The lack of acknowledgement (perhaps understanding) of pedagogic practices as inherently learning, innovation (translation) and identity formation processes (Fenwick and Edwards, 2012: xiv) gives a certain power to the Certificate IV to contour or channel pedagogic practices in particular (and more manageable) ways (Mulcahy, 2012: 78). This observation give substance to Bathmaker and Avis’ (2013: 743) contention that managerial discourses find it much easier to gain purchase in contexts where the educational expertise (critical professionalism) of VET educators is weak and is designed to remain weak.

... teaching qualifications involve highly codified and regulated standards to be met by teachers, devised by government-designated arms-length organisations. They represent an example of government-controlled ‘new professionalism’, part of a policy agenda of modernisation of public services focused on ‘driving up quality’ in education (ibid.: 734).

The assumption that higher levels of qualifications will develop innovative capability is not entirely justified either. As Thomas (C1) comments, higher levels of VET educational qualifications are not practical enough to develop the skills and knowledge for innovation. According to the NSSC (2013: 49), the core skills and knowledge developed in higher VET qualifications for educators centre on educational theory and practice, educational context and research capability. There is little mention of innovation, although research is clearly linked to innovative practice in the literature (Cochran-Smith and Lytle, 2006, Williams et al., 2012, Nilsen and Ellstrom, 2012) and in the empirical data.
Innovative learning

If one accepts pedagogic innovation as relational, sociomaterial and learning practices, then learning to become a VET educator might focus more on how to be a ‘heterogeneous engineer’ (Law, 2011:5), than on how to develop new products or pedagogies. A heterogeneous engineer, Law explains, understands how tangled and complex networks of relations work together in heterogenous ‘flows’, and why they go wrong (ibid.: 7). ‘It doesn’t help all that much to separate them out’, Law adds.

Becoming a heterogeneous engineer means learning how to assemble actors into loose assemblages, negotiate competing interests (Fenwick 2003: 137), strengthen relations and keep them together, seek and explore variation and difference, question and critique contradictory and ambiguous demands, find new ideas and inspiration (Reid, 2004), harness the power of affect (Skattebol, 2010), and tinker with solutions that are ‘not yet there’ (Wheelahan, 2009). Put simply, innovation is about learning to work in complex systems where accidents and mistakes that are waiting to happen (Law, 2011: 13) become rich opportunities for innovation, rather than issues to be sidelined, hidden or ignored.

Learning to innovate, or ‘innovative learning’ (Fenwick, 2003) is very different to the adaptive learning promoted by CBT and resonates strongly with the data.

All teachers are passionate about their students. Ask them what challenges they have with their students and what would they like to do. Then get them to go out and try it (Rosie, C2).

Where adaptive learning preserves the status quo, innovative or creative learning questions and critiques the assumptions that underpin and sustain ‘normal’ ways of doing things. Plays of difference, uncertainties, multiplicities, and ambiguities become organising principles of practice, rather than agendas of conformity and standardisation.

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110 Adaptive learning is a process in which tasks and situations are handled at a skill based level in a routinised way and yield stable, efficient, and reliable performances over time (Nilsen and Eilstrom, 2012: 160).
The ‘lived’ experience of innovative learning builds capability, confidence and resilience to deal with ongoing reform and change. Without the experience, educators are left,

. . . sitting on the sidelines rather mystified about what is meant by innovation and how they can contribute to it (Callan, 2004: 27).

One must then question how well educators can develop critical thinking and innovative capability in learners. Surely, as Reid (2004) argues, educators need to think ‘critically, flexibly and creatively’ and model these practices to learners. Yet, there is little reference in the VET literature to this paradox, indeed what level and type of learning should follow the Certificate IV.

Clayton (2009) argues that the Certificate IV should not be seen as an end in itself but as a foundation for more in depth learning about education. Wheelahan (2010: 8) maintains innovation is more likely to emerge if pedagogic learning is intensified in an educator’s specific vocational area. Corbel et al. (2014: 5) similarly contend that higher level capabilities, based on specialised vocational knowledge, can build innovative expertise.

Expertise in this sense is not simply ‘becoming highly proficient at certain techniques’, it includes abstract disciplinary knowledge (Winch, 2010, cited in Corbel et al., 2014: 5) and critical inquiry. The empirical cases of innovating practices, located in specific vocational disciplines, affirm these views.

Don’t just give them the Cert IV and say see you later. Get them to ask: how can I make learning more meaningful for students so they can apply it in real life situations and then support them through the learning process (C1).

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111 Seddon (2009) raises this paradox as a significant barrier to innovation in VET.
Implications for practice

According to Boyer\textsuperscript{112} (1990: 24), all good teaching involves learning. For the innovators in this study, learning starts when they sense something is wrong, or have uncertainty about what they are doing, or see a problem related to students’ learning (Elkjaer, 2003: 47). Like all practices, immediate questions emerge from the discrepancies between what is intended and what actually occurs.

