

A developmental framework of practice
for vocational and professional roles

Thesis submitted in fulfilment of
the requirements for the degree of PhD

Institute of Sustainable Industries and Liveable Cities

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July 2021

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Abstract

This doctorate contends that vocational (including professional) practice is developed by cyclical iterative processes of problem solving, research and experiential learning that share generic characteristics in common. This concept lends itself to use in academic programmes of vocational formation that require life-long self-development.

This research explores how mature professionals were using experiential learning and other processes for their development as compared with my own experience. The results of our combined experience were examined for their contribution to improved vocational formation. This development is closely linked to the concepts of 'competence' and 'capability' that became significant in contemporary vocational qualification prescriptions (Jessup, 1991; Stephenson & Yorke, 1998). In this work, 'competence' is defined as the performance of practice in a vocational discipline and 'capability' as how competence is built and evolved.

Narrative inquiry, aligned with autoethnography, was selected as an appropriate methodology for this qualitative research. The study began by undertaking a series of interviews (Seidman, 2013) with individual professionals from business, technology and education fields. My professional practice in tertiary education teaching inspired a consideration of a broader concept of vocational development. This arose from my realisation that much of the development I was comprehending used familiar processes of problem solving and research.

The approach to the research began with a focus on learning and its association with psychology and sociology disciplines. However, the addition of problem solving and additional research methods, has meant taking on a broader ontological and epistemological perspective. This is compounded by the separation of conceptual knowledge from experiential knowledge, making the principal form of inquiry an investigation into an epistemological problem. To try and situate the findings appropriately, the primary methodology and methods pertaining to the psychology and sociology disciplines have been retained in terms of data collection, analysis and presentation, and the personal autoethnography involves a hybrid between conceptual and professional practice perspectives.

Thus the work comprises individual narratives of the participants (Clandinin & Huber, 2009) summarised in a narrative as inquiry, supported by a personal autoethnographic narrative (Denzin, 2013). The autoethnographic narrative is informed by dimensions of professional practice described by Cochran-Smith and Lytle (2015); and Lester and Costley (2010).

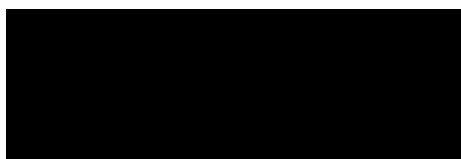
The findings comprise a developmental framework of vocational practice, which contends that individual capability (Stephenson & Yorke, 1998) is underpinned by cyclical and iterative, problem-solving, research and experiential learning processes which have generic characteristics. The concept of capability as a lifelong cyclical iterative process and the linkages between problem solving, research and experiential learning are seen as new contributions to knowledge. In turn, competence (Burke, 2005) becomes a state of practice provided by a developmental capability process and continues to grow through new problem solving, research or learning needs. As such, the framework allows for conscious lifelong self-development that will have major benefits in the tertiary education system and potentially earlier. Two further findings of significance were noted; the first being that an individual's narrative of identity also reflects their full practice and developmental capability holistically, (Clark & Rossiter, 2008; Polkinghorne, 1991) and that subconscious cognitive processes of insight, passive reflection and creativity all make a significant contribution to everyday vocational practice (Csikszentmihalyi, 2007; Eraut, 2002) and individual identities (Field, 2012).

Attestation

Doctor of Philosophy Declaration

"I, James Harrison, declare that the PhD thesis entitled A Developmental Framework for Vocational and Professional Roles is no more than 90,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work".

Signature



Date 12th of July 2021

Acknowledgements

I have pleasure in acknowledging the many people who have knowingly or unknowingly supported me on this life journey to date and the contribution they have provided in enabling me to produce the most significant piece of work in my life, so far.

Firstly, my family including my wife Susan, who has patiently and selflessly supported me through this doctoral journey; my mother Wendy, who provided unwavering love and my early passion for reading and learning; my sisters Susan and Penny, Diane and my daughters Rachel and Naomi and four wonderful grandchildren for all our good times together.

Then, there have been those who helped me in my education and careers including Thomas Sims, who gave me a second chance to join Swanage Grammar School; Colin Latham, who introduced me to Marconi, my apprenticeship, research engineering, and training careers; Dr George Tolley, who selected me as a senior training advisor for the Open Tech Unit in the Manpower Services Commission Sheffield; Maurice Alston, who initiated my UK consulting career; Ross Matheson, Peter Clarke, and Dennis Chapman, my NZ consulting career; Lynn Couch, Joh Cogle, and Rob Marks, supporting my tertiary academic career growth; and finally Dr Glenys Ker, for my current position and success with adult work based bachelor and masters programmes at Otago Polytechnic.

In my current doctoral research, I am indebted to the contributions of my research participants and the encouragement and support from my supervisors, Dr Martin Andrew, and Dr Oksana Razoumova at Victoria University, Melbourne, who always believed I could do something useful with this very broad research topic.

I am also appreciative of the interest and contribution made by several of my current and recent academic colleagues including Dr Behnam Soltani, Dr Glenys Ker, Dr Jo Kirkwood, and Dr Henk Roodt, who epitomise the roles of dedicated educators, who deliver the very best in academic and research excellence in our field of education.

Finally, I must also acknowledge the thousands of trainees and students, I have recruited, supported, and seen take off in their careers and who have provided me with the intrinsic reward of seeing them fulfil their potential and make a real difference in our complex world.

I would not be where I am today without all of you.

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Chapter 1 An overview of the thesis

This doctoral thesis chronicles a significant journey of comprehension that has led to identification of an integrated developmental framework of practice for vocational and professional roles. The thesis makes use of two primary data sources; that of narratives, and narrative of analysis of ten longstanding professionals, and evidence provided by a lifelong autoethnography. Its locus encompasses traditional research inquiry with professional practice findings and growth. As such, it needs to be reviewed as a hybrid of linked epistemologies.

The work set out to relate my autoethnographic journey of professional development to a group of fellow professionals with similar experience levels. It intended to compare their comprehension and application of initial experiential learning, and its components, with my own. What I found instead, were significant success stories built on the evidence of prior successes. These illuminated a wider range of cyclical and iterative processes common to vocational and professional roles, such as problem solving, research and other recursive processes which provide experiential and transformative learning.

A thematic analysis of these stories provides comprehensive comparison with my parallel journey of ongoing professional development. This was the conscious and subconscious processes I was using to support students undertaking a research-based master's programme in a range of professional practice contexts.

This led to a more expansive answer that has linked findings from earlier stages of my long career to contemporary re-interpretations of capability as a process. I found this concept of capability provided a cyclical iteration of performance improvement in many fields of practice. This has implications not just for vocational development, but for a lifelong journey of independent, coherent, and progressive growth in learning. It can be likened to a total quality management model of human development, where the principles replicate other quality systems. However, in the human case these are individual, influenced by communities of practice or real-world practice, and reflect an individual's life narrative and identity.

Throughout this text, I shall be using the word 'vocational' generically to include professional practice, but with the latter representing the higher end of the vocational range.

The rest of this hybrid doctoral journey is outlined as follows:

Chapter 2 begins with a literature review in a few major areas which are essential background to my identification of a developmental framework of practice and the role of cyclical iterative processes that underpin it. This includes an exploration of the complexity of our contemporary perspectives on knowledge and practice provided by philosophical ontologies and epistemologies; the methodologies of research practice particularly including the growth and efficacy of qualitative methods in human behaviour. It touches on some of the paradigms dominant in contemporary society that have been highly influential in recent technological breakthroughs. Contemporary education includes these paradigms but not the rapid change of context we now find ourselves in with changing work roles and the exponential impact of advancing technologies and other environmental pressures.

I provide an overview of vocational practice where knowledge and skills are integrated in concepts of competence, competency and more recently capability. I also summarise the challenges that humans are facing within a contemporary society, accelerating change and a continual need for development and adaption.

Introductions were later added to this section covering professional practice and practice as theory. Eraut (2002) considers process to be dominant in professional activity in that it combines processes of professional action with the ability to access and use, associated conceptual knowledge as required. Later Eraut identifies that most professional learning is gained informally from practice, rather than being taught. Practice as theory explores the perspectives of several contemporary researchers. Specifically, how from principally a micro and macro sociological perspective the nature of practice differs per se from knowledge. This makes use of the concept of 'habitus' as defined in Bourdieu (2017). Notably, how subconscious embodiment of this provides constitutive guidance of steady state practice by individuals in the communities of practice in which they operate. Both topics have significant linkage and implications for the developmental framework of practice derived from this research.

The chapter continues with an examination of contemporary learning perspectives. This includes experiential learning models by Kolb (1984), Engeström and Sannino (2010), and Moon (2013); introduction to transformative learning, Mezirow (1997); and social learning Wenger (1998). The related subject of reflection in experiential learning is also introduced by Moon (2013), cyclical models including Gibbs (2013); and in professional practice by Schön (1983) and Boud and Walker (1991). This is followed by examination of evidence gained from recent research work in Work Integrated Learning and Continuing Professional Development from principally the education sector.

The next section examines the concept of identity and its various forms including consciously Polkinghorne (1991), psychologically Clark and Rossiter (2008), and socially Wenger-Trayner (2015) in peoples' lives. More recently, it has been seen to identify an integrated and holistic picture of a person's practice and performance. This became evident when analysing and writing up the participants' narratives and later how the developmental framework of practice reflects this perspective.

The final part of the literature review examines the research gaps that have been identified leading to a first definition of a research question:

What role does experiential learning, and its related components play in competent practice and development of fellow professionals and myself?

The next chapter, Chapter 3, is concerned with the methodological approaches I have used in researching and compiling the narratives of my research participants and own autoethnography.

The research design makes use of a qualitative research methodology based on constructivist principles. The reasons for this include the conceptual location of learning as being situated in the disciplines of sociology and psychology; the rapid evolution and change in the paradigms that support these disciplines and the nature of constructivist inquiry, its multiple realities and its utility in such contexts described by Patton (2014).

The research addresses a modified question:

What role does common cyclical and iterative processes, such as problem solving, research and experiential learning and its related components play in competent practice and development of fellow professionals and myself? And a corollary: What were the implications of that for the formative preparation needed in vocational and professional careers?

The chapter continues with sections concerned with the ethics of human research and essential precautions required for their identification and treatment followed by a discussion on purposive sampling that identifies the characteristics used to select the professional participants needed. A description of the method of inquiry, analysis, and presentation is then provided. This includes the use of an extended semi structured interview process (Seidman, 2013), qualitative content analysis and final presentation of the participant findings in the form of narrative inquires (Clandinin & Huber, 2009).

This is then compared with my own autoethnographic journey both prior to and during the research journey itself that makes use of principles drawn from Denzin (2013).

The significance of reflexivity is discussed in relation to my work with the research participants and makes use of contemporary approaches identified by Kempster and Stewart (2010).

The approach to my own autoethnography also refers to perspectives of professional practice inquiry, as illuminated by Arnold (2011), Cochran-Smith and Lytle (2015), and Lester and Costley (2010). However, the results and their emphasis have been principally situated in the epistemologies of learning in social and psychological contexts. This is because the processes of the resulting developmental framework of practice make common use of processes of research used in the disciplines themselves.

The conclusions from this chapter are used to situate the research in the broad fields of psychology and sociology as well as to consider the limitations of the research approaches that are selected.

Chapter 4 provides the first part of my autoethnographic journey from early life to the commencement of this doctoral journey. Firstly, my autoethnography describes reflection on my professional practice and significant episodes of development up to the point of undertaking this doctorate.

The significance of my early careers to this journey includes my technical apprenticeship, my journeyman and leadership experience with organisational vocational and professional development, later project responsibilities for national vocational qualifications development, and subsequent consultancy activities before becoming an academic. These paved the way for my growing interest in this field of doctoral study and the significant findings I have made.

Chapter 5 provides narrative inquiries of my research participants. It portrays the narratives of their professional journeys both as successes and their awareness of contributing developmental processes. It also looks at the extent to which their comprehension of certain processes underpins the developmental framework of practice identified. It highlights the significant amount of their awareness and self-assessment which was embedded in their professional practice context rather than in a generic form. The chapter also illuminates the significance of and the level of subconscious cognitive and meta cognitive processes that occurred in their roles and the contribution it made to their ongoing development.

Chapter 6 provides a narrative of analysis on the participants' narratives. Here I review the common themes arising from the narratives of the individual participants.

Four significant themes are identified. Firstly, how their development adopts a framework which embodies their development through multiple iterations of recursive cycles of practice. These are primarily based on contextually based forms of problem solving. Secondly, that their practice was integrated and progressive. It evolved holistically through different roles, and this was reflected by their narrative identities. Thirdly, they were making use of both metacognitive and subconscious cognitive processes that supported their development. Finally, they were able to use the understanding of their growth processes to recommend improvements to early stages of formative education.

Chapter 7 describes the current stage of my autoethnographic journey, including my doctoral studies together with a catalytic educational role I have held with a NZ Polytechnic. My role changed from being a conventional tutor of tertiary programmes, to a facilitator of other people's learning journeys with an emphasis on reflection and how their present performance was informed by prior practice. This role forced me to examine my own practice more closely and led to a breakthrough. Notably, seeing the direct linkages between processes of problem solving, research, experiential learning, and other cyclical iterative processes. Furthermore, understanding the way they combine to form a developmental framework of practice for vocational roles.

At the same time, the supportive process I use as a facilitator has enabled me to observe the framework's impact on others and how the consciousness of their own development process accelerates their learning and development journeys. It also showed me how this framework could be adapted by others to their own needs without compromising its generic integrity and purpose in different practice disciplines.

Significant conclusions are also drawn on the linkage between vocational practice as defined by the developmental framework of practice and current concepts of narrative. These include psychological and social identity; a contrast between practice based and conventional learning approaches; and a novel perspective of practice as theory.

Chapter 8 describes the developmental framework of practice and the cyclical and iterative components it contains.

The framework depicts an active cyclical process that combines the principal processes of problem solving, research and experiential learning. Reflection is seen as an integral and omnipresent process at every stage of a capability cycle. Depending on

what is identified at each stage, the specific stage processes can also be iterated as many times as required in pursuit of a desired outcome, which implicitly leads to enhanced practice. Furthermore, rather than the cycle being simply the function of individual action, it is also seen as resulting from interaction with their landscapes of practice and external world contexts.

The generic framework offers many opportunities for further development in vocational contexts as well as being associated with educational formation. These include new insights arising from social and related behavioural perspectives.

The final chapter, Chapter 9 concludes the study by reflecting on the overall journey of this doctorate. It reflects on what has been gained through this seminal journey of self-discovery, what implications have been identified and the potential for other research for the framework's application in future.

A glossary of terms at the end of the thesis clarifies my usage and interpretation of several common terms I have used, including learning, competence, capability, reflection, vocational practice, and others.

Chapter 2 Literature and contextual review

Introduction

This chapter sets out the established scholarship and broad contexts of the research work undertaken in this doctorate. Because this has been a part-time journey over several years, references have been added, developed, and aggregated as the journey has proceeded. More literature is placed in later chapters to support new data or findings that need contextual explanation.

The review commences with the philosophy of knowledge and practice and how it relates, in the first instance, to the research dimensions of ontology and epistemology. These lie at the very heart of what we can know and how we can come to know it. The reason I have examined this closely is to enable me to come to an understanding of my own philosophical perspective as well as to identify how to situate and justify my research findings, that are closely associated with the ways we can research and learn. My resulting cyclical and iterative findings allow researchers and others in vocational roles to cope with contextual change that has become exponential and the continuous development necessary in a lifelong process of adaption and change.

My overview of vocational practice is followed by an assessment of what we currently use as measures of practice and achievement. It goes on to a discussion of how processes of competence and capability enable us to better cope with complexity, or the changes we face.

Next, there is an introduction to professional practice concepts and practice as theory.

The central sections of the chapter consider learning processes, including experiential, transformational and social learning together with an examination of conscious processes of reflection. This is followed by examination of contemporary development of professional practice in Work Integrated Learning and Continuing Professional Development programmes.

The chapter continues by describing different forms of identity and their relationship to the developmental framework of practice identified from my research.

A final section considers and discusses the research gaps identified from the literature review and from the prior experience of the researcher. This leads to formulation of an initial research question.

The above content, together with the subsequent chapter on my research methodology, form the context and landscape of my practice and serve to situate my research contribution.

Philosophical perspectives of knowledge and practice

Knowledge and practice are at the centre of how we live and progress in our life journey. We frequently forget in our modern world of human activity and related technologies how our comprehension of ourselves and our environment have been constructed; first by language and then later by such symbols as mathematics and metaphor that qualify and quantify the relationships and behaviours of practice and change.

In the Western world, pioneers of philosophy, mathematics and written language emerged from Middle Eastern civilisations. They understood how to create their own centres of civilisation by using resources for living from around them, compared with earlier nomadic tribes. However, what was common to the earliest of mankind and sophisticated civilisations was the sharing of knowledge and practice between older and younger generations. Knowledge provided a description and explanation of some things, whereas practice had to be experienced to be understood and refined. Culture provided an intergenerational resource of both to jumpstart each successive generation with an opportunity to build on what had gone before. Whether much of what we identify from the Greek culture was subsumed from earlier and related civilisations, they are still seen as providing much of what our knowledge framework is built on today.

Greek philosophers, such as Aristotle better esteemed knowledge that arose from practical matters, through the use of reason and logic, than imaginative creations from arts and narratives (Joseph & McGlinn, 2006). The use of reason characterised the philosophies of the Roman Empire. Contemporary culture from the Renaissance onwards saw logic transformed by the evolution of empirical experimentation. This not only broke the power of the Church as arbiters of human knowledge and destiny, but replaced them with philosopher-scientists, whose ontological and epistemological perspectives produced today's technological world of realism. However, as the problems of human impact on the world become more severe, an increasing range of philosophical perspectives are now being re-visited or generated. This trend is seen in research, where qualitative approaches, having human experience as their focus, have rapidly evolved over the past half century, and become a significant form of epistemological study.

Because of the significance of research and education to knowledge and practice, I have examined ontology and epistemology closely as part of my study's context.

An ontological and epistemological spectrum drawn from Potter (1996) provides a starting point (Figure 1).

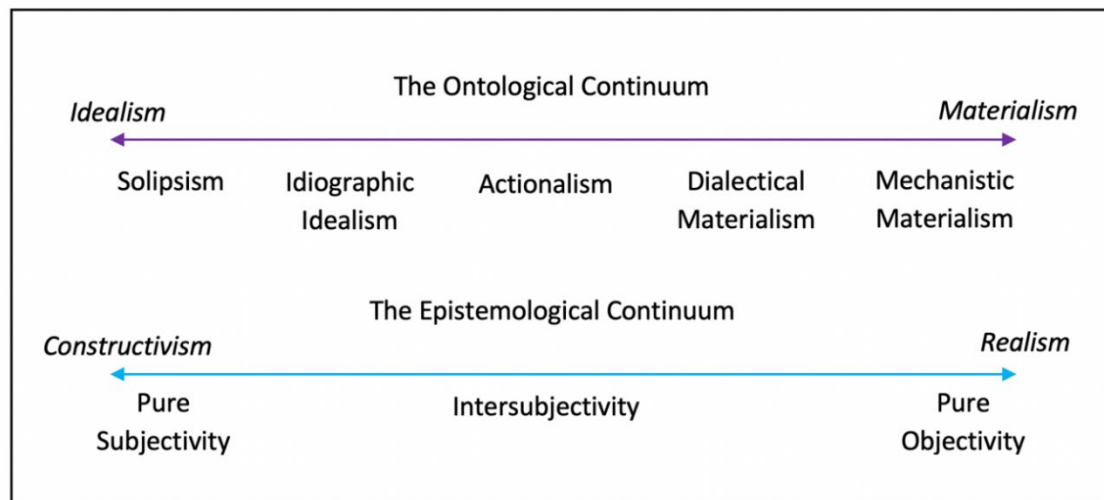


Figure 1. Ontological and epistemological perspectives
Adapted from *Analysis of Thinking and Research about Qualitative Methods* (p.37), by W James Potter, 1996, New Jersey: Lawrence Erlbaum Associates Inc. 1996. Reprinted with permission.

From an ontological perspective, materialism is a belief that there is a real external world in which entities exist, whether we are observing them or not. Idealism, on the other hand, suggests that the only thing we are capable of perceiving is a product of our mind and consciousness. Epistemologically, in the current age of qualitative inquiry, we operate within the continuum between the two, where comprehension pivots on different notions of objective or subjective truths.

Axiomatic perspectives, informing the methodologies and methods of research that produce what we can know and operate with in our lives, emerge from these conceptual frameworks. This has created a schism in the way human lives and behaviour, including education, have been studied in the disciplines of social sciences and psychology.

This axiomatic conflict is evident in my own lifetime and this research, with my use of a third person voice in describing the history of philosophy and an autoethnographic one outlining how experience changed my own epistemological being. As my early background involved science and technology, I had unconsciously assumed the

knowledge I had acquired from it represented a stable ontological and epistemological perspective. I began to question this only later in my master's study when I examined the underpinnings of management and economic practice. Here I found that the axioms and practice knowledge had changed in a short period of time due to societal changes brought about mass education.

More recently, even natural science fundamentals have been challenged by researchers including Capra (1982), Sheldrake (2012) and Johnson (2013).

In *The Tao of Physics*, Capra (1982) linked much of contemporary quantum physics and its understandings to the holistic perceptions of Eastern mysticism. This is not simply from a metaphorically similar perspective but one in which the roots of his understanding were linked by the integration of the human mind to the object of study, rather than as a separate impartial observer. This evolved from the fact that an observer in an atomic world had a direct and measurable impact on the object of observation at a quantum level of matter. In addition, Capra, showed that the behaviour of large systems needed to be viewed at a holistic level rather than at the reductionist level of their components to get a better understanding of their behaviour. Process, rather than structure, was a new way to explain the behaviour of fundamental matter more accurately. In overall terms, scientific knowledge is not absolute and invariant; it is only ever limited and approximate. All these ideas closely link with the eastern philosophies of oneness, process, time, and change.

In his book, *The Science Delusion*, Sheldrake (2012), a natural scientist, addresses several tenets of contemporary science that he identifies as contributing to a current philosophy of materialism. He maintains that research evidence is now able to challenge flawed paradigms of understanding that have prevailed for more than a century. He describes the arrogant perception that most ideas concerning the natural universe and life have now been discovered and many natural laws are seen as invariant. For example, the structure and behaviour of biological material is totally described by its genetics; life and consciousness are explainable in terms of current understandings of physics and chemistry; and that the inherent nature of life and evolution is seen as purposeless.