As they innovate, the educators gather evidence about what works and what doesn’t work, through practices of inquiry, formal research and informal and embodied learning processes. Thomas (C1), for example refers to knowing if his practice is working ‘when it feels right’ and when he can ‘see’ comprehension by students.

Indeed, much learning is occurring as the educators innovate spontaneously or deliberately, and most often, ‘knowledgeably and reflectively’ (Nilsen and Ellstrom, 2012: 158). They do not necessarily apply specific learning theories as they work (Smith and Dalton, 2005: 12) as much as negotiate what works in the moment according to the needs of learners and materials at hand (Law et al., 2013: 8).

Even using PBL as a theoretical scaffold for innovative pedagogies, Thomas’ (C1) practice shifts and changes in the moment according to what is best for students. In all four cases, new practices are being learned ‘on the fly’ as discrepancies and disturbances are ‘picked up’, problematised, investigated, researched, shared, experimented with and integrated (or not) into renewed practices. Most often, these practices are spontaneous and cannot be predicted or taught in advance of action.

\textsuperscript{112} Boyer (1990) identifies four forms of scholarship in universities: the scholarship of teaching and learning, the scholarship of engagement, the scholarship of discovery, and the scholarship of application. Williams et al (2013) claim these are relevant to higher education in the VET sector.
However, as Nilsen and Ellstrom (2012: 161) contend, the practice based knowledge\textsuperscript{113} acquired through spontaneous practice is not sufficient for the rigours of innovation. Ongoing examination and reflection on pedagogic practice is required (Reid, 2004: 8) that includes the concepts, theories, models and frameworks of research based knowledge that are generally articulated in text (Nilsen and Ellstrom, 2012: 157-161). Thomas’ (C1) iterative scholarly practice is a case in point.

\textit{Research ignites my curiosity – the new innovations and little things that change – the way that they question or design their problems for example that is so inspiring . . . it gives me a framework to do PBL. It helps me to understand its limitations (C1).}

The interplay between practice based inquiry, research based knowledge and innovative practice is also evident in Cameron’s (C2) ongoing inquiry into the pedagogic needs of disadvantaged students, Steve’s (C3) research into ‘cutting edge’ green plumbing practices (and how to translate these in online learning experiences) and Darren’s ongoing quest to find better ways to embed safety in work practices. Rosie (C2) reflects on the importance of this interplay.

\textit{Innovation is action learning for all of us. We wouldn’t be here if we didn’t put in so much time to research and learn.}

The link between practice based research, learning and innovative pedagogic practice in VET is also affirmed by Armstrong et al. (2008, cited in Hillier, 2009: 5), Seddon (2009), Moodie (2006), Corbel et al. (2014) and the OECD (2009). When research and inquiry is embedded in pedagogic practice, educators and their students are able to co-create knowledge and articulate their practices more profoundly (Nimkulrat, 2014). Nimkulrat (2014: 10) explains:

\textsuperscript{113} Nilsen and Ellstrom (2012: 157) refer to practice based knowledge as knowledge built from experience that manifests in craft expertise and is largely articulated through tacit knowledge and actions.
the teacher presents students ideas/data from research projects in a way that creates coherent meaning for both teacher and students, and the students in return share [their] own experiences and perceptions that help to clarify or develop the ideas for research.

Reid (2004: 8) purposely separates practices of inquiry in education from formal research\textsuperscript{114} in an attempt to lessen the burden on busy educators. While research is implicated in inquiry, Reid writes, the latter involves logical problem solving processes, intuition, passion, and emotion and is a more ‘holistic way of working’ practically with pedagogic dilemmas (ibid.: 6). Practices of inquiry are therefore not separate to pedagogic practices, but are more a ‘habit of mind’, a way of knowing and being in the world of educational practice\textsuperscript{115} (Cochrane-Smith and Lytle, 2009: 9); a ‘professional being’ (Reid, 2004: 3).

Termed scholarly practice by Williams et al. (2012: 1),\textsuperscript{116} these knowledge building practices involve ‘intellectual-practical’ work that moves ‘iteratively between established ideas, practical activities and new ideas’. Educators who engage in these practices are more likely to accept ambiguity and discontinuity as triggers for creative learning, rather than as threats or disturbances (Nilsen and Ellstrom, 2012: 162). Uncertainty, differences and controversies in pedagogic problems then become productive elements (Skattebol, 2010: 76) that can be ‘mined’ for new insights and practices.

By questioning, problematising, and theorising pedagogic experiences, educators and learners can experience transformative learning together (Cochrane-Smith and Lytle, 2009:9). In these instances, practices of inquiry become pedagogies in themselves (ibid.: 108) that bring theory and practice and adaptive and creative learning processes together in ongoing and cyclical innovating performances (Nilsen and Ellstrom, 2012: 156).

\textsuperscript{114} The Australian Research Council (2014: 12) defines research in university settings as creating new knowledge or using existing knowledge to generate new concepts, methodologies, inventions, and understandings.

\textsuperscript{115} While Cochran-Smith and Lytle write about practitioner inquiry in schools in America, they make the point that their writing might well be applied in other educational sectors.