Sheldrake (2012) challenges the 'scientific priesthood', one as powerful as the church once was, in scientific academies and research universities. He criticises their control over the free will of people and the fact that the concept of knowledge has become a political tool to mould society's development in ways that suit vested interests rather

than all society. However, further research and findings now emerging are challenging the deterministic framework that this realist and positivist philosophy has upheld.

Johnson (2013) in *The Body in the Mind* identifies how many conceptual structures of human understanding have arisen not from the objectivist constraints of disembodied rationality and logic, but from 'embodied' physical experiences. He shows how imagination, considered by earlier philosophers as not useful in rational explanation of any kind, turns out to be a major contributor to human understanding and comprehension of experience. He explains this in terms of intrinsic image schemata derived from human experience. These are cognitively extended into many other theoretical concepts through metaphoric mechanisms that demonstrate imagination as an embodied intelligence.

Kuhn (1970) demonstrated how prevailing belief systems, supported by their knowledge custodians, hold sway in each discipline. This happens even though there is increasing evidence to contradict it, until such time as there is a sudden change of belief from an old to a new paradigm. In our age of complexity, the exponential advances being made in contemporary fields mean that paradigms are changing more frequently.

There is a significant example of such a paradigm in education where the fields of vocational and academic education have been artificially separated for more than 75 years due to the "Oxford" philosophy. Lum (2009) describes that in the 1950's, Oxford University in the United Kingdom, became enamoured with the logical positivism movement that originated from Germany earlier in the century. As a result, several researchers and linguists, including Ryle (1949) and Peters (1964, 1966), argued that language practice and word meanings needed to be viewed literally and to have nothing other than a single meaning, both conceptually and practically. There was a rapid realisation that the basis and success of empirical science would be fatally undermined and invalidated by such a proposition, resulting in its scientific consequences quickly falling out of favour. However, linguists such as Ryle (1949), Snow (1960) and Peters (2010, 2015) persisted and their consideration of people learning through practice as *knowing how* (through process) and people who undertook more formal traditional education as *knowing that* (through knowledge) forced an artificial separation between these two forms of education. This has yet to be fully resolved. This paradigmatic belief indicated that those people learning practically only needed the knowledge acquired from the practice and not additional conceptual knowledge. Conversely, those undertaking academic education would not need

practical knowledge as their livelihoods in professional areas would not require it, or it could easily be added later. I observed this in my own education where all craft training was undertaken on the job with no additional college education and where few students in the humanities gained practical experience until they started their careers.

This was further perpetuated by the competence-based system discussed later, where lower levels of practice initially did not include any reference to knowledge requirements other than that made explicit by the practice. Even though this perspective is clearly not viable today, its impact is still influential concerning the fact that practice-based learning is somehow regarded as inferior to academic learning and the higher education systems delivering them are still separated in many international jurisdictions. The conclusion drawn by Lum (2009) and others including Eraut (2002), Hager (2017), and my own research, is that education needs both academic knowledge and its integration within separate realms of practice.

These studies have shown me the impact of paradigmatic beliefs on fundamental education and developmental practices occurring in the present day. They further indicate why my unconscious assumptions need to be reviewed in this study.

An analysis of the Potter diagram (Figure 1) suggests my new perspective has a range of fresh characteristics. Firstly, my ontology seems to fit across several parts of the ontological spectrum. I consider there is physical matter separate from ourselves that has its own characteristics and that these characteristics do not wholly depend upon their constituent parts for their behaviour, i.e. dialectic materialism. However, when it comes to human beings and animals, they are more dependent on actional realism which involves the effect of others as well as their own choice-making behaviour. More importantly, my epistemology has shifted towards constructivism. I consider my understanding of physical matter and social societies and disciplines such as education are being continually re-constructed from new evidence that we discover or learn. As a result, all I can ever know is a construct and never an absolute of anything. This provides the basis by which my understanding of self, process and development has evolved during this doctoral journey.

The purpose of this section has been to illuminate the frameworks by which contemporary society is evolving knowledge. At the same time, in a world of accelerating change, education and personal development of practice are no longer the prerogative of the young. It has had to change from 'a just-in-case' to a 'just-in-time' approach where individuals can control their lifelong individual development. This

involves not simply knowing *what/that*, but knowing *how*, and hence the next section reviews contemporary descriptions of vocational practice.

Vocational practice descriptions

This section discusses how and why the description and education of practice in everyday life has evolved significantly from generalist to practical integrated descriptions. These new descriptions are no longer principally knowledge-based of *knowing what* but can be integrated with the *knowing how* of vocational practice. This is needed not just for education, but for the whole of our lives. Some of the milestones of this development include competency, competence and more recently capability. This is followed by review of professional practice and its wider use of other conceptual perspectives. Finally, this section looks at the attempts to describe practice in theory.

Educational outcomes

Due to the history of Western philosophy outlined above, Joseph & McGlinn (2006) describe how early universities based their curricula around something called the Trivium. This is a combination of grammar, logic and rhetoric, which led to the development of the mind. Then later, the Quadrivium, concerning matters relating to mathematics, science and music. This ignored utilitarian practice such as trades, banking and commerce and fine arts such as architecture, painting, and drama. The grammar provided the encoded knowledge, the logic its justification and rules of practice, and the rhetoric the ability to disseminate its practice in communication. This type of curriculum underpinned all university education and was later used as the basis of schooling, linked with its associated notations of reading and writing, which revolutionised its dissemination.

As knowledge grew in scientific fields and applied professions came into being, the rise and practice of education harnessed the same approaches. It became apparent that the fundamental sciences and mathematics were able to assume theoretical ascendancy over knowledge frameworks derived from generations of tacit experience. This in turn fostered the growth of contemporary empirical research in university activity where fundamental knowledge assumed primacy over its application and subsequently of solving problems in those applications.

In the middle of the twentieth century a new knowledge framework formed the basis of Bloom's taxonomy (Krathwohl, 2002). Implicitly, mental analytical and synthesis skills were included in this taxonomy as 'knowing how', but this did not extend to vocational skills.

Development of vocational skills began with craft guilds in Europe. The skills and associated knowledge were provided by masters of the craft to their apprentices in an integrated manner through years of experiential practice. This changed during the industrial revolution where larger scale production became significant and complicated tasks were simplified by new machinery and manufacturing processes and where people like Taylor (2004), the father of modern work study, utilised people with natural practical abilities rather than spending time to train them. As levels of technology and production grew more sophisticated, more advanced vocational training was introduced during and after the second world war. But apart from in Germany where the dual vocational academic system gained equivalence, the status of vocational education elsewhere, in the USA and UK has been the poor relation of academic education. Attempts were made by Fitts (1964) to establish a skills framework similar to Bloom's taxonomy but it never achieved popularity. This is in part because skills curricula are difficult to describe, develop and measure compared to their knowledge-based counterparts.

The rise of the field of industrial psychology in the 20th century led to the study of people at work and the identification of positive traits or attitudes that supported increased work performance. Earlier research by behaviourists, including Skinner, showed that extrinsic rewards and punishments provided some influence on working behaviour. Later work by Vroom (Parijat & Bagga, 2014) and Deci and Ryan (2002) on intrinsic motivation led to the current perspective that fair and supportive treatment of staff led to more sustainable results in performance.

It is these three components that have dominated the description and assessment of implied vocational practice until recently, when more attempts at integrated descriptions were developed. These include competency, competence and capability which are reviewed below.

Competency

An important contribution to the effect of attitudinal traits on vocational practice was identified by competency studies in the USA. These were first used to capture work behaviours of high performing managers but have since been more widely applied in performance management and behaviour-based interview systems worldwide.

At the outset competency was defined by Lawshe and Balmer (1966) as the potential to perform, the ability to convert that potential into reality in a given work context and the motivation to do so. This was followed by McClelland (1973) who saw the potential of identifying characteristics of competencies as an outcome as a better way of

measuring organisational potential of employees as opposed to intelligence tests. This approach was developed by Boyatzis (1982) for managers where the competencies and their related characteristics of exceptional performance were identified from behavioural experience interviews. Later work by Boyatzis (2008) included the contributions of emotional and social intelligence. Such approaches were adopted by many consultancy organisations, such as Hay McBer, as ways in which organisations could classify employee potential and performance.

Examples include both actual outcome behaviours such as management, problem solving, teamwork and communication, with the addition of attitudinal behaviours including flexibility, attention to detail, cooperation, and commitment to safety. These statements tend to support a positivistic epistemology of individually led practice in that they ignore the significance and social impact on individuals of communities of practice. They also describe practice and performance as a collection of parts instead of an integrated whole.

Competency can be defined as superior behavioural performance using a numerical scale or behavioural anchored ratings (Appendices 1 and 2). Their significant limitation in a current environment is that contexts are no longer static but changing more rapidly. Also, the descriptors do not define adaptation processes by which the competency can keep pace with change.

Measurement of competency varies widely. It can be undertaken by direct observation of individuals by their peers, their supervisors or done indirectly by outside parties such as customers or suppliers. Rothwell and Graber (2010) describe how it can be undertaken through self-assessment, interviews, psychological measurement or contribution to overall team and organisational financial performance. Measurement of task performance or predictors of task performance and behaviour can also be used. A challenge of all methods is how well the diagnostic tools and processes validate the characteristics of the competency being measured. Lurie, Mooney and Lyness (2009) identify how well an individual competency itself relates to the competency of the processes or technologies used by the organisation. Sen (1993) notes how the complexity of the social nature of an organisation and its culture can either enhance or reduce the contribution of an individual and influence their behaviour through time.

Competence

Until recently, people worked in just a few jobs over the whole of their career and employment was stable. This meant that people could develop in a job or career with relatively few employment changes and companies invested in employees who had a

long-term future with them. At the same time, the limitations of traditional descriptions of knowledge, skills and attitudes were neither apparent nor significant. However, from the latter part of the 20th century, economic development arising from technology and other social change had a dramatic effect. Employees needed more training and development, employment stability had rapidly declined and whether by choice or not, many people were changing jobs at an increasing rate. For all these reasons, low skilled work became less significant, whereas higher skilled work became more complex, needed continuous development, and required higher academic qualifications to help offset these extrinsic changes.

As a result, fundamental changes to education and qualifications systems needed to happen in many developed countries. This was because employers could neither recognise nor train people whose qualifications were not able to sufficiently meet their immediate needs. The difference was to develop qualifications with descriptions showing how requisite knowledge skills and attitudes could be represented in generic work roles and expressed in employment related language.

This led the UK to develop vocational qualifications based on assemblies of units of work performance that related to generic work roles. These were called 'competence qualifications' (Lester, 2014).

The difference between competence and competency arose from two main distinctions. Firstly, the components of competence were derived from a top-down analytical approach to a field or industry sector, called functional analysis. An overall purpose was subdivided until its distinct, mutually exclusive components started to represent areas of activity undertaken in individual job roles (Appendices 3 and 4). Appendix 3 shows how given sub-functions of the NZ electronic industry could be divided between professional, paraprofessional, and other roles. Appendix 4 provides an illustration of how these functional role components were used to create performance standards, whose outcomes were defined by performance criteria. Implicit knowledge elements can be included where appropriate. An important dimension of the functional analysis approach was that it identified job role components as processes, that remained relatively stable through time. This forms a significant contribution to my research solution later.

The standards derived from functional analysis reflect the conceptual model of Mansfield and Mitchell (1996) in which tasks (*what was done*), task management (*how it was controlled*), contingency management (*how to adapt to changes*) and environmental factors (*context risks, operational freedom and types of interpersonal*

relationships), were included. Mansfield's work formed the framework on which the UK system of role standards and associated National Vocational Qualifications were achieved. At that time, the definition of the competence standard was deliberately designed to be understood and used by a learner to measure their own performance in a work role. Further, confirmatory assessment was arranged when the learner felt that they were performing to standard. This was intended to allow development of learners at a different pace. This was never possible in a tertiary education environment due to organisational constraints.

The popularity of these types of qualifications meant they were widely adopted later by other countries, including Australia, New Zealand and South Africa. However, in all these jurisdictions, their implementation and maintenance have proved problematic for several reasons. These include the micro-nature to which some of the analysis and student measurement was undertaken, such as in Australia and commented on by Wheelahan (2009); the variable nature of analysis and updating undertaken by Industry Training Organisations in New Zealand, where the assessment by tertiary organisations largely reverted to knowledge-based assessment; and finally the increasing pace of societal and technological change. This was aggravated by the dramatic increase in assessment activity, where qualification and awarding bodies' mandates required measurement of all performance criteria in a standard. This increased the assessment task by at least an order of magnitude over prior knowledge assessment approaches.

Even in the UK, in the 1990s, after massive investment by the UK government and industry to provide competence-based qualifications at all vocational levels, changes to government oversight have again led to increasing freedom of definition of standards and qualifications. (Whitehead, 2013). A major issue throughout was that tertiary public education continued to be funded on a fixed time per capita basis. This meant individuals continued to be provided with fixed development periods, which suited knowledge input and assessment better than competence practice and assessment. Work-roles requiring bachelor or higher-level qualifications have increased significantly and university providers, by virtue of their autonomy, have been free to continue to produce qualifications using their own forms of specification and assessment. This was not the case in high-risk areas of employment such as medicine or piloting aircraft, where legal regulation was mandatory, and personnel had to undergo rigorous forms of training and testing of their performance both at the outset and throughout their careers.

Currently, significant work is being undertaken between universities and industry in the UK to develop and implement competence-based qualifications within graduate apprenticeship schemes to offset the growing gap between graduate capability and employer expectations. Contemporary UK competence standards are now being defined at a role level and have reverted to knowledge, skills and behavioural descriptions (Appendix 5).

Capability

Capability concepts first emerged in the UK at the same time UK Government ministries were grappling with lack of training provision in many new sectors of the economy.

The Royal Society of Arts (RSA) which has held a prestigious role as a commentator of UK society held a forum in 1980. Reader-Harris, Gorb, and Caldecote (1981) described the growing gap the forum observed between what was needed by adults in contemporary society and the qualifications undertaken by school leavers and tertiary level students. As a result, a manifesto was produced for government, education, and other interested parties. It was concerned with the need to review and change how people might be better prepared for a modern society where knowledge and practice was undergoing continuous change. The RSA hosted several annual meetings on this topic, until it appeared that UK government initiatives were responding to these changes more effectively.

They articulated a new description of all round competence they described as capability. A distinguishing feature of its meaning was that it should reflect an ability by individuals to be able to use it in new or unfamiliar areas of practice, as appeared to be the case in vocational roles. This concept was the subject of a book *Capability and Quality in Higher Education* edited by Stephenson and Yorke (1998). In it they stated:

Capability is an integration of knowledge, skills, personal qualities and understanding used appropriately and effectively, not just in familiar and highly focused specialist contexts, but in response to new and changing circumstances (p.2).

Stephenson goes on to describe this capacity not simply as the measure of knowledge and skills, but as familiarity with their use in practice, including the ability to formulate and solve problems in different contexts. This capacity or capability allows an individual to continue their personal and professional development independently of formal

education inputs for much of their lives. This has significant implications for my own autoethnographic study and the formation of my developmental framework of practice.

Another distinctive concept of capability is provided by the work of an economist Sen (1993). He proposed a model of capability as an alternative way of measuring the economic wealth of those in society, not in terms of financial measures, but in terms of access and freedom to pursue goals and lives they have potential for. At its simplest, this includes measures of access to education, to areas of employment, gender and racial equality and freedom to live and work in different geographical areas. In contrast to the individual concept of capability described earlier; its lack in a society provides a barrier or diminution of individual capability in a deficit sense. Again, this concept, has significant implications for my study in terms of my realisation that established education approaches provide similar limitations to capability development in the face of increasing changes from technology and its global impact on life and work. Indeed, much of what Stephenson and Yorke describe in their book is impacted by Sen's deficit concept of capability as it applies to education policy, funding, curriculum, teaching, learning and assessment practices, as applied in contemporary education.

In conclusion, competence, and capability each have a contribution to the formulation of a better definition of human practice and performance, rather than falling back on surrogates of knowledge, skills and attitudes. Most importantly, knowledge, skills and behavioural attitudes are meaningless without the ability to apply them, not just in one context of practice but many. Secondly, every single human being in each field has a different combination of capabilities and competences which can be used effectively for themselves and others. Thirdly, how significantly motivation and confidence is affected by behaviour and emotion resulting in whether performance is successful or not.

Professional practice

Whilst competency and competence have all been applied to professional practice in certain disciplines in the latter part of last century, there has been separate research undertaken by other researchers, particularly on practice. Argyris and Schön (1978), Schön (1983), and Eraut (2002; 2011), have studied professional practice; how it formed, how it was practised and developed outside of conventional academic pathways.

Three early professions came to dominate the conventional understanding of professions. These were engineering, medicine, and the law. At the time these came into ascendancy, each provided clear conceptual solutions to many of the problems that needed addressing in each discipline and there were clear linkages between the

original scientific concepts and their application to real world problems. This gave rise to what Schön (1983) called a dominant technical rationality model in which the knowledge and its application were dependent upon known scientific sources. These were considered superior to the concrete problem solving engendered by it. This very much suited the positioning and status of researchers and universities in the social structure of society, compared with the professionals who made use of it. It is only in more recent times that new professional disciplines have arisen, where the problems have become multifaceted or systemic in nature, such as global warming or economic growth in a world with finite resources, where complex problems no longer neatly fit positivistic frameworks of conceptual knowledge. As a result, professionals need to make use of more sophisticated frameworks that extend beyond rationality-based models.

Eraut (2002) describes professionals needing to make use of five interdependent processes summarised as follows:

- Acquiring information through recognised methods of research inquiry, making use of tacit information that utilised an existing conceptual knowledge base, a conceptual framework, and skills in collecting and interpreting information
- Linking this to a demonstration of skilled behaviour in its practice to gain feedback which led first to tacit knowledge and later automation of routines
- All the above forming part of deliberative processes of planning, problem solving analysis and evaluation, delivered with professional judgement and which made use of situational knowledge, concept of practice and convergent and divergent thinking practices
- Moderated by sharing information with others through interpersonal and interpretative skills
- All making use of metaprocesses of thinking, reflecting, intuitive decision making and judgement

Based on the above, Eraut (2002) concluded that professional development needed to include a significant amount of professionally based development, significant emphasis on process knowledge development involving a balance of conceptual knowledge and all forming a major part of initial and continuing qualifications. Eraut considered that professionals engage with a variety of knowledge including people, situational, conceptual, process and that they control forms of knowledge, most of which were obtained from practice and several which defy conceptual description. For example, the fluency of practice provided by the Dreyfus & Dreyfus (1980) skills model describes

how experienced professionals make use of intuitive approaches in their practice, rather than being restricted by conceptually based rules that apply to the discipline.

Schön (1983), identifies the process professionals engage with reflecting on action to identify relevant knowledge from their practice. This is whether a problem can be resolved recursively by means of existing knowledge as in single loop learning (Argyris, 1976), or whether it requires a re-framing of the problem from scratch (double loop learning).

It is interesting to note that these researchers identify professional practice development arise from solving problems in practice and then becoming embodied in fluent practice. This provides grounding for my developmental framework of practice identified in this research.

Practice as theory

Practice as theory has received significant attention in recent times as social researchers have become aware of how influential society, culture and groups have been in contributing to individual human development. This was developed by Bourdieu (2017), who introduced the concept of 'habitus' where peoples' subconscious dispositions are the expression of social structures and as such predisposes them to act in particular ways. This determinism provides a stability of behaviour in a social group which enables practice to be passed between experts and novices. The importance of habitus is that it predisposes new information to be acquired based on old information and to maintain recurrent habitual levels of performance. Interaction between individuals as agents and social structures of practice in recursive practice enables optimisation and persistence of performance across time and space. This is akin to single loop learning described by Argyris (1976). Clark (2000) describes recursiveness in practice as being the ongoing ability of social participants to understand how a one practice template can satisfy a new situation, yet at the same time prevent transformation of practice. This supports the way in which routine practice can be undertaken unconsciously from procedural memory. These ideas are reflected in the developmental framework of practice formulated in this thesis where both recursion and adaption are possible through iterative cycles of practice.

Social adaptation or change of habitus is brought about in several ways. Wenger (1998, 2015) describes it in terms of the continual change of membership in communities of practice arising from the knowledgeability of membership of several communities of practice. Similarly, Giddens (1991) argues that the plurality of social groups and their actors can bring about strategic and divergent change. Sztopmka

(1991) does not see social structure as rigid and sedimented so much as constantly undergoing change. This change is between potential and actual realities through interaction at micro (individual) and macro (organisational) contexts and these are in a continual stage of becoming.

These concepts bear close relationship with the process model I have identified and the supporting narratives of the professional research participants I interviewed. It provides both grounding of the thesis results as well as enhancing its potential utility within social contexts.

Schatzki (1996) provided a contribution concerning the nature and scope of practice in terms of the three understandings of practice he defined as:

Practice is Learning how or improving one's ability by repeatedly working at it or carrying it out.....A temporally unfolding and spatially dispersed nexus of doings and sayings.....Performing an action of the second sort (p.89).

Green (2009) interprets this to mean that the practice of doing and saying creates an interplay and co-production of meaning through practice. Such understandings are implied by Schatzki's further referral to the application of explicit principles of projects, purposes, beliefs, and emotions. Green interprets this to mean use of various forms of tacit, propositional, or procedural forms of knowledge; explicit or implicit rules; rule referenced rather than rule governed practice and use of ends, means and behaviours appropriate to such practice. Green clearly distinguishes practice from representation in the classical sense of representation guiding practice, and considers it might form part of practice description.

Kemmis (2010b) makes the argument that Aristotelian and Marxist praxis perspectives tend to be informed by traditions in each field of practice, as well as considering the best people to be involved are those engaged with the experience. This is in distinct contrast to the concept of an independent researcher, who is not familiar with the practice in question. Kemmis argues that this is particularly the case with education research, where researchers with wider interests have a significant impact in the field. This results in learners and their development often being obscured by other priorities. This idea has support from other researchers of practice including Carr (2007) and Schatzki (2002).

The features that practice theories have in common is that they are situated, social and relational and that knowledge gained from them is embodied and enabled through practice, is more than can be known or described, and that the holism of practice is

more extensive than the mental cognition and processes of individuals involved with it. At the same time, human agency plays an active part in social participation through being conscious of knowing what they are doing in the doing of it. This will be reflected on and developed further in my autoethnography on this study.

A useful application of practice as theory has been provided by Binder (2012) in the field of urban planning. Binder identified a model of recursive practice that includes an embodiment of social structures, understands the aconscious way things are done around here, forms a basis of agency which defends existing practice and where modification of practice is, innovation. The word 'aconscious' is used deliberately in that the practice is neither wholly conscious or subconscious. It is a guiding framework that is embodied physically and emotionally as well as rationally. It interprets Bourdieu's concept of habitus and Vygotsky's model of relational learning and that a fit with habitus is not simply an economising need for satisficing but represents more broadly based ecological needs. The ongoing relation between individuals and the social practice they are engaged with is defined on the one hand by stability and the confidence in current practice. On the other hand, it is defined by stepwise processes of adaption to new states of habitus after Wittgenstein (1971), which are accomplished aconsciously or with more active engagement.

The important conclusion to be taken from this section is that practice is not able to be described conceptually in the same way as knowledge in that it possesses tacit, embodied and emotional dimensions that are shared individually and collectively within social communities of practice. Such dimensions prevent practice from being able to be independently described in the same way as conceptual knowledge.

Contemporary learning perspectives

Introduction

The focus of this section is concerned less with conceptual learning than it is with learning from experience and practice, although the former may form part of the processes of the latter. At its simplest, a conceptual learning process defines how a learning outcome is achieved. Bloom's taxonomy (Krathwohl, 2002) provides a six level hierarchy of cognitive processes ranging from remembering through understanding, applying, analysing, evaluating and creating knowledge that is commonly used in conceptual learning.

However, there are other important dimensions of learning which are intrinsic to our awareness and practice in the world. These include practice and experience, participation in social groups and handling our own and others' emotional natures. In

social contexts, Roth (2015) considers a great deal of our learning and behaviour is assimilated subconsciously as culture. Further, learning processes have tended to divide into disparate directions that are underpinned by monist or dualistic perspectives of individuals; where learning is either part of an integrated sociological ontology, such as promoted by Lave and Wenger (1991) and Jarvis (2011); or the continuing dualism in which the learning processes and outcomes are associated with an individual from an epistemological perspective, such as promoted by Illeris (2009) and Mezirow (1997). Both perspectives are explored further below in their differing ontologies of psychology and sociology without at this stage trying to promote one over the other. It is recognised that this dualism will need to be addressed later as part of my results.

Experiential learning

A significant group of processes that have been identified in social or experiential contexts are collectively identified as experiential learning. These are frequently associated with a cyclical process where the outcomes of learning are only arrived at by progression through linked stages of practice and associated individual cognitive processes. Sometimes, these cyclical processes may need to be repeated several times for an adequate comprehension or practice to be achieved.

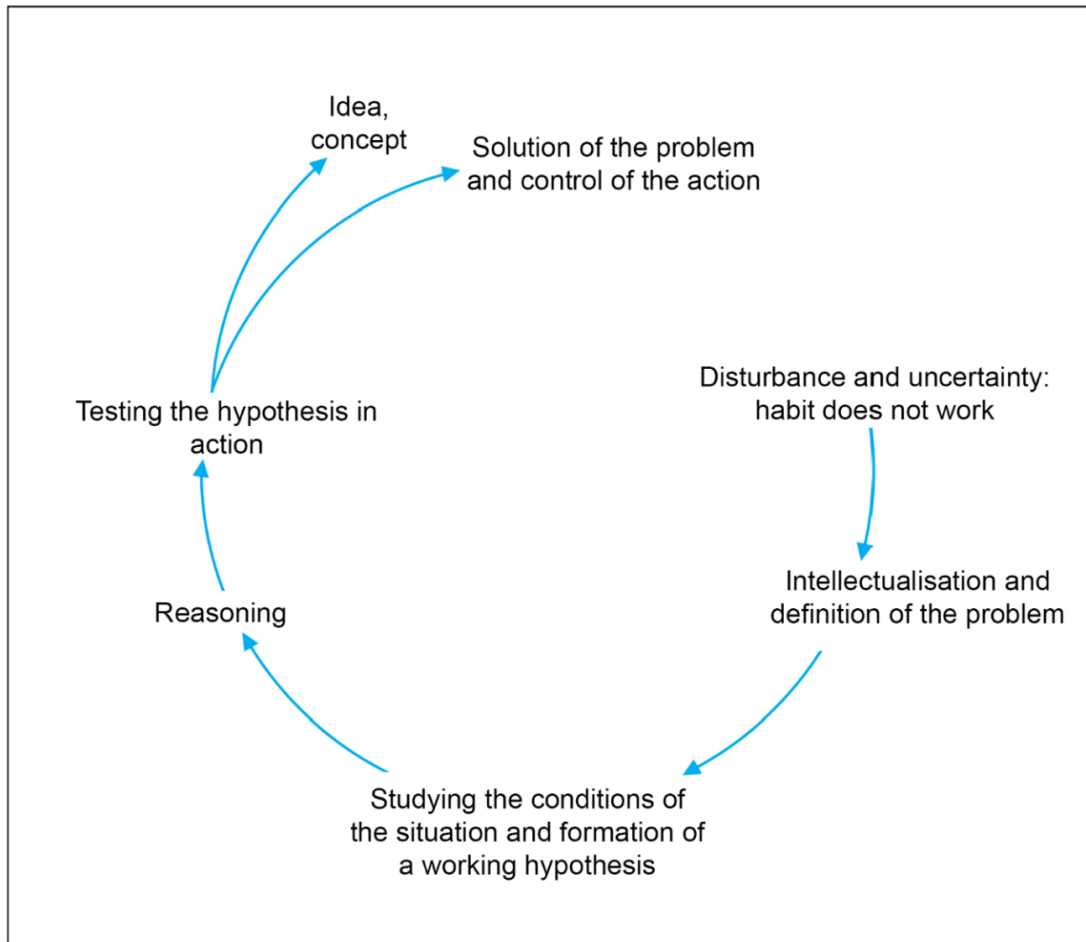


Figure 2. Dewey's model of reflective thought and action
Adapted from *The Concept of Experimental Learning* (p.65), by Reijo Miettinen, 2000, *International Journal of Lifelong Education*, 19(1), 54–72. Reprinted with permission.

An early model is Dewey's model of reflective thought and action (Figure 2). This model is based on the Darwinian biological theory of adaption and evolution that arises from an organism finding that its habitual behaviour no longer works. Dewey (1997) considers that there are two types of experience. Firstly, primary experience which remains largely subconscious and unknown unless it starts to create problems as described above. Secondly, secondary experience which is where the problem is reflected upon and the consequences used to create learning.

Elkjaer (2009) describes Dewey's definition of experience to mean more like culture. In the sense that it is an ongoing interaction between a subject and their world. It is also linked to the future as well as the past. It can affect both subject and world. At the same time, it can be emotional and spiritual in nature as much as it might be an occurrence.

Another popular model is the Kolb (1984) model, which is loosely based on adaption studies of Lewin, Dewey and Piaget (Figure 3). This comprises a cycle of four components including observation, reflection, theorising, and experimentation. The learning process can begin and end at any stage of the cycle as well as be repeated as many times as needed to achieve learning proficiency. However, learning is not properly achieved without the full cycle being undertaken. This is challenged below. Kolb, Boyatzis, and Mainemelis (2001) promote the flexibility of his model with their associated work on learning styles.

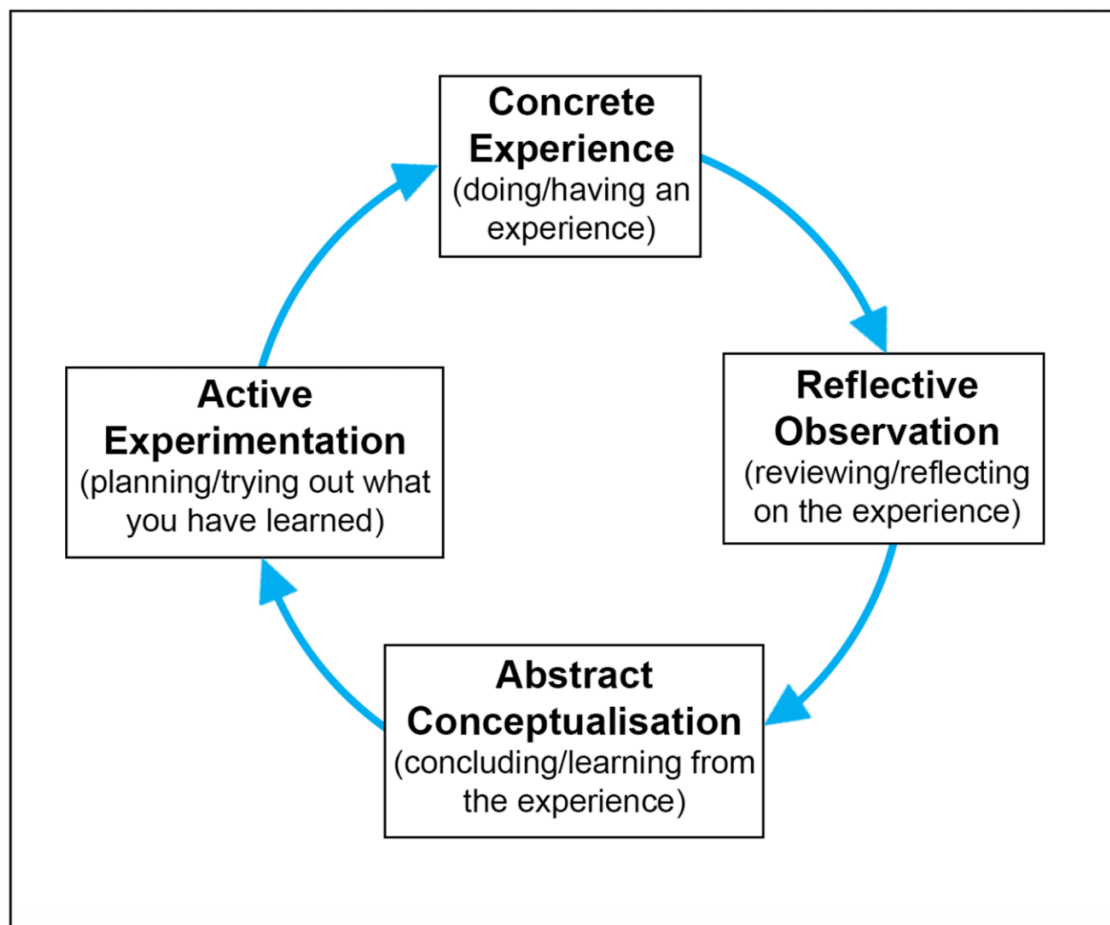


Figure 3. Kolb's model of experiential learning
Adapted from *Experience as the source of learning* (p.77), by David Kolb, 2015, New Jersey: Pearson. 2015. Reprinted with permission.

A significant critique of Kolb's model was undertaken by Webb (2003), a PhD student of Kolb. She identified several epistemological inconsistencies between the Kolb model and the cognitive work of Piaget. In particular, she identified that the relationship between learning and experience in the Kolb model was a simplistic derivative of the learning process as suggested by Piaget. It ignored the wider role of learning of which social adaptation was a part. It did not consider wider learning, such as provided by

intuition. She challenged the restricted definitions of each of the four components which she considered to be more integrated, certainly between reflection and the others. She also refuted the validity of the learning styles and learning adaption models that led to the derivation of the model and the resulting dialectical tension and dynamic interaction with the components of learning that Kolb defined.

The eclectic approach taken by Kolb to link this model with work by Dewey, Lewin and Piaget is also challenged by others including Miettinen (2000), Heron (2009) and Engeström and Sannino (2012). A more recent model, 'the expansive learning model', has been developed by Engestrom (1999) (Figure 4).

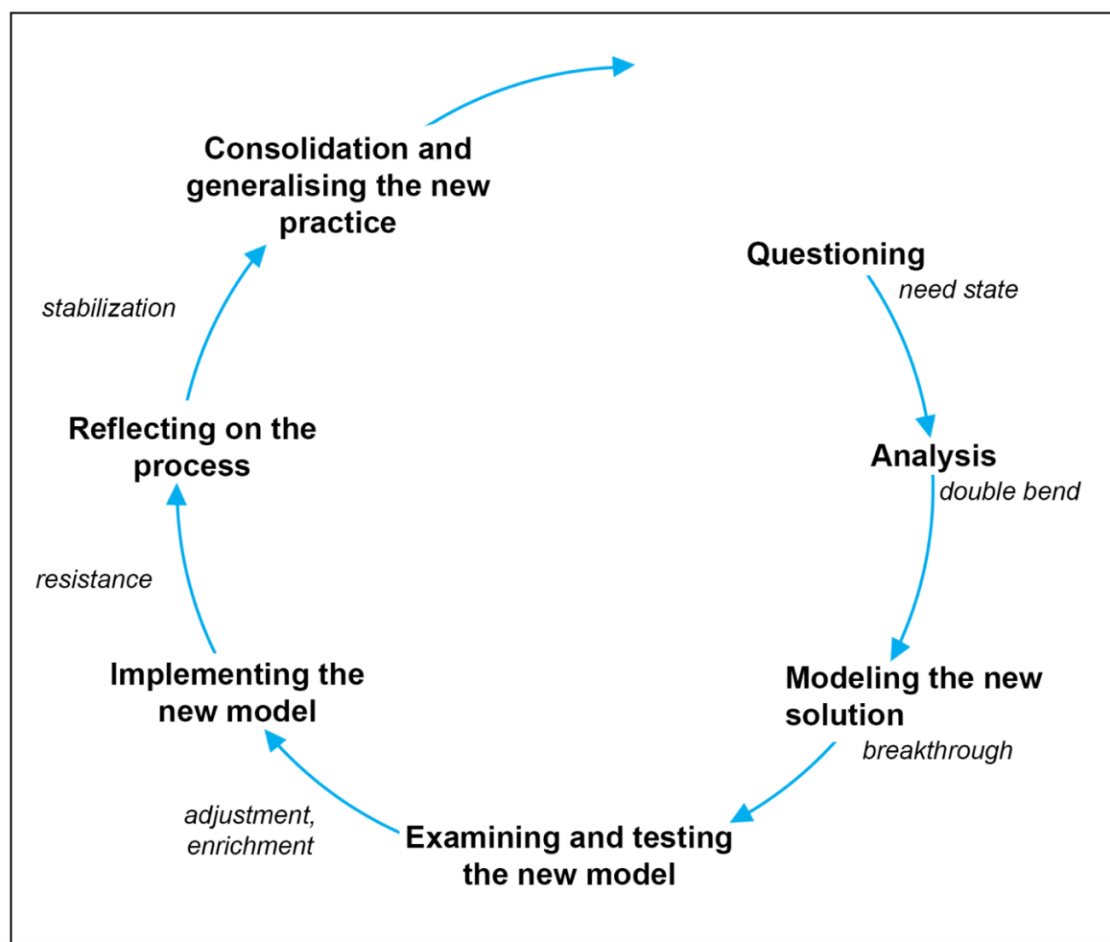


Figure 4. Expansive learning model
Adapted from *Perspectives on Activity Theory* (p.384), by Yrjö Engeström, 1999, Cambridge: Cambridge University Press. 1999. Reprinted with permission.

This bears close comparison with my developmental framework of vocational practice based on problem solving and related processes.

Moon (2013) has developed a similar cognitive model to the above, but which makes use of five stages of learning (Figure 5). These are derived from many sources of work including Piaget, Habermas and Mezirow. The noteworthy aspect of this model is the extent to which each stage describes the learning itself as a progression from shallow to deep learning and the effect that this has on the development of the mind in terms of memory and capability. At the same time, it also shows how reflection contributes to the cognitive processes of assimilation and accommodation. Reflection is examined further in a separate section below.

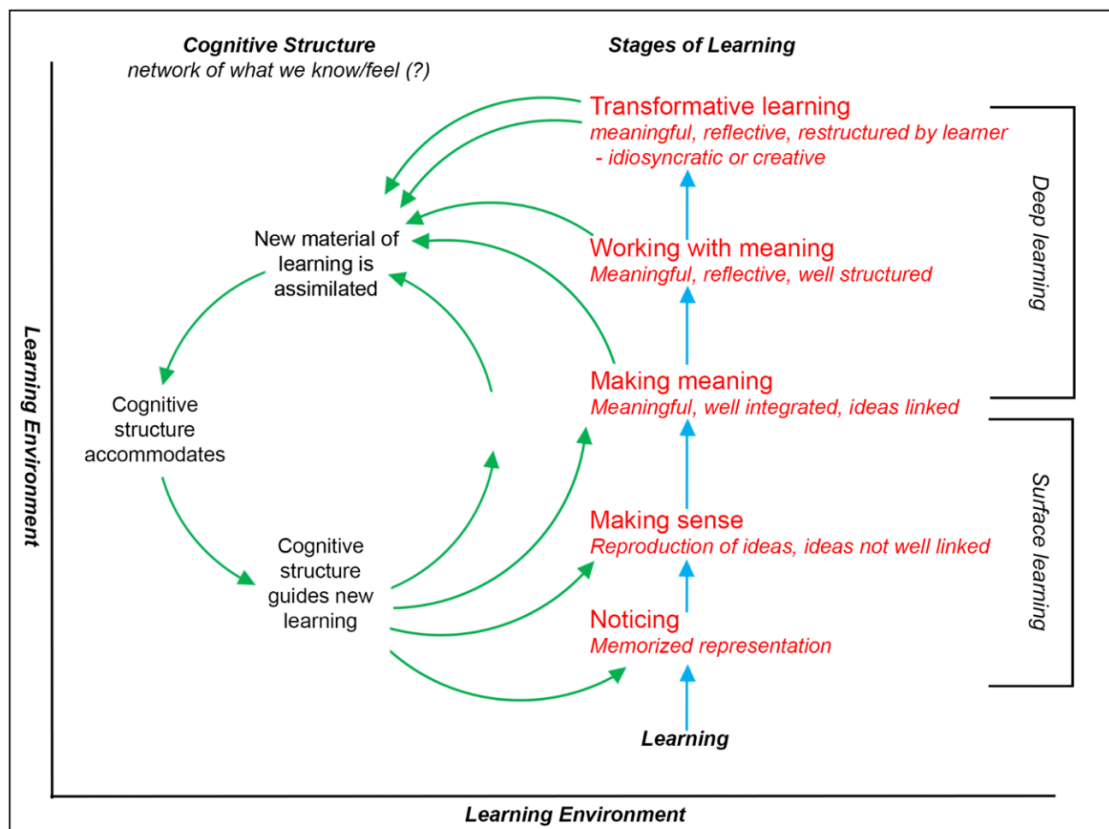


Figure 5. Moon's model of learning
Adapted from *Reflection in Learning and Professional Development* (p.137), by Jennifer Moon, 2013, Falmer: Routledge. Copyright 2009 by Kogan Page. Reprinted with permission.

Transformational learning

Mezirow (1996) describes transformational learning as learning that arises from autonomous thinking. This is not adding to repertoires of knowledge constrained by existing frames of reference but changing or re-organising those frames of reference. Mezirow describes a frame of reference as arising from a habit of mind and as such it creates resultant points of view that define daily practice in many different fields or disciplines. Many of the underpinning axioms of such frames of reference can be

inherited from family background, culture, or earlier learnings in life. They can affect our outlook and beliefs concerning anything, such as different races or cultures or our place in the world and ability to change it. Transformational learning tends to arise as we gain experience in life and discover practices or concepts that no longer work. Initially this can affect one or more points of view, but as it progresses it starts to challenge habits of mind, and this is when frames of reference can be adjusted. Learning that helps support this includes deeper or broader instrumental learning to resolve ongoing problems, or communicative learning in which discussion between different parties creates awareness of different possibilities to view or handle troublesome or affective situations. At the same time, this can bring about critical reflection of one's own or others' assumptions and their relative significance and how they might be actively resolved. Transformation is achieved when learning leads to a significant change in perspective or practice that produces new and relevant insights. Such transformation leads to ongoing transformation and increased sensitivity of our individual frames of reference and their impact on our practice.

The significance of transformational learning in this research is that it can be directly involved as a sub-process in the developmental framework of practice.

Social learning

An important modern concept of learning has been described by Lave and Wenger (1991). Learning is seen not as an individual but a socially derived process. Learning is derived and built through extended participation in different social communities of practice. In each community, knowledge is built, developed, and evolved through the participation of its members in furthering a group purpose. Moreover, much of the comprehension is tacit in the sense that it forms the language, habits and practice that links the group together in a common culture. The learning is primarily gained inductively by the practices of group members and evolve through shared language and repeated practice. The nature of the associated knowledge is subconsciously embedded in the culture and practice of all individuals. This is analogous to an experienced driver taking a familiar route to work and only being conscious of unexpected incidents along the way, as opposed to what is done at every turn or junction. Such learning is not any less complicated than formal taught learning, it is simply developed in a different way and may only become conscious at times when a new situation is different from what is expected.

Wenger (1998) provides a more evolved explanation of social communities of practice and their characteristics. He divides this into two main areas, the first of which is

concerned with how the purpose and the meaning of a social community is created by the interaction of participative and reification processes that combine its shared learning and knowledge. The second being how this reflects in the identities of its participants and their individual patterns of participation in their community. This is based on their modes of belonging at any given time. He describes the history of experience of an individual in a community and the meaning gained as their competence. Identity is also multivalued in the sense of how it is perceived by an individual themselves, compared with how it is viewed by their community and different members of it.

In later work, Wenger-Trayner (2015) describe a landscape of practice as the sum of all communities of practice an individual may be part of simultaneously or at different times. Since each community has their own norms of practice, the boundaries between them offer interesting opportunities of learning as an individual is made conscious of the differences applying to each community. They also discuss the concept of social identity that is a composite of an individual's practice in all their communities of practice and the idea of knowledgeability that the individual possesses over and above that needed in a single community. This has interesting implications for not only wider definitions of narrative and psychological identity discussed later but also the developmental framework of practice I identify from my research as a process for both individuals and their community of practice to develop and grow.

Reflection

Reflection is a metacognitive process that is present in many learning processes. Its description is influenced by the background and discipline from which different authors have originated.

The Dewey (1997) model of learning described earlier considers that reflection arises out of a feeling of perplexity from which active and goal directed thinking and action arises. This active process continues until testing and evaluation resolve the causes of the initial perplexity. Piaget (1964) on the other hand, considers that the reflection process is largely automatic and is part of the assimilation and accommodation cognitive processes children and adults engage in to make sense of and adapt to the conditions of their environment. Habermas (2005), considered that reflection was an epistemological tool that was used by people as a critical and evaluative process of enquiry to enable self-understanding, particularly in social fields where a scientific approach was not possible.