\textsuperscript{116} Williams et al (2012) are writing specifically in the context of the higher education in VET.
In effect, as Badley (2003: 305) writes, practices of applied research become a scholarship of teaching and learning (Boyer, 1990). ‘Thoughtful critique’ (Cochran-Smith and Lytle, 2009: 2) or ‘reflective practice’ (Nilsen and Ellstrom, 2012: 156) is integral to this work. Pedagogic theory is not reified over practice in this argument. Rather, theory and practice are considered to be equally important (Mulcahy, 2011: 232), as Thomas (C1) explains.

To be effective, theory needs to be practiced. Otherwise they [VET educators] will never get it. If you put them through a program designed to learn without them experiencing it, at the end they say, that was an experience – and that’s it. But if they really experience it, they understand the theoretical aspects of the practice as well.

When engaged in practices of inquiry, educators become closely associated with broader political issues (Skattebol, 2010: 77) and are better supported theoretically to negotiate the complex and often contradictory discourses, cultures and forces impacting on their work (Bathmaker and Avis, 2013: 731). Practices of inquiry also discourage unhelpful work behaviours, such as hiding pedagogic problems ‘behind smoke screens’ instead of sharing them and then learning from the process (Reid, 2004: 10). Systems and processes that support VET educators to develop resilience, tenacity and the ‘sticky combination of adaptability and perseverance’ (Mol, 2008: 77) that innovation demands, must surely be beneficial.

I conclude this discussion with a reflection on two questions raised in critical feedback to this study:

1. What is the difference between good and innovative pedagogic practice; and
2. What makes innovative practice in this study distinct from that prescribed in VET standards?

As mentioned in Chapter 3, the four case studies could equally have been narrated and analysed as examples of ‘good’ rather than innovative pedagogic practice. Indeed, each case is an exemplar of good practice as determined by the ‘Standards for Registered Training Providers (RTOs) 2015’ in Australia. For example, Standard 1 states:
The RTO’s training and assessment strategies and practices are responsive to industry and learner needs and meet the requirements of training packages and VET accredited courses (Commonwealth of Australia, 2014: 13).

Each innovative educator enacts ‘good’ practice by maintaining a delicate balance between these complex and often contradictory requirements. Sometimes they stray from what might be assumed to be ‘good’ practice as they adapt, change and modify what they do to fit what is happening in the moment.

What makes the practices innovative is the way the educators push learners (and themselves) beyond existing understandings and, during the process, open new spaces for knowledge creation and transformational learning and change. Steve (C3) for example, describes this phenomenon as taking his learners (plumbers) on a journey to ‘a higher level’ that transforms their ‘mindsets’ about how and why they work. For Thomas (C1), innovation means doing,

\[
\ldots \text{something that hasn’t been done before, something that hasn’t been tried before, something you experience and refine, something you get feedback on and improve and something that challenges you.}
\]

Pedagogic innovation here is about pushing learners ‘out of their comfort zone’ to ‘change’ the learners’ sense of who they are, what they know and what they can do (Somerville, 2006: 47). The four innovative educators practice their pedagogies in ways that conform to these terms, yet consider that what they do as a ‘regular’ and ‘normal’ part of everyday professional practice ‘in the daily dealings with students’ (Cameron, C2).

Professionals standards for VET teachers do not recognise (or tolerate) the emergent and ‘becoming’ (Deleuze and Guattari, 1987) nature of these transformational practices because they quickly ‘become’ messy, unmeasurable, unpredictable and uncontrollable; the very nemesis of the ‘good quality practice’ standards prescribe.
In Closing

The use of ANT as an interpretive frame in this study has, to some degree, demystified the concept of innovation and the lived experience of innovative pedagogic practice in VET. By (re)conceptualising innovation as emergent and relational practices that are ‘enacted into being’, ANT provides a ‘counter-narrative’ (Fenwick and Edwards, 2013) to mainstream philosophical views of VET pedagogy, learning and innovation.

While I cannot conclude that translation succeeded in the four cases, I could see translation work in action, how innovating practices come to be, how links are made, how they are shaped, why they persist and how they change and maintain their shape along the way. Further empirical evidence is required to establish if these practices have been mobilised and ‘black boxed’ in other VET settings. I do conclude however, that spatialities, affect and policy discourses are fostering and sustaining innovative performances in the empirical settings under study.

While the small scale nature of this study cautions against generalisable conclusions, I close by claiming that the innovative pedagogies exemplified in this study are co-constitutive knowledge building and sociomaterial activities entangled in practices of inquiry and innovative learning. They are not packages of ‘pedagogic transactions’, or educational products, but active and co-constitutive collaborations between learners, educators, supervisors and other heterogenous actors.