Moon (2013) concludes that the reflection process might largely be associated with a single type of mental activity that has been described by other academics in a variety of *frameworks* of application. Her definition of frameworks includes contexts such as professional practice and learning as well as how the reflection is undertaken in an active or passive manner involving either objective or subjective knowledge. Some of the descriptions she associated with reflection processes include that they are frequently associated with learning processes and their outcomes as part of making sense of things; that they can be associated with conclusions about matters which pop out automatically and are synonymous with intuitive practices; and that it involves complex mental processing which is significantly more than memory recall.

Other conscious , affective and logical models of reflection are provided by Gibbs (2013), Driscoll (1994), Atkins and Murphy (1993), and Hegarty (2011). Most are presented as cyclical processes. See Gibbs' model below (Figure 6).

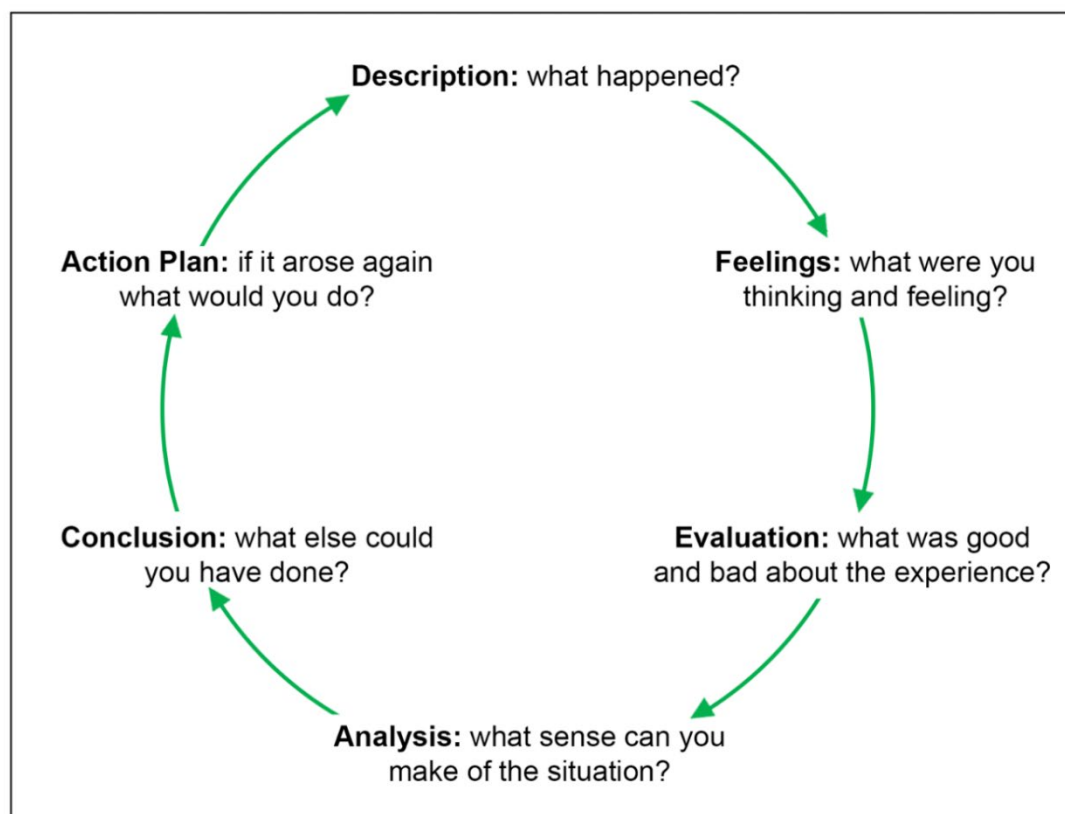


Figure 6. Gibbs's model of cyclical reflection
Adapted from *Learning by Doing* (p.50), by Graham Gibbs, 2013, Oxford: Oxford Brookes University. Copyright 1988 by Graham Gibbs. Licensed under [CC by 3.0](https://creativecommons.org/licenses/by/3.0/) .

In contrast, Kolb (1984) identifies reflection as but one stage in his experiential learning cycle, where it describes the transition between the observation of a single experience and the development of a model that makes sense of the experience. Again, the act of reflection is seen as being conscious and being focused on a single physical act of experience as opposed to any other experiences that emerge in further parts of the cycle.

Schön (1983) provides a rather different perspective with his description of professional practice and his concepts of reflection in action and reflection on action. Neither assume that reflection is part of learning so much as accommodating the ambiguity of professional practice. Also, its departure from espoused theories to theories in use that are personally based. Reflection in action is not so much reflection taking place in the moment as it is making sense of anomalies that are part of a professional's tacit knowledge and not amenable to formal description. It adds to the artistry, as Schön describes it, of professional performance. Reflection on action is retrospective, may have a role in learning, but is more to do with informing subsequent action and theoretical understanding.

Boud and Walker (1991) examined reflection at work and created a model of understanding and improvement that would help those trying to improve their practice and performance for themselves and others in a work context (Figure 7).

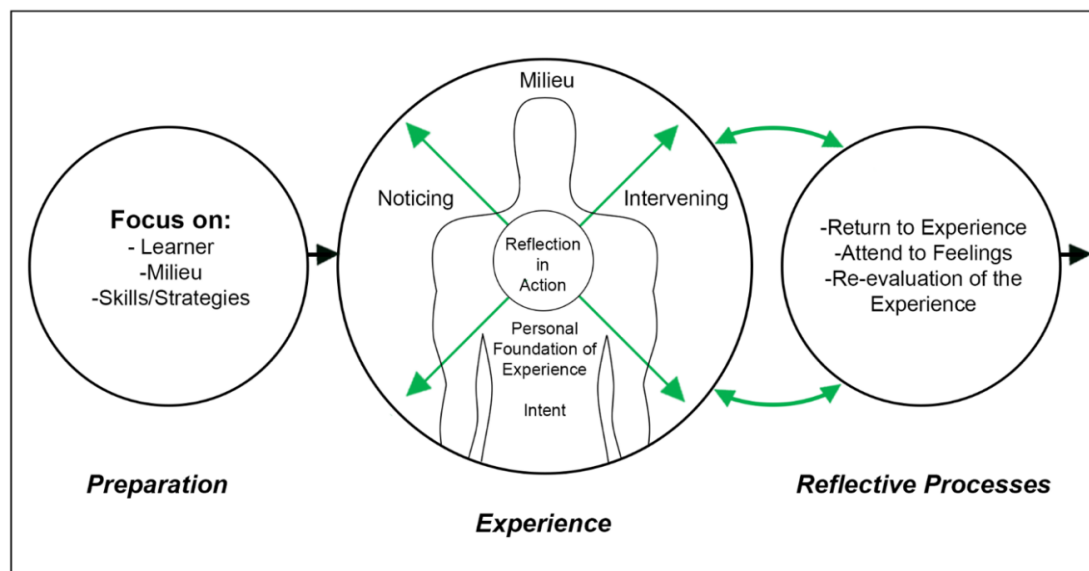


Figure 7. Reflection at work
Adapted from *Reflection at Work* (p.18), by David Boud and Andrew Walker, 1991, *EAE600 Adults Learning in the Workplace: Part A*. ERIC. Copyright 1985 by Boud, Keogh and Walker. Reprinted with permission.

With reference to Figure 7, they described their model in three parts, a preparation phase for the learner and then two operational phases that cycled iteratively between the work-based learning initiative and the learner's reflection and sense making of the results. The learner could either commence their preparation first or after experiencing and reflecting on the situation they were engaging with. Based on their existing background and identification of their learning needs, they could then plan how they could build on their existing practice and skills with experimentation in their work context. Like Schön's reflection in action, this action would be reflected on in three ways; concerning what was happening, how they felt about it and what their findings meant. Their assimilation of this information would result in new information being linked with existing information, identifying new relationships between such information, determining authenticity of conclusions drawn and accommodating all of it into future practice. The cyclical process could be repeated until the desired learning intent was achieved. This process-oriented approach bears close comparison to the capability dimension of my developmental framework of practice.

Finally it is necessary to take into account the types and levels of reflection that can exist as described by Mezirow (1991), concerning content, process and premise reflection. The first two are analogous to the sort of reflection implied by Argyris and Schön (1978) in single loop learning and the last is more akin to double loop learning. In a later paper, Mezirow (1998), links his critical or premise reflection to the top two learning stages of King and Kitchener (1994) (Figure 8).

Stage 1	Single concrete category of knowing. Certain Knowledge gained by direct personal observation and needs no justification.
Stage 2	Two concrete categories of knowledge. A person can know with certainty through direct observation or identity through an authority.
Stage 3	Several concrete categories of knowledge are interrelated. Knowledge is assumed to be either absolutely certain or temporarily uncertain. Justification is based on authorities' views or what 'feels right.'
Stage 4	Knowledge is understood as a single abstraction. Knowledge is certain and knowledge claims are assumed to be idiosyncratic to the individual.
Stage 5	Two or more abstract concepts of knowledge can be related. Knowledge is seen as contextual and subjective. Beliefs are justified by using the rules of inquiry for the appropriate contexts.
Stage 6	Abstract concepts of knowledge can be related. Knowledge is actively constructed by comparing evidence and opinion on different sides of an issue; solutions are evaluated by personally endorsed criteria.
Stage 7	Abstract concepts of knowledge are understood as a system. The general principle is that knowledge is the outcome of the process of reasonable inquiry for constructing a well-informed understanding.

Figure 8. Levels of learning

Adapted from *Developing Reflective Judgement* (p.208), by Patricia King and Karen Kitchener, 1994, San Francisco: Jossey Bass Inc. Copyright 1994 by King and Kitchener. Reprinted with permission.

Mezirow (1998) later extends his definition of critical reflection to critical (self) reflection of assumptions by which he means looking at the rationality of underpinning frames of reference which form fundamental perspectives of current practice in any field. Frames of reference are linked with paradigms, and these underpin the way in which different fields of knowledge are described at any given time. With reference to my earlier review of transformative learning above, transformative learning is the development of autonomous learning capability in which an adult can make coherent, principled, and consistent judgements of their disciplines in ways that align with contemporary standards of practice. This is embodied in their critical approaches to instrumental practice and principles of discourse and produce meaningful changes to their frames of reference for a given situation, time, and context.

Recent professional and vocational practice findings

A significant amount of research has been undertaken in recent years in two distinct areas relating to professional practice development. The first is at the formative stage of professional development and is represented by the increased use of Work

Integrated Learning in many undergraduate programmes. The second is associated with Continuing Professional Development, in which research from the health and education sectors predominates.

Work Integrated Learning has principally been associated with work placements, internships and project placements that vary in length from a couple of months to more extended sandwich periods of between 6 months and a year. Its principal purpose has been to allow students to participate in real work situations and to develop a range of employability skills that extend beyond simply experience with issues or problems related to their technical discipline. An extensive quantitative research report by Jackson (2016) found that such practice benefited students later in their academic programmes, gave rise to increased self-awareness and comprehension of professional responsibilities, was more impactful when conducted over a longer period of time and showed lower levels of skill with working in teams and of being aware of social accountability and responsibility. Other researchers support the need for students to obtain not just technical abilities and soft skills but to use that purposively within a framework of critical thinking and reflective practice to navigate the complex and ethical challenges provided in the modern workplace. Ferns, Campbell, and Zegwaard (2014) identify this as critical moral agency, where a professional can develop a critical disposition in respect of power (political and professional) and its relationships, awareness of social and moral influences, and the capability to change both oneself and one's community of practice. This professional agency can be likened to a bridge that links the social and cultural demands of a workplace with the development and practice of individual identity. Due to the sophistication of such practice, Zegwaard, Campbell, and Pretti (2017) perceive that this needs to be supported by pre and post preparation and discourse surrounding a WIL placement.

In a more recent paper, Zegwaard and Rowe (2019) consider that professional practice development needs to be scaffolded throughout the whole academic journey. This idea is considered further strategically by other researchers under the concept of Practice-Based Education (PBE). Higgs (2019) considers Practice-Based Education as framing goals, strategies and practice that direct student's learning towards their post graduate professional roles. This can occur not only on campus but in many other contexts including online, self-directed and workplace contexts and make use of problem based, WIL, blended and interprofessional learning. The professional skills that are developed as a result should not be used in reductionist ways but be integrated and contextualised in all practice. She links it to the capability approach of Stephenson and Yorke (1998). Mann, Chang, Chandrasekaran, and Others (2021) consider PBE as a

strategic holistic framework involving academic workplace and professional partnerships. It is characterised by authentic practice, developing learner agency to be socially responsible professionals, and combines opportunities to learn and work simultaneously. These researchers base their application of PBE on three common theoretical clusters concerning learning, social and content dimensions. The learning makes use of real client based or user problems, the social dimension is obtained through working in multiple teams over extended periods, supported by academic and professional mentors and the content is learnt through a combination of authentic experience, self-direction, and mandated requirements.

A range of research in Continuing Professional Development (CPD) has identified a range of contextual, practice and personal factors as enabling effective continuing development of practice. Whilst the findings have been obtained particularly from the Health and Education sectors, they are seen as valid in wider disciplines as they have generic attributes and values. In health, the American Organisation of Nursing Leadership (AONL), Fowler (2020) has identified several elements that support staff wellbeing and development. These include a collaborative, communicative, visible and proactive leadership, staff recognition and ongoing professional development to mitigate the impact of mistakes and their potential consequences that occur. In education, Bates and Morgan (2018) identify the need for a culture of collaboration, ongoing CBD opportunities, access to expert facilitation and coaching support and active learning practice to enhance CPD outcomes. In addition, appropriate content needs to be supported by effective models of demonstration, practice, feedback, and reflection. This is supported by a longstanding postgraduate programme of 2 years duration undertaken in Austria, described by Hanfstingl, Abuja et al (2020), where an individual's development was based on evidence drawn from reflection on current practice and then extended. This was undertaken by encouraging participants to design their own developmental journey using action-based research to review concrete problems in their institutions. Their work was shared amongst a fellow group of students and professional academics to compare practice with theory and resulted in enhanced comprehension of didactics and pedagogy alongside evaluation of their own management and practice.

Earlier research by Clarke and Hollingsworth (2002) identified a model of Teacher Professional Development which, unusually, linked learning outcomes to processes which had produced it. It showed how stimulus and changes in a domain of practice could be experimented with by participants through practice and reflection to enable improved outcomes to be produced in a domain of consequence that subsequently

changed an individual's personal knowledge, beliefs and attitudes. A similar type of model has also emerged from Japanese teacher development practice called Research Lesson study and described by Murata (2011). Here, a group action research study is planned to provide support to a specific area of student learning in a given subject area. The resulting findings are shared and reflected by all participating group members. This has the effect of building professional collegiality as well as allowing for faster development of research outcomes and individual professional practice. Another study by Dogan and Altun (2018) show its wider application and success in a European country.

Finally, a further significant body of empirical research has been undertaken over several years by Korthagen (2017) and colleagues in which he has identified how much teacher learning takes place subconsciously and is influenced not simply by cognitive understandings, but also emotional and motivational dimensions. The latter two dimensions can have a significant subconscious effect on reflective outcomes of learning incidents unless taken into consideration by an enhanced model of meaning orientated reflective practice, which he has produced and tested. He contends from his research that teacher's and other professions undertake multi-dimensional and multiple-level learning simultaneously.

Aspects of identity

The need to investigate the subject of identity more broadly has arisen late in this journey due to it emerging in the analysis of my participant narratives and synthesis of my framework findings. This was because both my participants and my sense of my own identity held together a coherent gestalt of understanding and experience that each of us appeared to make use of in all aspects of our current lives. It provided a sense of ourselves and a confidence to pursue anything that we were interested in without being prescriptive of specific areas of knowing that or knowing how.

Polkinghorne (1991) describes narrative as inquiry as narrative which configures diverse events of one's life into a meaningful whole. It provides a self-concept or identity which is based on a life history of stories. It is a construction of meaning based on events, comprehensions, thinking and reflection. It is part of our gestalt (whole). This has significant implications for the holistic concept of a developmental framework of practice.

I later looked at psychological aspects of identity of which McAdams (2012), was a significant contributor. In this paper, he discusses the contemporary currency enjoyed by narrative as an expression of psychological identity within developmental, social,

clinical, and cultural psychology. He identified that narratives were an effective way people were able to make sense of their lives and they contained sufficient meaning and durability to allow both psychologists and their subjects to provide meaningful evidence of the narrators' psychological and cultural gestalt. This supported contributions to identity development, psychological wellbeing, memory, and personality development.

In a further paper, McAdams and McLean (2013) describe some common themes emerging from research into narrative identity. These include agency in which individuals understand how to make things happen for themselves, communion in which others support them and meaning making in which they are making sense of situations and events they must deal with. This includes the capability and competence to deliver something of value in their fields of expertise.

The ontological difference between psychological and social interpretation of narrative, and hence identity, is that the former is concerned with individual comprehension whereas the latter is embodied in social participation and relationship. Wenger (1998) deals with this at length in *Communities of Practice*. He demonstrates the interleaving of individual participation and meaning making within a community of practice and that individual identity reflects an ever-changing trajectory of engagement and contribution to the purpose, outputs, and relationships of the practice. The whole practice is not situated within an individual per se but in the collective of a community. However, the trajectory through time can be part of an individual's desire to play an increased role in a community and this can be assisted by the developmental framework of practice I have identified.

It is apparent from examining it through a narrative, psychological or social lens that each perspective provides part of a whole, but that the whole is only partially conscious to ourselves and others. Indeed, not all of it may be located within each individual but distributed amongst the communities of practice as part of that practice.

In conclusion, Polkinghorne, McAdams and Wenger are some of the theorists in different disciplines whose work suggests that identity continually changes and evolves through life both by design and by happenstance. Secondly, that we are only conscious of part of that identity at a given point in time as different parts relate to specific communities of practice and our conscious attention is drawn to issues at hand. Finally, a significant amount of comprehension is being absorbed tacitly and may only emerge later through insight and imagination (Roth, 2015). A good example is my becoming

aware of some of the hidden paradigms that underpin much of contemporary life and the influence of current economic and financial paradigms in modern society.

Conclusions

The work on my literature review has served three purposes. Firstly, it has provided a springboard for me to identify my research purpose and the direction my research has taken from its outset up to the interpretation and write up of the summative narratives of my participants and myself. Secondly, it has provided a powerful, focussed, and recursive means of comparing and re-comparing the state and progress of my research work and development as the study has progressed. It is both a reflection and a means of reflection on the adequacy of my understanding. Further, it enabled me to re-visit familiar background sources of material from which I have been able to identify new angles or comprehension as the research data has been consolidated and presented. Thirdly, it has contributed to the identity of the research gaps from which my research questions have been identified and developed

Identification of research gaps

In Work Integrated Learning, I find some evidence of student-centred processes by which students can observe, participate, analyse and reflect upon the dimensions of their practice-based as opposed to academic-based experiences.

At the same time, many work placements tend to be quite generalised, lack related professional supervision in the workplace and do not focus on discipline specific areas of development needed that are appropriate for students. Much better are problem based issues, that relate to a student's discipline that a student can participate in.

Undergraduate development does not expose many graduates to significant projects or research per se and it is only at postgraduate level, where these become more evident. This is not the case where universities are fully responsible for both academic and professional development, e.g. in medicine or in law.

In Continuing Professional Development, many environments do not encourage either time or the support to undertake systematic and continuing development.

Professionalism arises through subconscious autonomous habit and an ongoing sense of curiosity as well as the influence of a learning centred community of practice. A lot of development is organised by an individual themselves through job and employer changes.

From my own history of professional practice and extended development both at pre professional and professional levels, I realise that my development has been led by

myself rather than promoted by others. It is, therefore, useful to research a range of highly experienced professionals to see how they have been building their professional practice beyond academic preparation.

I am also aware that vocational training at a craft level and below has been focussed on knowing how rather than knowing that so development pathways, which required tertiary academic background, have been hard to progress to. Since many craft levels of activity are now similar to technician positions, more academic background is now required, and qualification levels have become similar to that of technicians. The gap that used to persist here has now moved down to semi-skilled levels of employment where application specific development is still popular. In terms of training at all levels, the concept of being responsible in subordinate ways to others at all levels is fast disappearing. As a result, all qualifications and related practice preparation at all levels should no longer be distinguished by levels of supervisory or management responsibilities. What these modern developments mean is that more of the findings to be researched at professional level will also apply at vocational levels of practice too.

My conclusion on the discussion of contemporary learning perspectives is that there are distinct gaps concerning the nature and processes of subconscious learning compared with conscious learning, either individually or in social settings. Secondly, the processes of acquisition and assimilation in adult communities of practice are not explained adequately at an individual level of conscious or subconscious advancement. Finally, learning as an active process of engagement and advancement is not well developed. These are all issues that needed addressing in my research.

Experiential learning forms a large part of all vocational and professional development and research. Yet it is underutilised and undervalued in large areas of formal education. However, as its later links with research and problem-solving will show, it now forms part of a significant means by which human competence and capability develops in individual, transformative, and social contexts.

Nearly all discussion on reflection identified in this literature review is concerned with conscious and objective processes of reflection. Little is mentioned about passive reflection per se, although the concept of “aha’ moments’ is the most common illustration of this. This is an area of particular interest to me and is discussed fully in connection with a theme arising out of the narrative as analysis of my research participants in Chapter 6.

The conception of identity has appeared late in this thesis. However, it is now seen as significant in that it represents a considerable part of our capability and practice in a

landscape of human practice. Furthermore, it is partially formed by the developmental framework of practice this thesis has identified. The remainder of identity seems to have been subconsciously formed from a wider experience of life itself.

Based on this literature review, the first iteration of a research question was generated as:

What role does experiential learning and its related components play in competent practice and development of fellow professionals and myself?

However, based on subsequent interview and personal discovery this was later broadened significantly. This is further discussed in Chapter 3 on research methodology.

Other perspectives

This literature review has evolved significantly throughout my doctoral journey and has provided some useful perspectives as follows:

The study of my ontological and epistemological perspectives has enabled me to understand the meaning of current perspectives and ongoing classification and research of human-derived knowledge. It has enabled me to see the linkage between past and contemporary philosophy and the direction in which it is going, at first unified and now disaggregated in terms of post-modernist perspectives as well as the important role paradigms are playing in a world of increasingly rapid change.