I argue that current framings of innovative practice, and the change agendas that seek to foster them, render these practices invisible and misunderstood. Reductive accounts of what an educator is, and what they do based on representational views of the world and exclusively cognitivist and humanist learning theories, extinguish the very conditions that make innovative pedagogies possible (Suchman and Bishop, 2000: 332).
Herein lies the ‘slipperiness’ between policy and practice; a mismatch in the accepted truths of policy and the ‘swampy low grounds’ of practice – that place where problems are messy and confusing and incapable of technical solution (Schon, 1992: 191). It is time to reframe the VET sector as a knowledge building, ‘innovation intermediary’ (Moodie, 2013: 16) in Australia’s education system, rather than the ‘adaptive layer’ (Skills Australia, 2010), or diffuser of knowledge and technology (Toner, 2007) as it is currently framed. This is not to argue that innovation should be solely regarded as an economic activity, as some commentators might, but to conclude that a policy agenda of learning and critical professionalism across the VET sector is more likely to foster and sustain innovating praxis in current times.

Learning for educators must be reconceptualised from skills and capacity acquisition and development to the lived experience of innovative learning and inquiry. As the OECD (2009) writes, the absence of scholarly work in VET is a systemic barrier to innovation and change in Australia. Much more can be done to engage VET educators in practices of inquiry, innovative learning and applied research.

It would be unwise, however, to conclude that innovation will always occur if educators learn through scholarly practices, or if enough time or support is given to support innovation. It would be equally unwise to argue for unfettered freedom for innovative activity. As Fenwick (2003: 131) writes, innovating praxis necessarily lives in ‘dynamic tension’ with stable networks of distal policies and organisational processes and priorities. Control mechanisms and structural conditions must be in place to limit innovation, otherwise too much can be destructive (ibid.: 124) and put at risk well-functioning and essential practices and structures (Nilsen and Ellstrom, 2012: 163).

Equally, institutionalising discourses, values, processes, and vocational habitus can be ‘blockers’ (C1) that constrict and discourage attempts at innovation. Most notable, according to Fenwick, (2003: 131), are interventions aimed at organisational learning.
Thus I arrive at how this study might contribute to the field of pedagogic innovation in VET. It is unlikely that neoliberal reform will revere and nurture the contingent and messy nature of innovating work. There will always be ‘unease’ between policy and practice given their different philosophies and cultures. However, in the tensions lie problems to be explored, played with, questioned, shared, researched, and solved, and rich and intriguing spaces of possibility (Fenwick, 2006: 29). Multiple possibilities exist if we recognise pedagogic innovation is often performed incompletely and imperfectly with others (Perillo, 2007: 7), is predisposed to irrationality, untidiness, and contingency (Bigum, 2000: 13) and is inextricably entangled with learning and inquiry.

The best we can do is explore rather than homogenise, the instability, uncertainty and controversy of educational life and share in the hard and uncertain work of innovation and change. Then all involved in VET, even those with a penchant for planning useful change for others (Fenwick, 2011: 257), are not freed from the rigours of innovation and have a useful stake in how the system evolves (Sutton, 1999, cited in Nieuwenhuis and Shapiro, 2004: 60). The often ‘distrustful and unproductive relationships’ between policy makers and educators that inhibit innovation might then dissipate (Mehta, 2013: 463). With freedom to play and express new ideas, with the capability to negotiate processes of translation, and with active involvement from the decision makers above, creative and innovative educators must surely flourish.

Drawing on Perillo’s (2007: 241) principles for pedagogic innovation, I close with provocations for further inquiry and debate in the sector:

1. How can we develop shared understandings of innovative practice? This question goes to the core of the ‘disconnect’ between distal policy and the affective, spatial, caring, and connected work of innovating educators;

2. How might we foster inquiry, innovative learning and creativity as part of pedagogic practices? This question promotes innovating as a ‘natural’ knowledge building practice and goes to the heart of why educators make the effort?
3. Is innovation a shared responsibility across hierarchical boundaries or do we attempt to change the way others do things instead? This question asks who is involved in decision making and innovating processes which, as the data reveal, makes all the difference to innovating activities.

These questions, as Engestrom (2001: 140) argues, are not resolvable by ‘a sum of separate individuals’ removed in time, space, and effort from innovating experiences.

**Reflections and sympathies**

Throughout this study, I have looked for new ways to understand the everyday practices of innovative VET educators. Adopting a post-structuralist lens and using resources provided by ANT, I have attempted to make visible the forces that foster or hinder these practices. This has not been an easy path, but one I chose for its ontological and epistemological challenge and for opportunities to ‘open up’ new ways of thinking.

Having read, reread, discarded, and ‘mulled over’ many challenging philosophical, theoretical and practical accounts of pedagogic innovation, learning and change, I have now profoundly changed my thinking about learning, work and education. Most influential in this process has been the work of Bruno Latour, John Law, Anne Marie Mol, Sylvia Gherardi, Dianne Mulcahy, Tara Fenwick, Mary Hamilton, Ingunn Moser, Suzanne Perillo, Estrid Sørensen, Margaret Somerville and Michel Callon.

It is to their work I have returned time and time again, becoming more absorbed and enrolled in the ontological assemblages and ‘occupied territory’ (Kamler and Thomson, 2006: 29) of ANT. Much of my early research in the mainstream VET, management, and organisational learning literature was discarded as ANT disrupted and disturbed my conceptions of pedagogic innovation and, ultimately, my identity as an educational researcher. Increasingly I found the mainstream literature inadequate when accounting for the empirical world of VET pedagogic practice.
As an educational innovator, I was highly sensitised to the educators’ experiences in this study. I found it exhausting to observe the nuances, negotiations and shifts in practice as the educators undertook their impressive innovative work. Inevitably, I became enrolled in their networks, accepted due to my ‘conferred academic respectability’ and my considerations of, and sympathies with, their efforts (Gaskell and Hepburn, 1998: 74). Thus I am an affective and embodied actor in this research, and bring my own ‘psycho-social’ (Mulcahy, 2013: 5) influences to the findings.

Law (1994: 4) writes however, that research in itself can be a process of ordering that attempts to conceal particular situations and occurrences. Law also concedes that the more we appear in our narratives, the more we move away from ‘attempts at empiricist ordering’. Rather than a moral or ethical dilemma, I see my involvement in this research as a rich and productive experience.

Just as I argue for the caring relationships between supervisors and educators in innovative pedagogic experiences, I argue for embodied experiences by researchers in the practices under study, with due acknowledgment of the need to critically reflect on the effect of this experience on research findings. When practicing as an ‘embodied researcher’, one cannot readily purify and ‘tame’ the complexity and indeterminacy of localised practices into manageable and predictable phenomena. It is also unacceptable to tell others from afar what they should be doing.

My final reflection concerns how the philosophy of ANT resonates with me personally. Like Gherardi (2012), I cannot subscribe to the ‘cultural imaginary’ of western culture that places individuals in competition with the natural world. I have struggled in the past to articulate this unease. ANT has provided a theoretical voice towards addressing this disquiet which is the personally transformative dimension to this study.
While all theories ‘invite us to see the world through the selective lens of their assumptions and metaphors’ (Hamilton, 2012: 54), the sociomaterial approach of ANT resonates with my intuitive ‘take’ on how one, as a human being, is part of a nature-culture collective. More specifically, it has helped me to formalise my understanding and appreciation of innovating praxis in VET.

From this point on, the difference I hope to make to thinking about innovative pedagogic practice in new ways, however modest, takes it’s starting point here (Law and Moser, 1999: 251).
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Appendix 1: Participant Plain Language Statement

[Date]
[Name of participant]
[Address of participant]

Dear [Name of participant]

Re: Research project: Sustaining pedagogic innovation in the Victorian VET sector

I am writing to invite you to participate in my research project entitled, ‘Sustaining pedagogic innovation in the Victorian VET sector’. The research will contribute to the Doctor of Education I am currently undertaking with the Graduate School of Education at the University of Melbourne under the supervision of Dr Dianne Mulcahy as the Principal Researcher. You have been recommended to me as a leading exponent of innovative pedagogical practice in the vocational education and training (VET) sector in Victoria.

The research project seeks a greater understanding of innovation in teaching and learning practices across a range of VET contexts. The purpose of the research is to:

1. capture what happens when VET educators innovate in a rich and detailed description of the experience;
2. better understand the discourses and practices of VET pedagogy and pedagogic innovation;
3. better describe the conditions that foster innovation and how innovation can be sustained in VET organisations.

To achieve this purpose, I will be working with five innovative VET educators as they practice in different vocational educational settings to investigate areas of commonality, and points of differences in pedagogical practices, across the five sites. Using the data I collect, I will attempt to interpret the experiences in a way that describes the reality of innovation in practice. Should you agree to participate in the research project as one of the five participants, you will be asked to:

- complete a preliminary questionnaire (approximately 15 minutes);
- participate in an individual interview (approximately 45 minutes);
o participate in a semi-structured focus group (approximately 45 minutes);
o be observed in practice (approximately 100 minutes) to develop a rich account of what happens when innovation occurs in real life settings.

With your permission, the individual interview and focus group will be audio-taped to ensure that I capture an accurate account of what you say. I will also take notes during the interview. When I have transcribed the interview, you will be provided with a copy of the transcript to verify that the information is correct. You can request to add or delete any information you have provided.

As the researcher, I intend to protect your anonymity and the confidentiality of your responses to the fullest possible extent within the limits of the law. Your name and contact details will be kept in a separate, password protected computer file from any data that you supply. This information will only be able to be linked to your responses by myself, for example, in order to know where to send a copy of your interview transcript.

In the final report, you will be referred to by your name only with your approval and, otherwise, will be referred to by a pseudonym. At your request, I will remove any references to personal information that might allow someone to guess your identity; however, you should note that as the number of people I seek to interview is very small (five participants), it is possible that someone may still be able to identify you.

There is also the possibility that subjecting your teaching practice to scrutiny may have negative consequences for you. However, as you have been selected for this study because of your reputation for leading innovative pedagogical practice, the likelihood of damage to your, and other participants’ self-esteem, is reduced.