Another important finding was to note how the major measures of human performance, either in work or in education, were predicated on descriptions of practice. These tended to be collections of things like subjects or competencies and not holistically integrated into relevant wholes or underpinned by clear processes of acquisition or development. And yet research itself, and the efficacy of its results are predicated on the choice, application, and justification of methods of acquisition that are used.

Practice has appeared as a significant contributor of both vocational and social knowledge and learning. McKee and Eraut (2011) identify several different areas of knowledge that are required by professionals in the delivery of their roles and which are developed and represented through practice. This includes the intuitive based fluency of experienced practitioners operating at the higher levels of the Dreyfuss skills model (Dreyfus & Dreyfus, 1980). Practice as theory has been illuminated by a significant range of work based on Bourdieu (2017) concept of habitus and the interaction of human agency to both preserve and adapt social practice through recursive and adaptive processes. Kemmis (2010a) notes the active participation of human agents in

social contexts as not being passive but of reflecting conscious action in knowing what one is doing in the doing of it.

However, practice holistically cannot simply be conceptually expressed in language, but is also embodied as physical and emotional behaviour.

Further relevant literature is introduced in both methodology, participant narratives, narrative of analysis, autoethnography and the description of the developmental framework of practice itself. Here, it will better illuminate the discussions and conclusions located in these parts of the thesis.

Given the broad meaning of several of the terms used here, such as practice, learning, and development, readers are encouraged to look at the glossary at the end of the thesis to confirm my more precise usage of the terms.

Chapter 3 Methodology

Introduction

This chapter is structured in the following way. Firstly, the research design and purpose are described. These sections consider the overarching research methodology applied to the research approach undertaken in this thesis.

Then it divides into three parts:

- The selection, inquiry, analysis and presentation methods applied to the research participants
- The inquiry, analysis and presentation methods applied to my autoethnography
- Conclusions including the limitations of the research

Research design

The research design is set in a constructivist inquiry methodology. The research methodology that frames this epistemological study is treated as being constructivist for the following reasons. Firstly, the social discipline of individuals and societies are in a constant state of evolution and the paradigms, as explained by Kuhn (1970) are changing more rapidly today than ever before. Secondly, Damasio (2010) explains that the operation of the human mind psychologically is still not well understood at a conceptual level and the very nature of its development is diverse. This is due to what Rogers, Lyon, and Tausch (2013) describe as the unique circumstances of every individual's lived experience and emotional impact. Thirdly, constructivist inquiry described by Patton (2014) supports the idea of multiple realities and seeks to understand how people construct their perception of reality at a given point in time and how this guides their practice of it. Finally, my own ontological and epistemological persuasion is inclined this way from evidence provided in the literature review.

The research design is expressed in the purpose, selection and inquiry methods used to gather data from the research participants and myself. This is followed by the analysis and presentation methods used to analyse and present the data in its final form and the findings obtained. The reasons for given choices of method are provided in each section together with linkages to referenced literature.

Research purpose

The purpose of this research was to gain more understanding of how professional level people continue to develop their practice informally throughout their careers without significant academic updating, as highlighted by McKee and Eraut (2011). Initially it

was considered that the development was associated with experiential learning as its use had been commonly identified with vocational and professional activities. It also linked with my lifetime experience and interest in this topic, as discussed earlier. An analysis of a sample of experienced professionals would provide a good basis of comparison with a personal autoethnography.

The initial question used was:

What role does experiential learning and its related components play in competent practice and development of fellow professionals?

Learning, more generally, is seen as forming a significant dimension of the disciplines of psychology and sociology. From the psychological perspective, many researchers, ranging from Dewey, Piaget, Schön and Eraut have linked cognitive and metacognitive processes of an individual to learning. In sociology, the micro and meso dimensions of social development have contributed to the meaning making processes associated with culture and community, described by Lave and Wenger (1991) and Wenger (1998). Both disciplines embody processes that epistemologically define and evolve their conceptual ontology. These processes appear closely linked to the concept of research itself.

Specifically, this research explored the means by which individuals are comprehending their contexts, activities and experience in an inductive manner either consciously through reflection Moon (2013), subconsciously Roth (2015), or informally McKee and Eraut (2011).

Partway through the interview process I had an epiphany of the kind described by Denzin (2013), where I realised wider processes of development were being described that were contributing to the capability concept expressed by Stephenson and Yorke (1998). This also explained the stability of many professional roles I had recognised in earlier qualification work. (See Chapter 7)

Epiphanies are quite frequently recognised in both narrative research, described by Clandinin and Huber (2009), as well as in descriptions of insight and 'aha' moments by Hogarth (2001).

The epiphany caused me to re-purpose the research focus of this doctoral study. I recognised in the interview data I had already collected that many of my participants had evidenced use of broader developmental processes. The changed purpose of research expanded the focus from the process of experiential learning to related processes of problem solving and research. Fortunately, the epiphany had no impact

on either the choice of research participants or the inquiry method, as it only required a change of analysis scope on earlier interview data.

This changed the focus of the question to a broader form:

What role does common cyclical and iterative processes such as problem solving, research and experiential learning and its related components, play in competent practice and development of fellow professionals and myself? And a corollary: What were the implications of that for the formative preparation needed in vocational and professional careers?

The corollary question arose because I had recently taken up a new position as an academic facilitator to students undertaking bachelor and master qualifications using work-based practice. Also, the emerging research results were now seen as expanding into formative academic contexts.

Research participants

At the outset of the research process, two sources were selected to explore the research questions above. Firstly, fellow professionals with long successful careers drawn from technical, business, and academic fields with whom I had prior acquaintance. Secondly, an examination of my own autoethnographic experience drawn from five careers.

Ethics in human resource research

An important dimension of contemporary research involving human participants is that their selection, their treatment during the research process and their contribution towards the topic of research is fairly represented and is beneficial to a research aim. It might help a researcher gain additional goals like a qualification or professional recognition, but there is an overall need to achieve mutually beneficial value from participation. Part of this is achieved at the outset by purposive sampling discussed in more detail in the next section. Another part of it is through the relationship the researcher builds with a participant through all stages of the research process including data collection, the feedback of analysis for clarification and an impartial representation of their contribution to the research outcome itself. The approach above is reflected in a statement by Kapp (2006) who wrote:

The most salient ethical values implicated by the use of human participants in research are beneficence (doing good), non-maleficence (preventing or mitigating harm), fidelity and trust within the fiduciary investigator/participant relationship, personal dignity, and autonomy pertaining to both

informed, voluntary, competent decision-making and the privacy of personal information. (p. 335)

This requirement is upheld by the informed voluntary consent process all research institutions in education or elsewhere demand of their researchers through a formal approval process. (Komesaroff, Dodds, McNeill, et al 2002)

The attention to the methods used in data collection, analysis and narrative treatment of the participants described elsewhere in this chapter have all been selected to contribute towards a fair and ethical treatment of their perspectives. Whether they are known to the researcher or not, it is ethically significant that a research participant has no relationship or conflict of interest with their researcher that would compromise the research veracity.

In this case, the research gap of how people develop their professional practice was determined by undertaking series of semi-structured interviews followed by a thematic analysis and narrative write-up, that captured their comprehension in a series of contexts they had lived through. This is detailed in the ethics application approved by the Human Resource Ethics Committee of Victoria University in 2015 (Appendix 9).

Their recruitment, consent process, interview participation including follow-up invitations to reflexively comment on their narratives and initial conceptual findings of the developmental framework was undertaken in full accordance with the ethics approval conditions. Some of these responses are shown in Appendix 8.

Purposive sampling

Campbell, Greenwood, Prior, et al (2020) quote 'purposive sampling' as being able:

To select respondents that are most likely to yield appropriate and useful information and is a way of identifying and selecting cases that will use limited research resources effectively (pp. 653-654).

Based on trustworthiness of qualitative data and results, including credibility, transferability, dependability and confirmability, Campbell et al (2020) described four types of purposive sampling based on stratification, cell, quota and theoretical methods. All are criterion based and are a priori selections except for the theoretical method, which starts by undertaking provisional sampling.

The purposive sampling used in this study made use of a cell method in which different characteristics were used to identify suitable candidates. The principal characteristic was to select a group of fellow professionals with significant career experience, but there were others explained in more detail below. All participants formed part of the researcher's professional network from the past 30 years, who were professional associates and colleagues, but were neither currently linked in current work relationships or any other way that would represent a conflict of interest. It was helpful to the researcher to know his participants in this way as it enabled easier selection against the other criteria specified below.

The researcher needed people who had had more than 30 years of professional experience in one or more career fields, who had achieved noteworthy career goals, were still very active in what they were doing and had values and interests that were supportive of education and development in general

They had interesting stories to share that were not known to the researcher at the research outset from their life journeys. They had demonstrated through prior interactions, their ability to develop and achieve successful outcomes through the way they viewed, responded, and operated in their professional disciplines and environments.

The ten people who ultimately completed their interviews with the researcher are provided in Table 1. Another two chose not to continue following their first interviews and are not shown here. No reasons were provided for their withdrawal, and their data was destroyed. The order in which they are listed, here and their narrative analyses in Chapter 5, relate to the order of interview. All their names are nom de plumes which relate to their cultural background and original initials. Only a couple of these people were known to one another as former colleagues, and none were made aware of the participation of the other in this research. The researcher's background is added for the sake of completeness.

Table 1 *Demographics of Research Participants and Researcher*

Nom de Plume	Current role	Professional experience	Years of professional experience
Rob Macintosh	Tertiary business tutor	Journalism, advertising business leadership, tertiary English and business education	>40 years
John Mason	Investment advisor	Languages, university leadership, investment	>35 years

Jean Clark	Tertiary and private tutor	banking, English adult education Primary, adult, and tertiary education. Union and education leadership	>45years
Geoff Smith	Project director	Construction. project management and business leadership	>40 years
Charles Hulme	Retired	Sales, sales leadership. Tertiary education leadership and consulting	>45 years
Jeremy Green	Tertiary tutor	Police detective, professional musician, tertiary business education	>35 years
Dean Roberts	Retired	Media, secondary and tertiary education. business consulting	>45 years
Dan Douglas	Business entrepreneur	Sales and marketing leadership, business leadership	>50 years
Tom Naylor	Professional sports organisation leader	Business entrepreneurship and professional sports leadership	>30 years
Martin Fry	Leadership consultant	Secondary and tertiary education. Sales, business and tertiary education leadership	>45years
Researcher	Tertiary facilitator and mentor	Research engineering, Corporate learning and development leadership. International vocational and professional qualification development. Educational consultancy. Tertiary education leadership	>55 years

Inquiry method for research participants

I undertook interviews with my research participants using an extended interview process informed by Seidman (2013). This consisted of mainly three separate interviews of approximately an hour's duration with a week or more between interviews.

The ease of interviews was due to my existing acquaintance or friendship with the participants and their career experience being in similar fields to my own. The separate interviews were helpful in that it gave time for participants to reflect on the questions and the answers they had provided earlier. The interview questions used are shown in

Appendix 7. They comprised broad questions to elicit the participant's consideration of the topic, together with some follow-up questions to extend answers if required. Two versions of questions were used. The first focussed on learning from practice using experiential learning and related sub processes they identified for themselves. Later, I realised that the participants explained their developmental practice more clearly from their own practice and contexts. This subconsciously contributed to an epiphany, where I recognised the involvement of broader processes of problem solving and research contributed to the participants' growth. This resulted in my broadening the perspective of questions. It also included reference to how they would like to see schooling and tertiary education developed to involve the understanding they had gained and the significance of it to formative development. I consider this helped ground the relevance of their practice based on the ideas of Lincoln and Guba (1985).

An important development of my understanding of interviewing arose from my consideration of the topic of researcher reflexivity here. The concept of reflexivity provides an acknowledgement of potential bias inherent in a researcher's approach to gathering and interpretation of findings. There was a need to be aware of this and to take steps to mitigate its impact.

Alvesson and Skoldberg (2009) provide a description of the dead ends many qualitative researchers find when they try to identify an empirical truth in an objective and unbiased way. This includes their philosophical stance, their methodology and the limitations of language meanings. They recommend a multifaceted treatment of reflexivity that declares:

Interpretation implies that there are no self-evident, simple or unambiguous rules or procedures, and that crucial ingredients are the researcher's judgement, intuition, and ability to 'see and point something out', as well as the consideration of a more explicit dialogue-with the research subject, with aspects of the researcher not entrenched behind a research position and with the reader (p. 271).

Other authors describe researchers addressing their biases by consulting with researchers from other disciplines. Hibbert, Coupland, and MacIntosh (2010) describe the need to generate more open theorising in established communities of research practitioners who are inclined to hold onto singular paradigms for too long. This results in ideological constraints and lack of progress with theory development. By involving wider research disciplines, there are multiple understandings that are possible from alternative connections and interactions. The authors describe two kinds of relational

reflexive practice; first allowing others with different voices to participate and secondly, being able to develop new relational models between communities, data and research contexts. They have shown how these approaches can be applied at pre-research planning, theorisation during research and theory refinement at the end.

Examples involving research participants in the development and refinement of theory are demonstrated by Kempster and Stewart (2010) in organisation and management fields of research. This is particularly relevant to my study as participants were confident with their professional practice.

As a result, the research participants were provided with transcripts of the interviews, their resulting narratives, and the framework of practice to comment on. A selection of their comments is provided in Appendix 8.

Analysis and presentation methods for research participants

The participant research data was first transcribed.

Initial content analysis was undertaken in an NVivo software application using Marks & Yardley (2004) principles. Themes were identified from sentences or passages provided by the participants to capture both the manifest and latent content of the transcriptions. This included the participants' stories of their professional journeys though life and their explanation of that success for themselves in their own terms. This was extended by more careful examination of some of their supporting processes followed by correlating these with their formative education and how they would like to see it improved. An example of the coded information from a participant is shown in Appendix 6.

Due to the rich language and nature of the data content provided by participants, the following assumptions were made concerning the content analysis approach. These included not trying to count the instances of words or ideas produced by participants as being a significant determinant of the quality of evidence; limiting the coding to the significance of what was said in a context to the questions asked and their related answers; the main analysis processes being applied to the participants' learning and development descriptions. The results provided the basis for presentation in a narrative inquiry format.

Narrative inquiry is a method of analysis by which individual's understandings and behaviours can be critically analysed and reviewed by a researcher from what is said, what is implied and what subconscious behaviours interact to influence the subject and researcher's comprehension of the matter being researched.

Bell (2002) describes how narrative inquiry is about trying to explain people's narratives by placing them in frameworks of explanation. It is an analytical examination of the underlying assumptions or weightings that the story illustrates that is being sought and this arises from people's culture and their experience. It should move beyond use of narrative into an analytic explanation of insights and assumptions the narratives contain. The current sense people make of their lives is decided by the narratives they already know, but this changes as new events and new comprehensions are realised. Such stories are in a continual process of evolution and avoid matters that could undermine their identity. It is important that a researcher can identify the ambiguity and layers in stories as well as their own subjectivity so as to identify criteria by which their perspective on it may be judged. It is also legitimate for others to use different criteria to support or critique narrative inquiry.

I also examined papers by Clandinin and Connelly (1989), and Clandinin and Huber (2009) who have been leaders in adapting narrative inquiry within the educational domain.

Clandinin and Huber (2009) define narrative inquiry in this way:

People shape their daily lives by story. Story is a portal through which a person enters the world and by which their experience of the world is interpreted and made personally meaningful. The study of experience as story is a way of thinking about experience. (pp. 2-3)

They talk about three commonplaces of narrative inquiry that provide a conceptual framework in which a narrative inquiry can be positioned, and which need to be explored along with the narrative itself. These commonplaces are defined as temporality, sociality, and space.

Temporality is concerned with the fact that both participants and researchers are constantly composing and revising their auto biographies. This means researchers need to be aware of the temporal nature of what they identify as well as the continual changes occurring in life about places, events, and other things.

Sociality takes account of personal and social conditions in effect at the time the research is being undertaken. Personal conditions include hopes, desires, feelings, aesthetic perceptions, and natural dispositions. Social conditions include the milieu in which people's experiences are unfolding that embody internal, social, institutional and linguistic narratives. There is also the importance of the relationship between the researcher and the participant.

Finally place as a commonplace is defined as the concrete, physical and topological boundaries of place or sequences of place in which the inquiry was situated and or where the events being described took place.

The frameworks of explanation provided by Bell and the commonplaces suggested by Clandinin and others made use of the themes that were identified from the analysed participant data. The participant narratives also align with the concept of narrative analysis described by Polkinghorne (1995) in which the analysed data is narratively presented in an integrated format.

The treatment of participants' responses

The framework for analysing and presenting the participants' responses follows on from the overarching aim of qualitative research and related methods described above to ensure the trustworthiness of the phenomena they identified.

Firstly, the authenticity of the final results is not simply derived from the form of presentation, but through the coherence of the research methods and processes that led to its identification. This is well described earlier in this chapter, including purposive selection of participants, choice of semi structured interview method and subsequent analysis methods. This is further elaborated by other researchers Whitaker and Atkinson (2019), who suggest that the inherent subjectivity created by the social mores of discourse between two parties firstly needs to be recognised and secondly addressed through active means to improve the authenticity of responses. Some of these active means include the longevity of experience with the phenomena, the rhetoric of comparison and contrast with their comprehension, and evidence arising from active practice and reflection. Melles (2005) discusses the need to focus on the process of meaning construction during interview analysis based on interviewer comprehension of the differences in social, cultural, or institutional differences that may exist between interview parties. There is need to recognise the performative dimension of an interview such that the two parties actively construct a discourse based on respective perception and constructive interpretation of a question in terms of content and language. Thus, the interviewer needs to actively identify the type of vocabulary that a respondent might use to display their responses to enhance the authenticity of the resultant interpretation.

When selecting a narrative structure for presentation, my logic was to provide a coherent description that began with a background theme on each participant and then detailed two participant centred themes that had emerged from content analysis before returning to a common theme of how their comprehension of learning and development

could be applied in a modern education setting. The two personal themes were presented in near verbatim form to accentuate the language and contextual illustrations of the phenomena that supported their learning and development processes. The final theme was used to support grounding of their practice in a common educational context of formative education.

Throughout each narrative, I provided some autoethnographic commentary to illuminate areas I found significant, and which provided links later to the subsequent narrative of analysis of all the participant contributions and to the generation of the developmental framework. This multi-layering of the participant narratives was designed to help the participants to reflect on their journey, their contribution to the findings, and to support the reflexive approach I used during and after my engagement with them. (Seidman, 2013; Kempster & Stewart, 2010) This was generally endorsed by their responses to their narratives shown in Appendix 8.

The main findings arising from these narratives were then presented as a summative analysis of narrative, Chapter 6.

The structure of the analysis of narrative is informed by Polkinghorne (1995) who distinguishes this as a paradigmatic analysis of narratives to identify common themes or concepts arising from narrative sources. He bases this distinction on work by Bruner (1986), who identifies two forms of cognition. The first is paradigmatic which uses a process of categorisation and the second narratively links data together based on a unifying plot.

The narrative of analysis constructed in this thesis is also further grounded by comparison with relevant literature drawn from the literature review and related domains.

My autoethnography

The purpose of undertaking an autoethnography as part of this thesis was to allow me to compare and contrast my own lifelong journey of development with that of the participants. At the same time, most of my career roles have been closely associated with human development, either in training or academic contexts. It, therefore, provided me with an extended history and detailed source of data to enable review and reflection on the findings discovered.

Arnold (2011) has drawn together some useful perspectives on use of the self as a source of data. She begins by arguing that being a member of a specific research community and participating in its ongoing discourse infers knowledgeability and

expertise of each individual member and how that contributes to its development. She illustrates this with reference to the significance of a coherent and informed review of literature in any research work which intrinsically involves discourse with oneself. She goes on to identify the growing acceptance of self-reflection, self-observation, and self-analysis. These are supporting the opening up of formally rigid orthodoxies between research communities and others. She further shows how post modernistic perspectives are now enabling new perspectives and multiple dimensions of knowledge to be recognised. An important linkage between this work and later descriptions of professional practice work by Cochran-Smith and Lytle (2015) is made concerning the deep affiliation and ethical practices of such professional groups in their own knowledge acquisition and practice.

Further analysis, based on several researcher perspectives of post modernism, allows Arnold to conclude that subjective academic narratives can add to contemporary knowledge. This is done by allowing scholarship of its writing and self-analysis to be judged by others reading it.

[Inquiry methods for autoethnography](#)

I have used two inquiry methods to access relevant autoethnographic data for this thesis. The first approach suggested by Denzin (2013) provides an overview of my life and careers that led to the identification of this research study. The second examines specific professional practice undertaken as part of this research process and more broadly in a related professional academic role that has enhanced the significance of the results identified. This considers the work of Cochran-Smith and Lytle (2015) and Lester and Costley (2010) on work-based research, and Patton (2014) on pragmatic inquiry.

Denzin (2013) provides a summary of contemporary thinking on the reasons and justifications for an autoethnographic perspective to be taken seriously in the expression of new knowledge and insights into human and other phenomena. Denzin likens autobiographical or biographical descriptions of peoples' lives as *pentimento*. *Pentimento* is a description of things which have been painted over in a painting, which can be revealed again later. A common way of describing peoples' lives is by means of stories where people are characters at a time and place in which critical events or epiphanies change them and their life purpose. This is consistent with Polkinghorne (1995) view of narrative analysis as being a collection of experiences that are linked by a thematic plot.

The context of professional practice research provided by Cochran-Smith and Lytle (2015), was associated with teacher research by teachers and associated professionals in US education. Their perspective of practitioner research follows the definition Stenhouse (1985) gives of inquiry as both systematic, and self-critical through multiple forms of data collection and reflexive analysis of the practitioner research process. The sharing of findings through contemporary media and related communities of practice helped support the efficacy of these types of inquiry findings.

Cochran-Smith and Lytle examine several critiques of professional inquiry methodology. They describe how language by conventional researchers is somehow used to separate out what teachers normally do from teacher research. Self-study implies the subjectivity of the self and its indivisibility between self, knowledge, and teaching. This has not traditionally been seen as scholarly. The authors refer to Anderson, Herr, and Nihlen (2007), who discusses the need for different types of validity criteria in practitioner research such as; democratic validity (acceptable to all stakeholders involved); outcome validity (providing acceptable solutions to problems researched); process validity (using suitable methods and inquiry processes); and catalytic validity (helping participants gain greater understanding and dialogic validity involving peers in critical and reflective discussions of work findings and analyses).