Once the thesis has been completed, a brief summary of the findings will be available to you on request. The data collected will be held securely for the duration of the project and will be destroyed five years after publication of the final thesis.
Your participation in this research project is completely voluntary. Should you wish to withdraw at any stage, or to withdraw any unprocessed data you have supplied, you are free to do so without prejudice.

This research project has been approved by the Melbourne Graduate School of Education’s Human Research Ethics Committee. Should you have any concerns about the conduct of the project, you are welcome to contact the Executive Officer, Human Research Ethics, The University of Melbourne on phone: 8344 2073 or fax 9347 6739. Dr Dianne Mulcahy can be contacted by telephone on 8344 8656 or by email at monicadm@unimelb.edu.au.

If you are willing to participate, please complete the consent form accompanying this letter and return it in the envelope provided. I will then contact you to arrange a convenient time to meet and brief you further about your involvement in this project. If you would like any further information or would like to discuss your involvement in the meantime, please contact me by telephone or email as per the details below.

The ethics approval number for this research project is HREC 1035073.1. Thank you for your interest in this project and I look forward to your reply.

Yours sincerely

Melinda Waters
Student Researcher
Ph: 9372 5051
Mob: 0422 005 443
Email: mwaters@tafcentre.vic.edu.au
Appendix 2: Participant Consent Form

Participant Consent Form

Project title: Sustaining pedagogic innovation in the Victorian VET sector

Name of participant: [Name of participant]

Name of researcher(s): Dianne Mulcahy (Principal Researcher) and Melinda Waters (Student Researcher)

1. I consent to participate in the research project named above. The purpose of the research and the details of the data collection methods, storage of information and use of data have been explained to me and a written copy of the information outlined in a plain language statement has been given to me to keep;

2. I understand that my participation in the project will involve the completion of a questionnaire (15 minutes), an individual interview (45 minutes), a focus group (45 minutes), and observation of my teaching and learning practices in my workplace (100 minutes);

3. I authorise the researcher to use for the purpose of the project, the data collected from the questionnaire, individual interview, focus group, and workplace observation that I participate in;

4. I acknowledge that:

(a) The possible effects and risks of the use of the data collected from the questionnaire, individual interview, focus group, and workplace observation have been explained to me to my satisfaction;

(b) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data previously supplied;
(c) I understand that the project is for the purpose of research and not for treatment (for medical research);

(d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;

(e) I have been informed that, due to the small sample size required for this research project, there may be implications for protecting my identity if I choose to remain anonymous;

(f) I have been informed that the individual interview and focus group will be audio-taped;

(g) I have been informed that copies of transcripts will be returned to me for verification;

(h) I understand that the raw data including audio-tapes will be stored securely and will be destroyed after five years;

(i) I have been informed that a copy of the research findings will be forward to me, should I agree to this and request a copy.

   o I wish to receive a copy of the research findings (please tick);

      □ Yes □ No

(j) I understand that once I have signed and returned this consent form, it will be retained by the researcher;

5 I consent to:

   (a) be identified by name in any publications arising from the research (please tick);

      □ I consent □ I do not consent

   (g) the individual interview and focus group being audio-taped; (please tick);

      □ Yes □ No

250
(g) photos being taken of:

- myself as I am working (please tick);
  
  □ Yes  □ No

- artefacts and materials related to my teaching practice (please tick);
  
  □ Yes  □ No

Signature of Participant: ___________________________  Date: ________________

_____________________________  __________________

Signature of Principal Researcher:  Date:

_____________________________  __________________
Appendix 3: Employer Plain Language Statement

[Date]
[Name of person]
[Organisation]
[Address of organisation]

Dear [Name of person],

Re: Consent for participation by [name of participant] in the research project, ‘Sustaining pedagogic innovation in the Victorian VET sector’.

I am writing to request your permission for [name of participant] to participate in my research project entitled, ‘Sustaining pedagogic innovation in the Victorian VET sector’. The research will contribute to the Doctor of Education I am currently undertaking within the Graduate School of Education at the University of Melbourne. [Name of participant] has been recommended to me by people both within and external to your organisation as a leading exponent of innovative educational practice in the VET sector, and has expressed interest in participating in this project, subject to your permission.

Through this research project, I am seeking a greater understanding of innovative VET teaching and learning (pedagogic) practices across a range of educational contexts. The purpose of the research is threefold:

2. to capture what happens on the ground when VET educators innovate;

3. to better understand discourses and practices of pedagogy and pedagogic innovation in the VET sector;

4. to better describe the conditions that foster innovation and how innovation can be sustained in VET organisations.

To achieve this purpose, I would like capture the thoughts and experiences of [name of participant] as [he/she] innovates in [his/her] everyday teaching and learning practices.
Using the data I collect, I will then attempt to interpret the experience in a way that describes the reality of pedagogic innovation in practice. I will be working with five innovative VET educators in total and observing their practice in different vocational educational settings.