The conclusion Cochran-Smith and Lytle (2015) arrive at, in a politically tactful way, is that professional practice inquiry has threatened the traditional university hierarchy between researcher and teacher, where one is the creator of knowledge and the other is the transmitter of knowledge. This contrasts with other professions where Friedman and Phillips (2002) describe the expectation that established professionals act as mentors to the less experienced and consider their profession to be of service to the world.

Middlesex University in the UK has built its reputation on academic programmes to accredit professional practice. Workplace practice can be conceptualised as research and the learners are recognised as practitioner researchers. Lester and Costley (2010) discuss the epistemology of work-based learning as being located in the pragmatic practice of knowing and doing. This was first articulated by Dewey (2007) and later Sennet (2008), who see it in terms of a constructivist and phenomenological perspective; and finally Tennant (2004) who describes it as individuals making sense of their roles through self-analysis. It also reflects Schön's (1987) idea of constructionism where learning and doing are linked through a reflexive spiral of development where knowledge informs practice and conversely practice informs knowledge. Costley and

Lester also consider that work-based learning is conceptualised in terms of what it is useful for (a concept of pragmatic research methodology). It can include dealing with messes, wicked problems, and a need for transfer of wisdom within communities of practice.

Later, Costley and Lester (2012) expanded their justification of work based learning as a valid form of research practice due to its recognition of transdisciplinary areas of expertise that did not fit conventional knowledge disciplines. It was not producing conceptual knowledge per se as much as providing knowledge for direct application within a discipline of professional practice This aligns with the concept of Mode Two workplace knowledge, which is considered parallel to rather than substituting for conventional knowledge.

Patton (2014) considers that pragmatic forms of research inquiry help provide practical and useful answers that can illuminate or solve real world problems. Patton describes it as follows:

In contrast to philosophies that emphasise the nature of reality, pragmatists emphasise the nature of experience. Instead of questions about truth, pragmatists focus on the outcomes of action. Instead of concentrating on individuals as isolated sources of belief, pragmatists are interested in shared beliefs (p. 153).

Patton sees several ways in which pragmatism supports professional inquiry. The first is that uses questions and methods which provide useful and practical answers. Secondly, it recognises the real-world constraints of resources and time. He also sees it being able to draw upon a range of traditional inquiry methods without being constrained by their contributing ideologies. One such method is action research.

Critics of pragmatism tend to regard pragmatism as lacking sufficient rigour or scientific basis, without involving a theoretical construct. In addition, that evaluation of pragmatic solutions quickly produces an unmanageable menage of unverifiable methods. Patton sees this as arguments arising from philosophical purists and frequently from those of a realist persuasion.

My own conclusion is that awareness of these perspectives has been useful along with using my professional and pragmatic knowledge as supportive of the primary methods of inquiry used here.

Analysis and Presentation method for autoethnography

The analysis of my own autoethnography has proceeded in parallel with the analysis and presentation of results of the research participants. Firstly, through reflection and comparison of what participants described they had been doing at the time of interview. Secondly, later, as I was analysing and writing up their narratives. Thirdly, whilst I was linking literature review data to the findings and the construction of this thesis and the developmental framework of practice itself. Finally, through sharing and discussing the findings as they evolved through general discussions with colleagues and undertaking formal presentations of the work at international conferences.

This helped expose the pentimento as Denzin (2013) describes the nature of our lives; staircasing of understanding from ongoing participation in my research community of practice and Schön (1983) and Eraut (2002) descriptions of professional practice and its recursivity.

Another important dimension of my professional growth and its application to the developmental framework of practice is the significance of the writing process and its revision to the positioning and grounding of this work. The benefits accruing from a recursive synthesis of both the outcomes and processes identified in this thesis have been well documented by several other researchers. Flower and Hayes (1980) are credited with introducing a new line of inquiry associated with cognitive synthesis that arises from reflective and reflexive processes. These range from initial to final drafts of writing. Later, compared models of knowledge telling compared with knowledge transformation in written composition. More recently, Klein and Boscolo (2016), have provided recent evidence of writing supporting comprehension and learning as a transformative process of cognition. All make use of cyclical processes that bear close comparison to the framework I have identified.

Conclusions and limitations of research

Whilst my main role is as professional academic and the object of my research has been the comprehension of fellow professionals' development from a range of disciplines, I consider that my research topic, methodology and research practice can be situated within a conceptual context of inquiry. Firstly, my existing literature and the narrative data of my fellow participants have been compiled from conceptual qualitative inquiry methodologies. It is only in my own analysis and presentation of my autoethnography that I have referred to learnings and understanding that have been identified through a professional practice lens. Secondly, the object of my research has been epistemological in that I have been examining processes that have been used

widely in all forms of contemporary research to further conceptual knowledge development in the disciplines of psychology and sociology. Thirdly, I am aware that the selection, choice, and amalgamation of the processes involved in this research have been instrumental in supporting not only the significance of process in my own development, but also forming an integral part of the importance of process more generally in learning and development.

In particular, the prior application of these methods in the fields of sociology and psychology, as noted in the relevant literature, have helped expose important linkages between work I was aware of and work I was not aware of. This includes the concept of narrative identity and subsequently psychological and social identity. Then the recursivity of the compilation approach to the thesis. Finally, most recently the concept of practice as theory and theory as practice in social and professional realms. None of these would have become conscious to me and therefore significant without reflection and exploration of the prior usage of these methods and then their utility to my own processes. The recursive nature, particularly of the analyses, and synthesis of the participant research and my own autoethnography has provided me with a good example of the utility of the developmental framework of practice itself.

The methodology and the methods of research used here have provided an integrated perspective in which to position the research outcomes. They have also enabled an evolved perspective, that is able to holistically link individual cognitive and social learning and development processes.

There are limitations that are present in all human research, where language and its multiple meanings are used as the medium of comprehension of social and cognitive phenomena that firstly have to be recognised and then secondly related to premises that can be shared collectively. It is inherently subjective. Morgan and Drury (2003) describe the subjectivity of qualitative research as:

A fundamental basis for describing and interpreting the contextual variability of phenomena that surrounds the lives of human subjects (p.76).

They go on to add:

Interaction between researcher and participant is recognised as a key component of data generation and valued as such, because it is a means of getting close to the experiences of participants so that phenomena can be viewed from their own perspective (p. 76).

I have purposively selected my participants from a range of communities of practice I have been associated with during my recent history, who share common elements of culture, history, language that I am familiar with, and this again relates to my subjectivity as a person with a given world view.

However, by aligning with me epistemologically across several professional disciplines, they were able to share with me some of the significant phenomena concerning their education and subsequent professional development through practice-based evidence and scientific perspectives of their practice.

Given the growth of the qualitative research discipline in recent years, I have used mechanisms that have gained broad acceptance in this form of research to provide an objective perspective on the trustworthiness of their learning and development processes. This was to know the participants over a period of shared history; to undertake extended interviews over three separate occasions to allow for personal reflections of the topics discussed (Seidman, 2013); to make use of content and thematic analysis approaches to help ground the data analysis; to create narratives making use of a large amount of near verbatim text to reflect the subtleties of their learning and development experiences (Clandinin & Huber, 2009); and finally sharing their narrative inquiries with them (together with my main finding of a developmental framework of practice), to receive their reflexive comments (Kempster & Stewart, 2010).

Finally, I have used my own autoethnographic experience as an experienced professional practitioner to compare and contrast the participant findings with my own. I believe the findings have enabled a new perspective to be formed that offers useful further research in this important field.

Chapter 4 My pre-doctoral autoethnography

Introduction

The purpose of including my autoethnography as a key part of this doctorate is that there have been very clear developmental stages in my life. These have not simply arisen from events but have grown from living life and being stable for relatively long periods during which I came to realise that a transformation in my self-identity and life purpose had occurred. That is, I am not a collection of parts; be it education stages, work and life successes or failures. I am a comprehensive 'Gestalt' of experiences, realisations and understandings which now give me evidence to share with others to help support their journeys.

The significance of this autoethnographic journey is it aligns with my identity as a New Zealand citizen and the respect I have for the wisdom of the first settlers of this land and their concept of whakapapa research. Roberts (2013) describes how the present is situated in the culture and history of the past but is being built on and developed today. This closely aligns with the nature of my individual narrative as I have progressed through my life and the new and renewed connections I have made with others, who have helped to make me who I currently am. It is the review, and re-review of my professional journey narrative, together with growing consciousness of my tacit and informal learning that has provided the epiphany and turn, as discussed by Denzin (2013), that characterises an autoethnographic account.

Polkinghorne (1991) describes self-identity as a living narrative, which he considers fits the schematic dimension of knowledge identified earlier by Mandler (1984). This was subsequently extended in later work by McAdams and McLean (2013) and Clark and Rossiter (2008), who all related a significant part of identity to prior experience and learning. I discuss this subject in more detail in Chapters 6 and 7, in relation to the narrative and related identities of my research participants and my autoethnography.

I consider there are two distinct stages to my identity development; the first becoming aware of who I was and the confidence to act as that person; and the second stage where I gained significant personal success, took up self-employment, moved back to New Zealand and found my life's mission and passion in education and the discoveries made in this doctorate. I have divided the autoethnography into two chapters, the first positioned here to describe what led to my doctoral study and then the second, later, to describe my personal development alongside the process and outcomes of the journey

My life has provided a comprehensive apprenticeship in contemporary academic, vocational, and professional education across technical, organisational and tertiary education fields. This data adds perspective to fellow professionals' narratives here, who have made successful careers for themselves in the late 20th and early 21st centuries.

My autoethnography is located as follows:

Chapter 4:

Description and highlighted autoethnographic commentary on my life up until the start of my doctoral journey.

- My early life and professional careers till the age of 40
- My civil service and consultancy careers including my master's journey
- An education career from journeyman lecturer to principal of a Private Training Enterprise in New Zealand

Chapters 5 and 6:

Highlighted autoethnographic commentary on the narratives of participants and their narrative of analysis

Chapter 7:

Description and highlighted autoethnographic commentary on life during my doctoral journey.

- The outset of my doctoral journey
- The doctoral interviews and developmental model realisation
- The analysis and write up of my doctoral evidence
- Autoethnographic conclusions

Chapters 8 and 9:

- Continuing highlighted autoethnographic commentary to support the developmental framework of practice and the study's conclusions

My early life and professional careers until my mid 30s

I am the eldest son of three siblings of two middle-class UK parents, whose lives and backgrounds collided because of the maelstrom of World War II and who in other circumstances would likely not have met or married. My parents emigrated to New Zealand shortly after the war to be with my in-laws, who felt a new start on the other

side of the world was better than staying in post-war Britain. They helped my parents with the establishment of a horticultural business, and I spent the first 10 years of my life growing up in a halcyon environment of a young laid-back culture of wealth and privileged land rich families.

I saw little of my father and a lot of my mother, who was the homemaker and who protected us from my father's post-traumatic stress disorder and drinking. Her love, kindness, selflessness, and deep understanding of children's needs enabled me to enjoy childhood. It gave me freedom to play with friends in the bush and at the ocean as well as unconsciously providing me with a world of knowledge from books.

This changed significantly when my parents split up with my father moving to Australia to remain near his family, and my mother returning to the UK with my siblings and I. This required me to assume adult responsibilities from that point forward and to realise that my future success was principally my responsibility. This arose from my immediate failure to pass an 11-plus selective exam, a year at a secondary modern, where I became top of the class before being offered transfer to a local grammar school to start secondary education for a second time. Here again, I remained top of my academic group for the rest of my school career. The rest of my childhood was stable, living in a family home in rural Dorset.

My academic success arose from several factors. Firstly, the ability to work hard, coupled with a good memory and an extensive general knowledge from prodigious reading. Also, an avid curiosity and questioning approach to all that I did, which extended into technical areas, where I built and fixed bicycles, radios, and appliances of all kinds. However, I was also ultrasensitive to the possibility of further academic failure and as the work became harder, I became concerned that I might not attain university entrance by staying at school.

I decided to leave home at 17 to undertake a technician apprenticeship with Marconi Ltd. They were a leading UK electronics company in Eastern England that had a significant work and training reputation. My ability with technical devices, practical training and continued high performance at part-time vocational qualifications enabled me to be successfully promoted onto a professional scheme where I completed a good honours degree after another four years. This alternated six-monthly academic and training periods where my practical experience ranged from designing and building a racing go-kart, researching early LCD display and MOSFET technologies and undertaking environmental testing of marine radar equipment.

I gained a good graduate position with the Marconi research laboratories where I undertook advanced development of satellite parametric amplifiers and miniature ferrite circulators. These were primarily undertaken in the field of microwave engineering, but I needed to utilise a range of supporting knowledge including low temperature (liquid nitrogen), solid state and material physics, vacuum deposition, and other technologies.

Two years later, I made a major change in career direction to support and ultimately lead the apprenticeship and training functions of Marconi Radar Systems, for a dozen years. This comprised being responsible for a team of 20 staff and leading the support of 500 full-time trainees, ranging from clerical and craftsmen trainees through to several professional engineering and scientific disciplines.

The highlighted text that follows provides a reflective commentary on the significance of this period of my life.

The purpose of discussing my early life and careers is that it laid the foundations of who I have become today and covers my professional fluency with technical research and development and later managing training of younger versions of myself to enter similar roles.

There are several interesting facets to this which are relevant to the research work and results I have achieved in this doctoral journey. Firstly, there has been a high level of informal learning and development. Roth (2015) argues the case for learning resulting from becoming aware inductively and constructively from such a process in that the comprehension arises at the end from what has gone on rather than it being pre-determined. Perhaps this is what distinguishes a stricter definition of experiential learning in which the experience precedes the significance and meaning of it, compared with more structured learning sought in problem solving and research.

When I was a student at school, and subsequently, I made use of a wide range of general knowledge that I had acquired from extensive reading. This provided the foundation of significant academic success as I had plenty of other sources to relate to my formal learning. It fostered an innate curiosity and intrinsic motivation across many disciplines. Indeed, a grammar education at the time was a liberal education and as well as specialising in sciences I also undertook practical, artistic and linguistic studies in both Latin and French. Schneider (2004) describes liberal education as enhancing intellectual judgment, building social responsibility, and encouraging integrated learning within multiple disciplines. Roth (2014) supports the notion of a modern liberal education in the USA as still serving the needs of a culture that offers freedom of choice and values innovation as a driver in a modern economy. It provides the

contribution of critical thinking, with its emphasis on inquiry. It also helps students to understand wider cultural connections with study of religion, art, science, and music. I realise I also took a very active approach to my learning which was to extensively question my teachers on aspects of the subject I wanted to engage with and understand. Savage (1998) corroborates the efficacy of this in describing how critical thinking is improved through encouraging learners to pose open questions on topics which have multiple answers. It is also supported by the ancient adage credited to Solomon Ibn Gabriol that:

A wise man's question contains half the answer.

At the same time, I became interested in how things were made and worked and started fixing broken appliances. Over the years this evolved into making models, building bicycles from scrap yard parts, and later applying this to car mechanics. I developed a good skill of fault finding and repair, through careful observation and measurement. Later this translated into electronics technology where both the operational devices and their technologies were not physically visible apart from their outputs. This was the first example of having to rely on theoretical explanations to understand the practical consequences. And yet as with my reading before. I did not see it then as learning because learning was what I was formally doing in school or college and this was just being able to do things that interested me. Bicknell-Holmes and Hoffman (2000) describe learning problem solving strategies to undertake independent discovery learning as being a significant growth process in general education.

In the second year of my degree programme, I became aware that the theoretical models I was dealing with were not a reality but constructions arising from human research and experimentation that were evolving through time. Also, I found there were large disconnects between phenomena in the micro world, our world, and the universal world. I therefore saw the world in several distinct and separate ways. There was academic or formal learning, there was experiential and practical knowhow, which I did not call learning. There was an unconsciousness surrounding an internal sense of identity and the significance of culture and language. This prevented me from sharing aspects of that with others as well as the emotional significance of things that mattered to me. These matters were only resolved more fully many years later.

At that time, success in the formal sense significantly mattered to me. Achieving a degree was extrinsic recognition of my success and my place in the world. My judgement of that was predicated on what I knew I could achieve through hard work,

but also the expectation that I needed to be able to fluently apply complex scientific concepts and their associated mathematical models, from first principles, to create breakthroughs in my technical field. As that did not happen in a timeframe, I was comfortable and confident of, this precipitated my first career change within my organisation and several years later I moved on from my first employer to bigger contexts to resolve recognition and confidence needs.

The conclusion to this comprehension has two important consequences for my doctoral research. Firstly, it is deeply personal, and it would have been very helpful to have been aware of the developmental framework of practice I have identified in this thesis from ten years of age onwards. This is because it provides several links that were missing, and I consider are still missing from conventional education. Secondly, that effective development is enhanced through understanding its process. Thirdly, how informal learning and being practically engaged in the world supports one's development. Fourthly, the knowledge linkages created by undertaking a liberally focussed education and finally the impact of emotion and confidence needed to build success through formative education and subsequent life.

My civil service and consultancy careers including my MBA qualification

This period of my career provided the initial insights to making major progress in my understanding of myself, my competencies and to provide evidence of that. This arose in several ways.

Firstly, I left my initial employer of nearly 20 years to work at a national level in a quango of the UK Civil Service, The Manpower Services Commission (MSC). This organisation had been set up by the Department of Employment to address the major problems of lack of vocational preparation in many new industry and service sectors as well as to redress the large numbers of youth leaving formal education without any qualifications or training.

The way MSC did this was to use a large budget of pump priming to try to persuade the tertiary education and other supportive industry and service sectors into introducing major training initiatives and approaches to development. These included accelerated resource development, national support networks of industry, trade unions, professional bodies and local regional networks across all of the UK. MSC undertook this work by hiring shock troops, like me, with good industrial training experience to facilitate the process.

I suddenly changed from being a company learning and development manager to a national project manager. I was negotiating a dozen national projects for design and delivery of training resources and supporting the delivery of a self-sustaining service, within a two-year timeframe. Each project was funded at levels that equalled or exceeded my prior company's annual development budget and totalled several million pounds. Our personal development was supported by monthly workshops and seminars on open and distance learning, computer-based training, machine-based assessment and project facilitation and staff development. It was a whirlwind of change, national exposure to many different industries and services and weekly travel to all corners of the country.

This lasted two years and then I was promoted as one of four national project managers with my own team of twenty staff to lead national qualification development in about 20 UK industry sectors. My team and I were responsible for setting up and facilitating national standards bodies in each sector to develop new competence-based qualifications at annual budget levels now in the tens of millions of pounds.

The most significant of my projects was the training and development lead body who were only the second profession involved in this work outside of management. They were formed as they were needed to vouch for this vocational development approach within their industry sectors. They were considered essential to its success nationally. I ensured the credibility of this work by establishing the first qualification group inside a standards body. Their role was to work with major qualification bodies to harmonise and deliver these requirements, nationally alongside the then new National Council of Vocational Qualifications.

At the same time, I commenced and completed a four-year distance learning MBA degree with Warwick University. The value of this programme was understanding how to study independently using academic texts provided by the university and the diaspora I met at summer school and exam periods with their varied backgrounds. My understanding at this stage arose not from memorisation of material but examining how the conceptual knowledge could be interpreted and applied in both work and research contexts I was responsible for.

The personal and professional development gained from this period of employment and education provided me with the springboard I needed to become a successful self-employed consultant for the next ten years. Here, I directly supported further UK industry standards development work. I then moved back to New Zealand to undertake large corporate performance management developments with New Zealand Telecom

and Watercare Services. Later, I undertook a four year contract journey with the Electro-Technology Industry Training Organisation to analyse and produce employment standards and qualifications for the NZ electronics industry. This included all technical roles from shop floor assembly to professional design roles. Subsequently I supported an electronics entrepreneur as his principal education consultant, to introduce e-learning and computer-based learning support systems into New Zealand primary and secondary schools. The purpose was to encourage novel student-centred learning practices. The extension of my professional experience in scope and depth over this period allowed me to review my contemporary practice in the practical application of competence across several disciplinary fields as well as to new applications, such as performance management. At the same time, I also integrated my MBA learnings alongside this, which provided new understanding and linkage between the initial application competence in qualifications to wider business and human resource fields.

There are several key learnings I have taken from this career period. They created my interest in the subject of my doctoral studies as well as creating a significantly different identity for myself.

Firstly, the diligence and practice I had put into my career at Marconi's had unconsciously provided me with well-developed project and interpersonal competencies, which I could use immediately in my new role at the Manpower Services Commission (MSC). Roth (2015) talks about conscious awareness of prior practice arising some time following the initial experience.

My ongoing success with my initial project role, precipitated by significant development and support provided by MSC leadership, led to promotion as a principal grade civil servant. This provided endorsement of a new level of competence and I recognised I was now employed and performing at a level I had always hoped I would enjoy. My confidence enabled me to develop my own leadership style with my civil service team and their responsiveness and loyalty to a civil service newcomer was emotionally very rewarding.

During this period, I was working with professional colleagues in an extended professional community of practice both inside and outside of MSC. I recognised I was now able to contribute at a level equal to them. Wenger (1998) discusses the journey of a newcomer in a community of practice and how one grows in stature inside the community through time and practice.

This was enhanced by progress in my MBA studies, no longer from memory, but more seeing how to apply my holistic comprehension directly to my work roles at the time. Finally, I understood that all the academic material I was reading had been produced by individuals like myself, some of whom could communicate easily with me and others who could not, due to their nature, outlook, and differing experience. My professional competence grew, as I understood how I could adapt the academic learning I found relevant, directly into my professional practice. I believe this was also due to the theory being inherently more practically-based, as discussed below.

However, upon reflection of this study period, there was a conundrum I became aware of concerning the foundation of some of the disciplines as compared with my earlier scientific education. This was the concept of the underlying principles and axioms on which some disciplines were based, such as accounting, economics, and marketing. As I have indicated earlier, my sense of seeking more absolute knowledge from studying science were based on measurable principles that were invariant and external to human nature. What I found with disciplines based on human nature, such as economics, with an axiom of profit maximisation, was that this normative truth may have prevailed at the time of conception, but certainly changed later. As a result, knowledge of human activities was based on paradigms that changed as society changed and needed to be regularly re-evaluated (Kuhn, 1970). To assume that the theoretical perspective held true because one could apply mathematical principles to it (and their invariant rule-based rigour) did not make the underlying ontology and its axioms any more valid. I concluded that any scientific based theory on human behaviour was useful as a means of temporary explanation, but the veracity of any results was relatively short-lived. This is discussed by Shipman (2014) in his book on the limitations of social research and the two main ways this has been undertaken, first as a quasi-scientific form of study or secondly as an interpretive study. In either case, the justification must be seen in terms of validity, reliability, generalisation and whether its claims are open to public scrutiny. Generally, this is assessed by fellow researchers in terms of who is doing it, how it is done, and the methods used to collect analyse and position the findings in relation to similar work.

My key findings from MBA research into *'why people are only accounted for as cost in contemporary organisational accounting practice (apart from sports personnel)'* was that the International Financial Reporting Standards (IFRS) set common rules so that financial statements can be seen by investors in a consistent and comparable way internationally. As a result, contemporary organisation asset values, as measured this way, only represent about 10% of their actual value. The remaining 90% have to be

counted as intangible or goodwill, the two components contributing most being brand value and intellectual capital (Harrison, 1992)

While I did not call it experiential learning at the time, I was aware of several things. Firstly, how my development was being informed by my academic studies and my professional practice in the field of human development. Also, how new concepts such as competence, described by Jessup (1991), were bringing about a closer link between vocational qualifications and day to day practice. Moreover, how the status of being part of a nationally supported movement to enhance human potential was emotionally rewarding, as I was contributing to its birth and reality. Another stimulating comprehension was seeing how a simple statement of purpose for an industry sector could be functionally disaggregated coherently from a strategic to an operational level of practice. Furthermore, that this was not constrained by a conventional hierarchical structure but showed how the strategic purpose was linked through a coherent pattern of processes. This was articulated by the work of Mansfield & Mitchell (1996) in which quality concepts arising at that time in Japanese manufacturing from the likes of Deming, described by Aguayo (1991), formed a parallel with human development. Here, the description of people's abilities and performance moved away from narrow organisationally specific forms of job descriptions. Just as it enlarged my possibilities, it was also opening up the possibilities for many others and this idea significantly underpins the ideology of the developmental framework of practice developed here. Burke (2005) described the need for competence standards to be written to provide a specification that was as meaningful to the individual as it was to their trainer. In this way an individual could take increased responsibility for their own competence development. At that stage, it was also assumed that the individual, should determine when they were ready for assessment. It was only the constraints of input funded academic programmes where credits of time had to be allocated that continued to constrain learning times in formal academic settings. At the same time, the idea of generic and transferable competences came out of this era of development. I see now that this was the forerunner of student-centred approaches to learning and development and this links with the findings identified by Paterson, Jackson, Grieve et al (2012) in which intrinsic levels of motivation were shown to be encouraged by such practice. This is a central theme of the psychological advantages of having a developmental framework of practice that can be built and developed by an individual through their lifetime.

When I became a consultant, I found myself in a community of practice, illuminated by Wenger (1998), where I was recognised and respected as a full equal with others. I

was able to have complex professional conversations with mutual respect and understanding. My confidence accelerated based on what I produced and was supported by favourable reactions of clients and colleagues. Subsequently, through the recognition of my consultancy work output and quality by others, I built significant career success for myself and could justify my expertise in the field of human development. This confidence jumpstarted my creativity and since that time I have been effective at identifying megatrends and not being afraid to support my ideas fully. Another significant dimension of personal identity arose from my ability to support myself as an independent consultant for more than a dozen years. I was approached by others seeking my expertise and help for their endeavours and to confidently deliver on their expectations. This confidence built a structure of ongoing development and practice I am responsible for. It also provides me with the necessary intrinsic rewards of practice in a vocation that serves a higher purpose. This alignment between self and vocation is documented by Csikszentmihalyi (2007) study into highly successful people.

An education career from journeyman tutor to tertiary academic principal

During my consultancy career phase, sufficient work came at intermittent intervals, so I began teaching part time courses in New Zealand Polytechnics and Private Training Enterprises (PTEs). This morphed into more continuous education work from 2002.

I worked as a journeyman tutor in tertiary level business studies, providing several papers in the then New Zealand Diploma of Business programme, where I taught mostly international students seeking future careers and residency in New Zealand. I quickly started to design my own course materials and assessments. I not only became more proficient in my subject theories, ranging across accountancy, economics, marketing, and management, but was also very successful at helping students become adept with their own practice and to achieve high pass rates. At the same time, I was experimenting with blended learning and produced tens of Google websites to support student learning programmes to link relevant materials from across the web to specific programmes of study.

This was recognised by others and over a five-year period, I first became the academic director in the largest PTE in New Zealand. I later became the principal of another with three campuses in the Auckland region. These roles combined my abilities as an academic with successful leadership of high performing teams of multinational academics in New Zealand Qualification Authority (NZQA) Category 1 providers.

Based on these successes, I became interested in extending my academic career in the public funded tertiary sector. That together with my growing interest in post graduate study at a doctoral level led to the commencement of a PhD at Swinburne University of Technology in 2012 in the field of experiential learning using an artefact and exegesis research model. I later transferred my studies to Victoria University as I wished to stay with my principal supervisor, Dr Martin Andrew, who moved there, and who, in parallel with myself, was moving increasingly into professional practice modes of coming to know.

This period of vocational education allowed me to develop and embed all my learning and experience to date. It allowed me to be creative at supporting young people at the beginning of their careers in simultaneously gaining both theoretical and practical insight in their disciplines. It proved to me that I had the ability and personality to become a highly successful teacher as I could relate well to students and find successful ways to help them through their programmes building their practice and confidence. My support of students unconsciously reflected the style of humanistic psychologist Rogers et al (2013), who considered that a trusting relationship between a student and their teacher was of high significance in creating a motivational climate for learning.

The nature of my life and professional careers has continually led me onwards and upwards towards new interests and challenges. This latest career proved no different, except that it presaged what I now see as being what I had been seeking to really achieve with my life and my heart. To achieve what authors such as Robinson (2009) and Cammock (2009) respectively called the *Element* or *one's true vocation*, I believe my specific success here was not only helped by my breadth of prior career experience and the knowledge base I possessed, but it was largely my subconscious competence and capability to look at what was needed from my own earlier learning needs. I used this to find ways to augment a standard teaching approach with practical examples and projects I could derive from scratch. This was enhanced by my recognition that the language of different subjects, such as accounting, economics and marketing had unique and specific meanings that needed to be understood as part of their introduction and application. Thus, as a teacher I needed to operate at several levels myself including being the subject expert, a learner to find the best way to come to grips with the subject for the first time and a linguist for the vocabulary required of the discipline. Nagy and Townsend (2012) identified a teacher as needing to engage a learner with the subject that made common sense. This also reflected the adage that if you really

want to understand something, you need to teach it, as supported by research (Duran, 2017).

As an academic leader, I also formed my own professional communities of practice with my staff and encouraged them to share how they approached teaching themselves. DuFour and Eaker (2009) illustrate this idea in their book on professional learning communities to enhance educational attainment in the USA.

I was now fully aware of my own success and the way that I had achieved that from dedicated time spent as an apprentice, journeyman and professional. I felt I needed to extend how I had been learning and developing more formally and to research how fellow professionals had achieved the same. I found a research vehicle and research supervision that would allow me to undertake this in a way I had not thought possible at the outset. This was initially to use my research to produce an artefact and exegesis. The artefact was planned to be a book about experiential learning and associated techniques. More significantly, the underpinning philosophy encouraged the researchers' perspective to be a part of the research. This I now recognise as being closely associated with professional practitioner research, as described by Cochran-Smith and Lytle (2015) and Costley and Lester (2012) in which the authors highlight the benefits of practitioners becoming researchers in their own fields of expertise due to the significant levels of relevant tacit learning. This is emphasised by the developmental framework of practice identified in this thesis, where research is seen as a significant process of ongoing development for all practitioners.

Chapter 5 Narratives of fellow professionals

Introduction

The participants who were selected for these stories have all had successful lives. They have had several careers and jobs, have become well recognised in their own fields and have a good sense of themselves. Their positions are more stable now as they seem to have found themselves; they have nothing left to prove and they enjoy what they currently do. They are not strangers to the researcher in the sense that my relationship with them has lasted from several to 30 years or more.

All narratives are written under pseudonyms to protect the participants' identities as already mentioned in the ethical aspects discussed in Chapter 3 and confirmed in detail in the approved formal ethics application provided in Appendix 9. Their pseudonyms and demographics, together with that of the researcher, are again summarised below for ease of the reader:

Table 2 Demographics of Research Participants and Researcher

Nom de Plume	Current role	Professional experience	Years of professional experience
Rob Macintosh	Tertiary business tutor	Journalism, advertising business leadership, tertiary English and business education	>40 years
John Mason	Investment advisor	Languages, university leadership, investment banking, English adult education	>35 years
Jean Clark	Tertiary and private tutor	Primary, adult, and tertiary education. Union and education leadership	>45years
Geoff Smith	Project director	Construction. project management and business leadership	>40 years
Charles Hulme	Retired	Sales, sales leadership. Tertiary education leadership and consulting	>45 years
Jeremy Green	Tertiary tutor	Police detective, professional musician, tertiary business education	>35 years
Dean Roberts	Retired	Media, secondary and tertiary education. business consulting	>45 years
Dan Douglas	Business entrepreneur	Sales and marketing leadership, business leadership	>50 years

Tom Naylor	Professional sports organisation leader	Business entrepreneurship and professional sports leadership	>30 years
Martin Fry	Leadership consultant	Secondary and tertiary education. Sales, business and tertiary education leadership	>45years
Researcher	Tertiary facilitator and mentor	Research engineering, Corporate learning and development leadership. International vocational and professional qualification development. Educational consultancy. Tertiary education leadership	>55 years

Their stories are written in the following ways.

Firstly, the introduction provides snapshots of where they have come from, what have been significant milestones and what they are doing today.

The second section looks more closely at their development journeys and what they have identified as helping them to progress to where they are today.

A third section looks at aspects of their development which have broader significance to the processes and outcomes sought from the study.

The final section records how they think formative education and development might be improved.

There are three voices present in the narrative:

- The researcher's narrative descriptions in this font
- *The participant's responses in this font and set in a quotation format*
- The researcher's autoethnographic observations and realisations that link specific participant evidence to the findings discussed in the narrative of analysis and later the developmental framework of practice itself.

The individual narratives broadly follow Clandinin and Huber (2009) three common places of inquiry which they define as temporality, sociality and place.

For temporality, the most significant issue is the stage of personal development and understanding I had when I was interviewing them and what I was looking for from the interviews. This can be principally characterised as 'before' and 'after' in becoming

aware of wider processes of development that had enabled their professional development. In the before stage, I was more focussed on their learning process and their consciousness of that, whereas in the latter stage I realised they were developing on their terms and with their aspirations, but found that their processes of development were largely unconscious to them. This was because the cyclical and iterative nature of the processes they were using were very familiar to them. They were continuing to achieve without needing to continually reflect on how it was happening.

The significance of the social milieu is that early lives and careers of all participants had taken place in the 1950s to 1970s period in such western countries as the UK and New Zealand. Many had parents who had been part of the second world war. Growing up had meant learning to participate in adult society and doing adult work during schooling. A number had left school early and carried out their tertiary study later; others had benefited from traditional apprenticeships; while others benefited from the rise of tertiary education opportunities. Thus, education had been both academic and very practical. They all had a strong sense of purpose and had understood from early in life that it was they who made their success rather than it being given to them.

Finally, the place where these interviews were undertaken was either in their home or work environment, at a sequence of times that suited them. Some were undertaken in sequential weeks; others were undertaken over a period of up to six months. On reflection, this may have some bearing on the information I gained from them. Work priorities in some later interviews created time pressures, but the main interviews flowed reasonably well due to my prior and contiguous relationship with them.

The principal findings from participants and their contribution towards the overall developmental framework of practice are summarised in the narrative of analysis in Chapter 6. This includes their perspectives on the main cognitive and meta-cognitive processes they have used as part of their development.

Narratives of fellow professionals

Rob Macintosh's story

It is a characteristic of most of my participants that they have had a number of different careers. Rob Macintosh is no different in this regard having had four or more at the time of us meeting as fellow journeymen in the NZ Private Training Enterprise sector in New Zealand. Due to the variable nature of the international education market, most PTEs employ their staff on a semester-to-semester basis as numbers fluctuate and we all could undertake a range of topics within the business field.

Rob presented a wide range of experience and capability arising not only from his career variety, but also extensive overseas experience. This made for two interesting interviews and more evidence that is supportive of my model of self-development.

Rob's independence and variety within his background likely arose from growing up in the rural environment of New Zealand where his parents were involved in the horse racing industry. This involved a lot of travel, interaction with a large range of the adult population and early independent responsibilities. School formed only a fragment of his learning.

A realisation around the age of seven years set him on a pathway of exploring his own way of doing things and trusting his own observations:

As a child I realised that many adults were not credible. They were often wrong. And this was a big problem with adults in authority as they set themselves up as knowing everything but then you realise that they lied to protect themselves and the other thing is that they do not know everything. So, along the way, I became sceptical; I remember quite distinctly that kind of realisation when I was a kid seven years' old and these guys didn't know what they're doing, but they kept pretending they did.

This understanding encouraged my independence. Not learning the rules, not following the rules. My development required independence and to try and see things as they are objectively, or maybe subjectively. And by doing it.

Formal education was not too important to me; in fact, it didn't have too much influence on me. But I'll go back to another idea. What I find in terms of education being more self-educated is that when I've got something to do, I can go and find the theory and the principles of it that educated people have developed. I've got this idea about whatever it is and I know about

management because I've experienced it and I've learnt stuff before and now I want to go here. I go to look for it and find it that way.

One example of that was when he was around 15 and had to write a significant essay on the factors leading up to the second world war:

We were studying history which in New Zealand was European history of course. This course was on World War II and we studied that, and we had to do an important essay on it. I was thinking about this and I didn't think what we had been taught was exactly right, so I did something that I thought was better. Fortunately I had a smart teacher and he said "OK Macintosh where did you get this from?", and I said "Well I just thought of it and it seemed to make more sense than what you said" and he replied "Well that's really interesting because there's a fellow called AJP Taylor, has just put out a volume describing the causes of the Second World War which are the same things that you're talking about" and he went on "You're sure you haven't heard of this guy?" and I said "I've never heard of him" Now obviously it was a 15 year old's effort but I had done something that was novel. This was a big boost to my self-confidence.

He obviously achieved enough at school to satisfy university entrance but started off with an education about life before his first career as a newspaper journalist:

It was an interesting career for about five years and it certainly suited me. I guess the great benefit of being in the news media is both the currency of it, and that you're mixing on both sides of the street You're mixing with, business and power brokers and shakers and movers and then you're also dealing with the other side of the street. I was also doing features on the beginning of Maori gangs that were starting to grow because their take on things also interested me. Eventually I became a political reporter at the New Zealand Parliament.

He was able to do this because of his part time study at university in journalism, but it was his work in journalism that interested him more than his formal studies:

I probably would never have finished it if I had known what my news editor would say when I graduated when he said "Why and I mean that Rob. You are already in parliament!". Political Science was the main one and the rest of it was bits and bobs of English literature and things like that. In all honesty at the time, it past me by. I did not think it was any good, I thought it was just

theory with no kind of direction or a place in real life. And the whole idea of writing essays and doing exams; who writes essays and exams in real life apart from academics? I was unimpressed at the time.

After his journalism career, he became a copywriter in a creative media agency and rapidly progressed to become a creative director and then subsequently a partner in an agency called Campaign that became the third largest agency in New Zealand before being bought out by Saatchi and Saatchi. Following this, he then became a marketing consultant with his own small business and undertook a lot of work in Southeast Asia before an exploratory visit to China where he began teaching English to Chinese clients. He quickly became aware of business training opportunities and started providing support to Chinese businessmen on an MBA preparation programme at Shanghai University. He then moved on with this training and university teaching in Europe and London before returning to New Zealand a few years before I met him teaching international students in an Auckland Private Training Enterprise school.

I was interested to explore how he had achieved this significant range of high-level work and achievements. Here are some extracts as to how he felt he had done it:

Capabilities are something you can adapt; for example, thinking fast. I had to grasp key ideas to grasp new information for anything whether it was in marketing or in journalism you had to grasp the big picture and then of course relate to what is happening or changing and all of it required an agile mind to formulate key issues and new ideas. I need the big picture or the key idea first and then build up from there, build up the detail, the depth that is needed for the matter.

I still consider myself a writer you know as that was the only thing that turned me on when I was a teenager. And looking back because everything I have done is communication, as in mass communication and then other forms of communication that came from groups or with individuals. Thus, another capability is the idea of communication. In many things I do is to take a lot of information and then hone it down to a very tight message.

It is the same thing with tutoring and the training. If I have been successful at that, it's to understand that you know some applied management and how it applies to these particular people. And the other thing I'd throw in there is things that are current. You have to know that everything is evolving and not just what is happening now and where things came from.

It is also important to know one's successes.

A seminal moment was that second world war essay. It was such a vote of confidence in doing it my way. The other thing I think it is might be connected to is to be very widely read, but what I mean by that means is that you are very interested in everything like a renaissance person. And I found that it is possible to cross pollinate ideas from one discipline to another which I observed many others could not do.

I think the things that stick are things that we discover ourselves or have success in. If you look back on the way people operate, and the things that excite and move them, they are the things that they discovered themselves. I believe a big part of education is this idea of learning giving people success, real success. Also, it involves practice, figuring it out and putting it to the test to see if it is observable so it's semi-scientific and then comparing it with published information or other people, working in the same area. It is also judging whether it is rational; not necessarily logical, but rational. The key to rational is does it work. That is how you figure out whether you are on the right track.

The important concepts that Rob has mentioned here and that has wider applicability to my research is that it includes the concept of personal success and the motivation that it creates, particularly if other people endorse it. Secondly, to have a clear idea of the big picture into which one can fit subsequent details, particularly if that can be related to other areas of familiar learning. Finally, working with real situations and experiences to enable a personal perspective of it that one can compare with explicit sources of knowledge or other people you trust have knowledge or experience about it.

He also implied in his description of capability that it was practice or process based.

Since this was an early interview the emphasis of my questioning was more related to learning than overall development but as I relate the next section of our interview, the wider applicability of this information becomes apparent. The next stage of this interview was focussed on his learning process and brings into focus the need to practice, evaluate, reflect, to make use of intuition and judgement and to integrate all these aspects together. Here is how the conversation evolved:

I think it can be expressed as a focus on the what and the how and that's what a lot of learning and teaching is about and also why do it? And answering these questions forms part of a cycle of progression.

So, for me, I start out with the why. Why the hell do I want to know anything? it's a more of a big picture thing; if I find a why well then, I can go OK, there is a reason, a motivation to move forward. And then I work down to the what and the how; which either you figure out for yourself or then you go to the experts to get that knowledge or information. Now the how is you learn by doing and there you learn how successful or good it is so that you can improve through examination of what you have done.

The significance of that is because you are developing judgment and application of knowledge. So, you have got all this stuff, but you have to then apply it to real situations and that requires you have the resources to pick out a lot of stuff and then use it to make judgements. It is a multi-disciplinary idea where you are drawing on a range of capabilities for a real situation which is not black and white. I think an ideal learning process would be the apprenticeship system where you learn from real situations.

I feel language capability is crucial for learning. It is totally the main game because that is where all the information comes from, and it is the way it is passed on through metaphors and analogies, storytelling and putting things into context for others.

We talked about the importance of motivation in learning as arising from getting an answer to why, regarding any topic or pursuit. And then how the results of aspects of our own learning, such as his ability to write and express himself well moved from an external why to an internal why or intrinsic motivation. And once that happened, how we continued to do it by ourselves because it continued to inform us and provide rewarding results in virtuous cycles.

The discussion then turned to components of the learning process like reflection, 'aha' moments and intuition.

I try to use as near real life performance as I can so my students can identify the significance of their learning. As it is their learning process, they must do something and then they must put a standard on their performance. One of their own measures of performance is their reflection on how successful they have been from the task; whether they better or worse because of the experience they have gone through. And that is the way we measure things in life where we are in an environment with many influences and people around you with different perspectives.

And it is just as true for me too, I go into the classroom, and I undertake a programme or lesson and every day I reflect on how that went in a whole sense from how the learners participate, how I did it, what worked, and essentially that students got it OK. And then there was a further cycle. where you compared what you have concluded with other experts. I was able to work out what worked and what did not. And the only stuff that remained was what I could work with and develop it to be more effective.

Rob also works with 'aha' moments in a deliberate way:

If you want to know the answer to anything, you must work at it, you have to gather information, you have to pursue it, you've got to throw around ideas, you've got to look at it on all different sorts of ways and then you go to bed, go to sleep and you wake up and you have the answer in the first ten minutes.

It's the unconscious or sub-conscious providing the answer; it's sifting out the information provided; some may call it intuition because it is your real brain working at finding a solution. And it is connected for me; there is this kind of a WOW, not just ah, got it thing. It always comes unconsciously for me. And then there are habits that I do to increase it like I go out and have a cigarette and I nearly always get an idea or connection to what I am doing and as I do that. I go hey, 'aha', that is why it is not working, or that is what I can do.

You need information, I mean it does not work without input. Somehow with all knowledge or whatever, you have got to figure out what's important in the whole scheme of things and then if you're trying to apply that knowledge, what is important about how you do it. So, for example in student assessments, the student may have all the information, but you realise that there is no weight given to certain things; sometimes they just missed the whole point, or there are things that need to be linked not logically, but in some other way.

He also talks about his sense of intuition:

I consider I am intuitive, and I operate on intuition to start with. It goes back to a feeling and a judgement that if anything is any good, it has two measures; one it matches expertise and second, a very good solution for a particular situation is not just good, it is elegant.

Over my life, I have come to trust it more. And, then you have the other element of life experience where more stuff is kind of resolved.

He considers intuition a component of his learning process.

Intuition for me is part of all the right brain stuff along with inspiration and judgment and enables you to pursue different ways of finding out the what and the how. It makes sense to me that way.

In examining the components of learning that Rob and I discussed above, several further realisations came about that are relevant to his understandings about learning and which I have later realised are included in my developmental framework of practice.

Firstly, when I undertook these participant interviews, I did not analyse them immediately. I now realise many details from these interviews and my literature examination have contributed subliminally to the initial formation of the framework. In considering this interview more closely now, I recognise that Rob's views on working with a big picture of a problem or a topic to start with aligns with my approach. Also, his vivid description of his 'aha' moments and the fact that he could deliberately make them happen also became part of my own practice and an important contributor to my understanding of both active and passive reflection processes.