The time commitment required of [name of participant] will be approximately two hours. [He/she] will be asked to:

- complete a preliminary questionnaire (approximately 15 minutes);
- participate in an individual interview (approximately 45 minutes);
- participate in a semi-structured focus group (approximately 45 minutes);
- be observed in practice (approximately 100 minutes) to develop a rich account of what happens when innovation occurs in real life settings.

With [name of participant’s] permission, the individual interview and focus group will be recorded and photos may be taken of facilities, artefacts, and documents. As the researcher, I intend to protect the anonymity of [name of participant] and the confidentiality of your organisation’s information to the fullest extent within the limits of the law. [Name of participant’s] contact details will be kept in a separate, password protected computer file from any data that [he/she] supplies. This information will only be able to be linked to [his/her] responses by myself, for example, in order to know where to send a copy of the interview transcript.

In the final report, [Name of participant] will be referred to by name only with [his/her] approval and, otherwise, will be referred to by a pseudonym. While, on request I will remove any references to personal information that might allow someone to identify guess [Name of participant’s]; please note that as the number of people I seek to interview is very small (five participants), it is possible that someone may still be able to identify individual participants and their organisation.

Participation in this project is completely voluntary. Should you agree to [Name of participant’s] involvement in this project, you may withdraw your consent at any time and any unprocessed data will be removed on request.
Once the thesis has been completed, a summary of the findings will be available to you on request and you can request the deletion of any of the information relating to your organisation. The data will be held securely for the duration of the research project and for the minimum period of five years after publication.

This research project has been approved by the Melbourne Graduate School of Education’s Human Research Ethics Committee and will be undertaken under the supervision of Dr Dianne Mulcahy as the Principal Researcher. Dr Mulcahy can be contacted by telephone on 8344 8656 or by email at 
monicadm@unimelb.edu.au. Should you have any concerns about the conduct of the project, you are welcome to contact the Executive Officer, Human Research Ethics, The University of Melbourne on Ph: 8344 2073 or fax 9347 6739.

The ethics approval number for this research project is HREC 1035073.1.

If you agree to [name of participant’s] participation in this research project, please confirm your consent in writing by return email. If you would like any further information or would like to discuss the research project, please contact me by telephone or email as per the details below.

Thank you for your interest in this project and I look forward to your reply

Yours sincerely

Melinda Waters
Ph: 9372 5051
Mob: 0422 005 443
Email: mwaters@tafacentre.vic.edu.au
Appendix 4: Employer Consent Form

**Project title:** Sustaining pedagogic innovation in the VET sector

**Name of Organisation:**

**Name of Representative:**

**Title of Representative:**

**Name of investigator(s):** Melinda Waters

1. I consent to the participation of [name of participant] in the research project named above and in the following data collection activities: questionnaire, individual interview, focus group, workplace observation, and relevant workplace documents. The details of each of these data collection methods, storage of information and use of data have been explained to me and a written copy of the information has been given to me to keep.

2. I authorise the researcher to use for the purpose of the research project named above, the data collected from documents, artefacts and materials provided by name of organisation.

3. I acknowledge that:
   (a) The possible effects of the use of the data collected have been explained to me to my satisfaction;
   (b) I have been informed that [name of participant] and [name of organisation] are free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data previously supplied;
   (c) The project is for the purpose of research and not for treatment; (for medical research);
   (d) I have been informed that the confidentiality of the information provided by [name of participant] and [name of organisation] will be safeguarded subject to any legal requirements;
(e) I consent to photos being taken of [name of participant] while on the premises of [name of organisation] and of approved teaching and learning artefacts and materials;

(f) I consent to [name of participant] and [name of organisation] to be identified by name in any publications arising from the research (please circle your response).

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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Employer signature: Date:

______________________________  _____________________
<table>
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<tr>
<th>Individual questionnaire questions:</th>
</tr>
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<tbody>
<tr>
<td>1. What is your name?</td>
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<tr>
<td>2. What is your role?</td>
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<tr>
<td>3. What is your current age?</td>
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<tr>
<td>□ 18 to 29 years</td>
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<td>□ 30 to 39 years</td>
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<td>□ 40 to 49 years</td>
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<tr>
<td>□ 50 to 59 years</td>
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<tr>
<td>□ 60 years and over</td>
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<tr>
<td>4. Do you work full time or part time?</td>
</tr>
<tr>
<td>□ Full time</td>
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<tr>
<td>□ Part time</td>
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<tr>
<td>5. How long have you been teaching in VET?</td>
</tr>
<tr>
<td>□ 1 to 4 years</td>
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<td>□ 5 to 9 years</td>
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<tr>
<td>□ 10 to 14 years</td>
</tr>
<tr>
<td>□ 15 to 19 years</td>
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<tr>
<td>□ 20 years and over</td>
</tr>
<tr>
<td>6. What industry did you work in and what was your role?</td>
</tr>
<tr>
<td>7. How many years did you work in industry?</td>
</tr>
<tr>
<td>□ 1 to 4 years</td>
</tr>
<tr>
<td>□ 5 to 9 years</td>
</tr>
<tr>
<td>□ 10 to 14 years</td>
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</tbody>
</table>
### Individual questionnaire questions:

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<table>
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<tbody>
<tr>
<td>□</td>
<td>15 to 19 years</td>
</tr>
<tr>
<td>□</td>
<td>20 years and over</td>
</tr>
</tbody>
</table>

8. What is your highest VET or other educational qualification?

9. What is your highest industry qualification?

10. Could you describe what innovating in teaching within VET means to you (100 words)?

11. Can you give 1 or 2 examples of your innovative practice?

12. What drives you to be innovative?

13. What factors most influence your teaching practice (these may be internal or external to your organisation)?

14. Are there any general comments about innovative pedagogic practice in VET that you would like to make?
Appendix 6: Individual interview protocols

Interview time: 45 minutes

The interview protocols provide a list of questions and recommendations for the researcher in how to conduct the individual interview. The protocols aim to encourage the participants to be as informative as possible in their responses by ensuring flexibility during the interviewing process and creating a relaxed atmosphere where questions appear to be part of the natural flow of the conversation. The researcher will be guided by the following interview process:

- The participant will receive a copy of the questions one week prior to the date;
- The interview will be held at a location agreed by the interviewer and the participant. The interview room will be private and free from disturbances;
- The interview will commence with:
  - a thank you for the participant’s time and efforts;
  - a brief introduction and description of the research project;
  - a statement reassuring confidentiality;
  - an outline the structure of the interview including timeframe;
  - a reassurance that the participant can withdraw from the study at any time.
- The researcher will explain that the interview will be tape recorded and written notes will be taken. She will also explain that there are no right, wrong or desired answers to the questions being asked and that the participant’s views, information and personal accounts of their practice are crucial to the study;
- The researcher will ask the questions using a relaxed and informal manner encouraging a conversation;
- If the participant has difficulty answering the questions, the researcher will use prompts to encourage the conversation;
- On completion of the questions, the researcher will ask the participant:
  - if they have any further information or comments they would like to make;
• if they have any questions they would like to ask;

On completion of the interview the researcher will:

• reaffirm that the participant can withdraw any raw data from the study;
• explain the next phase of the project;
• check that the participant has the researcher's contact details;
• thank the participant.
## Appendix 7: Individual interview questions

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Individual Questions</th>
<th>Prompt questions</th>
</tr>
</thead>
</table>
| **1. Introduction /warm up** | o Tell me about your experience of VET teaching.  
o How have you developed a reputation for innovative practice?  
o What triggered or influenced you to innovative? | o How did you start?  
o How do you know?  
o Were there other people who inspired you? |
| **2. What counts as pedagogic innovation in the VET sector?** | o How do you understand the term innovation? What do you know about it?  
o When I use the term ‘pedagogic innovation’, what comes to mind?  
o Can you describe an example of an innovative practice you have seen in the VET that inspired you? | o Look for the innovation discourse.  
o Why do you say that?  
o Where/ why/how? |
| **3. How is pedagogic innovation experienced from a practitioner’s point of view?** | o Describer your innovative practice for me.  
o What makes it innovative?  
o How did the practice develop?  
o What works well and not so well?  
o What does it take for you to be innovative? | o What/who does it involve?  
o What effect does it have?  
o Why did it happen?  
o Why?  
o What are the big challenges to overcome? |
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Individual Questions</th>
<th>Prompt questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. How might innovative pedagogic practices be fostered and sustained?</td>
<td>o From your experience, what are the biggest obstacles to innovation?</td>
<td>o Why do you think that?</td>
</tr>
<tr>
<td></td>
<td>o Stepping back for your practice, describe the conditions that you think best foster innovative practices?</td>
<td>o How and why will they work?</td>
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<tr>
<td></td>
<td>o What do you need to sustain innovative practices into the future?</td>
<td>o What is most important to you?</td>
</tr>
<tr>
<td>5. To what end is pedagogic innovation directed in the VET system?</td>
<td>o Stepping back a bit further for a system view, what advice would you give policy makers to create the conditions for innovative practice?</td>
<td>o What are the benefits of innovative practice?</td>
</tr>
<tr>
<td></td>
<td>o Why do you think innovation is so important to the policy makers and managers in VET?</td>
<td>o Ask for a metaphor if need be.</td>
</tr>
<tr>
<td></td>
<td>o How do you think might we conceive innovation differently that better accounts for your practice?</td>
<td></td>
</tr>
<tr>
<td>6. Conclusion</td>
<td>o Are there any other comments or questions you would like to add?</td>
<td></td>
</tr>
</tbody>
</table>
Author/s:
Waters, Melinda

Title:
Sustaining pedagogic innovation in vocational education settings: an actor-network theory account

Date:
2014

Persistent Link:
http://hdl.handle.net/11343/54856

File Description:
Sustaining pedagogic innovation in vocational education settings