He has also indicated clearly how his creativity and understanding of his capabilities are derived from prior successes and is subject to intuitive recall. Most importantly, learning and its comprehension must be practised to be accommodated into future practice through cycles of process and is accessible through a deliberate process of passive reflection leading to 'aha' moments.

Rob moved into teaching after several other successful careers, like me. As a result, he has used all his prior experience to inform himself of how he can help others to learn better than he did at their stage in life. He had some interesting and useful views to share on this.

I think all along I have had an interest and ability in teaching people. In my earlier work environments, I was very good at picking people, even those with no experience, and helping them to realise their potential And I helped bring them through mentoring and providing them with the right experiences and directing them to the training they needed.

I teach differently from a regular teacher because my learning experience was different. It didn't come out of standard processes; it came from the way I learnt, and I understood how that meant for me.

I think the things that stick are the things that we discover ourselves or have success in. If you look back on the way people operate, the things that excite them and move them are the things that they discovered themselves. In simple terms you must give them information and then you set a target for an activity and try and leave a gap between the formal outcome and their current understanding, so they must fill the gap by themselves.

To do that best, they need to think about it. They need to identify the information that is available on any of the topics and then apply it to a problem that relates to their current situation. The significance of that is it is where they learn. If you can make it work, that is what you learn.

And then of course what we are doing is that we are in an environment that is the worst possible environment to learn anything sitting in a room behind a desk on a chair. So, the more I operate in a conventional teaching environment with colleagues who are trying to teach students stuff I can see it's not very effective.

He explained the ideas he thought would be helpful to a modern education system further below.

I would like to put it into a real-life situation which is expensive and that is why I mentioned earlier that the apprentice system is better than what we are doing, so that as much as possible is done in a real-life situation. As most people do not go to university, they go to work instead, that is intrinsically connected to life-long learning possibilities.

Where possible, a university should be sort of open to the extent that a guy who is studying engineering could be next to a guy studying graphic design. I think it should be project-based and perhaps the most exciting area is that because of the internet there is much more possibility of that; in that an engineer can physically build a virtual bridge and adding to that he or she is working not just with other engineers but people with other disciplines too; everything is more integrated and connected. Then, there are different ways this could be made to work, like making a cake with different ingredients.

And you as the student get to design your own mix from the university experience which is what the real world is like. And then the significance of information and its shortening half-life and the need to understand not just what is happening now, but to be able to continue learning and adapting to the current situation though our capabilities all our lives.

Again, Rob emphasises the significance of individual learning and allowing the learner to adapt themselves in ways that suit them as well as the psychological value of achieving their own learning and being able to apply it for themselves. The process should also be done collectively, preferably using real projects in real environments and supported by peer groups and facilitating teachers.

Rob had some interesting conclusions from the interviews I had with him which are worth recording.

I think the main one for me is to keep on with it Rob. I've been doing this now for nearly 12 years and so I got this new career by chance; it excited me, and I have undertaken it in many different circumstances, different subjects, different people, different countries and every couple of years it's changed, so it did remind me to keep the excitement and the challenge alive, instead of going oh well.

These interviews have sharpened up for me the sense of keeping it real as much as possible and it's reminded me of the why for the students; what do they hope to get out of it and the immediate thing I'm going to do is to do more investigation of what they got out of it after doing something. I have done this already, but I'm going to push much harder to find out what my students are achieving; did they learn anything or has it all been tick the boxes the qualification because I want to do more than that.

I'll try and get the circle going more; I've sort of stopped doing that and I think that I need to look at that more and pursue it more so that will loop back into my success, will keep me interested and also loop back into what my job should really be about.

My job is to make my students as successful as possible.

John Mason's story

John and I met during my lecturer journeyman days at one of the many international Private Training Enterprises in Auckland and like all of us has had an interesting and in his case dangerous period of life before coming to New Zealand as asylum seekers after the violent breakup of Yugoslavia. And of finding peace here like many others after similar wars in other parts of the world.

His heritage combines a mixture of Serbo Croat and Scottish ancestry, so he lived in Croatia and spent regular time in Scotland during his formative years. He is naturally bi-lingual and has developed multi-lingual capabilities later, which created the situation for him coming to New Zealand with a young family.

He undertook his high school studies in Yugoslavia and then went to Bangor in North Wales to undertake BA and MA studies with a British Council Scholarship.

Following this, I believe he went back to Yugoslavia and worked in the English Language and Literature department at Kosovo University, the most significant in the country, and later became its Head of Department. It was always heavily supported by the British Council, and he set up English language programmes and projects in schools with supplied UK resources.

After about 5 years he again returned to Edinburgh to undertake PhD studies to research foreign language acquisition and the concept of language fossilisation in students who had only ever studied a foreign language academically. He only completed two years of study as his funding ran out and he was disenchanted with an academic controversy that had arisen over two prevailing schools of thought at the time.

He then became an investment banker with Barclays International bank from private studies and a banking friendship that enabled him to fast track into a new career as a fund broker finding clients in central Europe. He undertook this very successfully until the 1997 crash where a lot of the funds lost 50% or more in value. Also, the indifferent attitude of the bank towards customers John had personally recruited deeply compromised his ethical values and so he left the bank. But it was not the end of his investment passion or investment activities that have arisen since.

In 1998 when the Kosovo conflict broke out John decided to move his family to New Zealand due to the multi-ethnic nature of his family and the threats that posed. But he returned to Kosovo and was employed by the UN to head up a language and translation section for the UN special representative. This involved a lot of conflict

mitigation work which did not suit the partisan interest of some of the groups involved and he became a high-profile risk. As a result, he returned to New Zealand after a couple of years to avoid any potential consequences.

This experience took a toll on him, and he avoided working for a while to recover from the stress and to work on promoting his family's wellbeing.

So, with two career backgrounds, one in language education and the other in investment banking he explored both options in New Zealand and both have continued in parallel since until recently when he has combined his teaching and education background to currently support personal investment clients in developing and managing risky investment strategies.

If we look at his background competencies and skills, it is his language background which is of most interest to my research. The reason for this is that the purpose of language education and its outcomes are not achieved without practice from the outset. And John had a very high level of linguistic knowledge, practice, and research experience in this field. I was therefore very interested to discuss this with him during our interviews as he had a unique take on it, which I will comment on further. But let me start with some of his understandings around language development and its application to communication:

Learning is a formal process which goes through education. Learning is linear. If in language you start with grammar, you first learn nouns, then you learn your, then objects and you learn context etc. So, you learn categories one by one, and they all go together in a linear way. But when you try to apply your knowledge and communicate with it is very difficult and there is a revelation that if you base your attempts at communicating based on language categories, communication is not very successful. I therefore concluded that language is not grammar. Grammar is simply a set of rules, which is a limited part of language expression.

Whereas communication has so many things going on at the same time. It is some grammar rules, vocabulary rules and communication skills. Again, if you learn those categories separately it does not make you a good communicator. Or whatever you learn, these learning categories are separate entities which are only a part of language and communication.

In real life, we acquire these notions subconsciously. I will try to give you a parallel. Say, for instance a medical graduate studies medicine and gains

expert knowledge. And then, he goes through years of practice of how to operate on a patient. It is not direct application of his knowledge; when you get to operate on the patient you learn a new set of skills. Once you have opened the patient up, you have so many things going on at the same time, breathing, thinking, digestion, and many hundreds of other processes. So, your specific knowledge about the organ functions, bloods, digestion, brain, how the brain works would be insufficient to operate successfully on a patient. Through practical work, step-by-step operating on a patient and coached and mentored by senior doctors, they gradually map their experience of how to operate, they see patients in a totally different way from what they understood from books. When you start the operation, he opens a patient that is living, I would say it goes in a spiral way; it's not linear, it's spiralling.

In language, I have always known that there are two parts to the language learning process. One is learning in a linear way. Learning say one category of say grammar; learning it part by part, learning nouns, verbs, and objects before you try to practise those rules, and there were some problems. Because those parts learnt in a linear way are only, part of a communication. This means our knowledge of the language and how to use it is still incomplete to be able to communicate effectively.

I will give you an example. I studied French in my High School and I was very good, I could read, I could write, I could maybe re-tell a simple story. I learnt all the grammatical categories to be able to understand the structure of the language. And, then I went to France. And, what happened, I remember was arriving at a hotel in the north part of Paris and confidently asking the receptionist for a free room. And she replied yes and started conversing in French and I got stuck. Luckily, she could speak English, so we continued in English. All my knowledge of French and yet my first attempt at real communication failed. I knew that if I'd spent months in France, I would have been fluent and I would have been able to communicate my ideas. The process of acquiring the language through communication is a totally different process to my conventional learning.

Once I learned that I realised that every phenomenon can be observed in terms of those dualities and when we need to understand things we come up against, the only way to properly understand is through practical experience.

There are few types of learning, linear learning, and holistic learning. In language, linear is when you link the language categories one by one; but spiral is when you start communicating. You are accessing many processes at the same time holistically.

I find John's concept of duality fascinating as it reflects his own experience of learning throughout life both in the language and financial fields. I had a similar experience when I learnt my French at school as there was very little daily communication with it until I went to France in my mid-thirties. What I found astonishing was to recall all my vocabulary and most grammar I needed within three days, but then to relax and say what I could as needed without it necessarily having to be perfect. Indeed, my own English language learning and development did not come from English grammar lessons as they were only undertaken at primary level but learning other languages later. In my science education, I undertook laboratory experiments early on and subsequently, my academic and practical work were combined from high school onwards, so I have tended to integrate them together.

The useful understanding to be taken from this conversation is that learning need not be a single way but can be a composite of many different methods and that education by formally separating academic work from practice, is only one way.

John has consolidated his professional development around a Language Acquisition model, he encountered in his university days, first proposed by Krashen (1982). This model proposed that more fluent second language development came about primarily through language communication practice that was moderated by formal learning of language structure. Another factor that formed part of the model was an affective component in which emotions such as motivation played a part.

John explained that he had made successful use of the same model in other professional learning concerned with financial investment, and later business teaching.

All my adult life I have been experiencing things, mostly through communication. And I try to utilise that a lot, but in the last 20 years, I acquired the dualistic nature of everything in life through experience. Of course, I did a lot of reading but when this became the norm I tried to observe and experience things in a different way.

The two most striking things of the dualistic nature which I have adopted is experience and learning. It struck me that learning is learning but experience

is experience. I realised there was no direct interface between them, but they act together somehow. I am not being original here as there is lots of literature on this but once I started to consciously comprehend things from my experience, I was able to move forward better in my life.

When we have a pattern of behaviour you can move with it very easily and I do not have to think about it very much, so I just move with it, it works for me and that has been a major revelation.

I'll tell you for instance, how I used that in my investment practice. It helped me take part in a dynamic trading market especially recently when I was trading continuously for a year.

I was having to fight as it was continuous experience all the time. Experiencing ups and downs in different stock prices, how to control that and to take account of different variables. It would have been impossible if I have not adopted this dualistic nature approach to my development. It helped me identify things immediately. Sometimes I needed to analyse a situation or a change; sometimes there were immediate solutions which arose from my intuition. Gradually you gain an understanding of the factors that are affecting the end-result of wealth creation and that is when you can read about and understand the categories of learning associated with financial trading.

And the successful end-result was 109% growth in the value of my investments in three years.

Our discussion moved onto how he approaches his own continuing development, making use of his dualistic model approach.

I develop myself these days by utilising both processes daily. It is a never-ending process. What fascinates me is I have adopted this dualistic development approach. That is my guidance; there are things that are represented in basic forms I call learning, which are conscious, and the rest arises from acquisition experiences, which are very much subconscious.

I can go straight to acquisition because I understand the difference now. So, most of the time now I go about acquiring things without learning. I acquire things that I utilise in my real world. Largely through communication. But sometimes it's not always possible to establish communication in the professional way I want. So, then I must use learning, but I prefer acquisition through communication. And I have done this all through my long career of

teaching and now being in the financial business. Being effective is striking a balance between learning and acquiring. I know the potential of both and the respective benefits of learning and acquisition.

The next section focusses on John's practice that has relevance to development more generally and relates to his practice both as an experienced teacher and as a professional practitioner.

I asked him to take me through an example of helping a student to become proficient, say in the communication process.

I always use an activity which I very much use personally and that is question and answer activities. I like to start by asking questions as that is how I encourage students to talk to me. I realised that this came first in initiating communication. Then exchanging experience through talking, or sometimes doing things. My language teaching process always begins with acquisition type exercises where people solve problems rather than being taught language categories. So, by resolving a particular language task subconsciously, they acquire heaps of structures, and those structures are totally different from the way they are learned in a linear way.

Recently I used a problem when I spoke about ethics. I did not give them a definition of ethics; I gave them case studies of unethical behaviour of companies like Fonterra in China or Union Carbide in India. I asked them to analyse the damage and the students recognised that damage meant people were hurt or killed and by analysing different cases. I then asked them to see the lack of social responsibility in that the organisation did not inform anyone and they tried to hide these problems. So, once we discussed all of that I mentioned that ethics is about being honest. So, social responsibility comes as a direct or indirect consequence of that. Through that process they learned a concrete and abstract definition of ethics and its application. And then I give them other definitions as well. Once they had that conceptual framework, we discussed more general things and I drew on their experience about somebody being dishonest with them and then they become emotional and recognised what they felt about it.

This is how I like to use communication about a subject rather than directly providing definitions of ethics and social responsibility and it being very abstract.

The significance of this approach is because individual learning acquisition must include affective variables like emotions. And by reflecting on personal experience, it leads to personal engagement and motivation for the learning. Whereas, If I started the learning in a linear way, it would have been boring, and they would not have been able to remember these types of complex definitions; this is a more effective way. More generally I see the use of affective processes as an essential part of proficiency.

In acquisition learning, a spiral process is acquiring many things at a time. Because when you communicate, the spiralling process goes in your subconscious mind and as you perform the task you must create more tasks which you consciously try to resolve, and this is enabling a lot of subconscious skills development skills at the same time. You acquire practical language through a matching process, match the word to an action and then combine in a task and once they focus on the task, they try to use the words they already know. If they make mistakes, I do not try to correct them because that would embarrass them and cause them to feel vulnerable. Instead, I acknowledge my understanding of their communication and paraphrase what they intended to say in affirmation of my understanding. And in this affirmative way, they gradually become more confident at performing different tasks.

In this area, John demonstrated his holistic and empathetic approach to his students as well as showing the significance of involving the whole person in the learning process, particularly how powerfully emotions could affect the comprehension and acquisition of new information. This is achieved, firstly, by relating it to prior personal experience and secondly acknowledging its validity in building confidence and motivation of the student's contribution to their own and other's learning. This is now central to the refinement of my own developmental framework of practice.

Another topic we spent some time talking about during these interviews was the word proficiency and his specific allocation of that term to professional practice.

Proficiency is developed by taking action or gaining acquisition experience to develop a proficiency map. For example, if I understand banking from learning, it does not make for proficiency it makes me knowledgeable. I need to take action to become proficient. Take the case of armchair philosophers. They might be able to talk or argue endlessly about a topic and that is a matter of opinion. They maybe proficient in the language but they are not

proficient in a profession unless they have evidence of their practice or can do something about it.

Knowledge about banking does not mean you can do anything you want in the bank industry. Take a simple profession like being a bank teller; you have knowledge of banking, but to do a teller's job you need to undertake their duties. So, your knowledge is transformed into a set of actions related to your work. Through constant interaction every day, you can advise your clients what to do, the difference between current and saving accounts, and a myriad of other small details you become familiar with through practice.

Proficiency is developed in communication through practice. I have my granddaughter she is a bit over two; she is very proficient and speaks fluently. But we have students of English who have studied for ten years and have enormous knowledge about the language processes, their vocabulary list is around 10,000 words as compared to native speakers, who probably do not use more than 800 words daily, but their communication skills are still appalling because they haven't acquired their language proficiency through an acquisition process.

The importance of the above explanation by John on proficiency is that his meaning is exactly what I mean by competence; that its acquisition is the ultimate outcome of both formal learning and its translation into practice.

John briefly mentioned the roles of thinking, intuition, and reflection in his practice:

I believe they are all crucial for acquisition. With thinking, I consider I cannot experience anything unless I premeditate my experience in my mind. And this is how I go about moving into the real world. Reflection is more retrospective, summarising and restructuring my experience. Maybe it helps with the translation between linear and acquisition learning.

Thinking and intuition work totally differently. When I try to think I try to analyse something to create something. But intuition comes as a readymade pattern which is based on my experience. It seems to be based on a holistic experience which means my intuition comes not from analysing a situation point by point, but from a different map. There does not seem to be a direct interface between the two.

I have found John's narrative interesting to write as he has been able to explain his learning and development processes more explicitly than some of the other participants. Some of this has been closely connected with prior research study into language acquisition and its subsequent use across all areas of his professional practice. But there has been continuous reflection and conscious awareness of his continuing progress with his development, not the least of which has been the amalgamation of affective processes into his practice to build successful relationships with clients and students alike.

I designed the end part of the conversation with participants to enable me to triangulate what they had described to me earlier about their own learning experience. The focus is on what they would like to see in a contemporary education setting and why. John was a good example as he has had a lot of teaching experience, firstly in language and subsequently in business education.

If I had a free hand with education, I would give them tasks. Once you give them a task it draws upon their knowledge about subject matter but also about experience and about their reasons to relate one to the other. It has multiple purposes, and we need to decide in education whether students just understand some categories or that encourage some way of thinking and doing. I feel if we could start with examples in business and real life then hopefully, they are better able to deal with the abstract knowledge definitions that categorise them.

Certainly, in the education I do, I am trying to build people who came to learn about business and who either want to be instrumental or become integrated into our society. It is multi-purpose teaching, not just book learning and this is all you need to do to pass a paper.

I would start with giving them a moral case study. By giving them a case study, I am using their knowledge of the real world before they started their course; I tap into their common sense they already have about say ethics. They learn the consequences of that from their family interactions and with their peers. And then we try to find the solutions to the case study from these prior linkages. By coming at these solutions from drawing on their sub conscious experience, they are learning the things we want them to be able to do.

By creating a problem with a case study, I am providing them with a acquisition learning pathway that links their past to where I want to take them. I have also utilised this process a lot in language teaching too. I do not start a lesson with grammar and vocabulary but i give them a story to motivate them. Or I initiate discussions that can be provocative and then they will be motivated to give you an answer.

The difficulty of learning categories and definitions from books and PowerPoints first, is that they are abstract. Take for example the definitions that nouns are words that give you an idea about objects and verbs show you movement; these are complex definitions of those items and whilst you can memorise them you have no idea about what they mean really. It is simply mimicry memorisation. Then what happens when we try to apply them in the real world? You do not see the connection to something as a whole, you cannot be competent by simply undertaking a mimicry memorisation process. But, if you give them a case study, they can understand the case as a story much better than teaching them specific categories and their definitions. Then they are able to see the definitions and categories in context.

To assess their proficiency growth, I create tests to see what they got through experience. But if we teach them learning in separate categories and try to get them to describe those things that will provide different answers.

Perhaps we should do the same as when we are teaching; there would be questions to see what they acquired from a solution to a problem. Maybe that could be 50% of the marks. And, then we could test individual definitions of individual parameters, for the balance.

I believe this final area of discussion clarified John's dualistic position very well. It has allowed me to be more insightful about the holistic development processes I have conceived in which learning develops from a big picture and not simply its parts.

I asked John at the end of the three interviews what he felt he had gained from our discussions, and he was generous in his reply:

I have reflected on all of this for much of my adult life; how I learn and experience things, what are my joys, my frustrations and I was delighted to find out about your holistic perspectives. Now I can move much better with my developmental journey.

I spoke about that with my children as they have similar views because of their experiences and their realisation about them. My elder son is more of an analytical type of problem solver; sometimes he does trial and error, sometimes he does different things. The younger is more synthetic; he can see an immediate solution without thinking about it but if he lacks an element subconsciously, he will not be able to arrive at a solution.

When they were little, I gave them a box, you know these boxes, small but different sizes where you can put one into the other. The elder one took his time and through trial and error learned and then did it perfectly. My younger boy could not do it and he became angry and disappointed. Then one day, it came to him, and he was able to do it immediately.

That is why my holistic teaching approach may have its limitations that need to be identified. I have not thought much about their possible implications for education but maybe you can investigate and find solutions for that. My revelations about the universal duality of things have been my guide and has helped me through much of my adulthood.

You once asked me when I would reach 50 years work experience because of your recent milestone. I did not tell you I had had significant gaps in my employment due to my family and I coming to NZ as refugees after long years of us trying to escape the misery of living through a bitter war in Yugoslavia and we were lucky to have survived. We came out of the war with a huge loss of self-esteem and no possessions, and I had long gaps in my employment finding a new way to live. Luckily, we are here now, and we are blessed by every day that is given to us. So, that is my final word.

Jean Clarke's story

Jean Clarke was one of my earlier interviewees where I focussed on identifying her experiential learning history more than a wider understanding of her development processes. However, there are still recorded linkages which support the wider role of such learning within other problem solving and research areas. These help to support the linkages that are proposed in the resultant developmental framework of vocational practice I identified for myself.

Jean was brought by her parents to New Zealand at the age of eight from Holland. They came to join relatives in New Zealand following a harrowing time in Europe during the second world war. They sought a safer and calmer environment here to bring up their family. Jean was the second of four sisters and she and her next sister became a fearless duo at handling themselves in a totally unfamiliar situation. Jean learnt to speak good English within the first two years of being in New Zealand and this was aided by a prodigious reading capability in which she read all the books in her school library. This ability to absorb information through reading has never left her and is still one of the main ways she acquires her knowledge, coupled with her ability to ask questions.

This meant that though she was put in a lower primary class for a couple of terms she quickly made-up ground and within a short period of time was one of the top performing students and regularly asked by the teacher to help coach the slower students or to manage the class when the teacher principal needed to leave the room for a few minutes. This love of learning coupled with her confidence, quickly shaped into a desire to become a teacher herself when she grew up. She spoke about it like this:

When I came to this country one of the things that I learnt very quickly was to observe and to ask questions and stand up for myself which was unusual because most of my education in New Zealand was in Catholic schools where most of my classmates were children from Irish working families; the nuns were Irish on the whole and we were European Catholics who had come from quite a different background. So, I was always ready to speak up. I learnt very early, but the time I was 10 or 11 I was a very confident public speaker. So, I think that helped. So, I was frequently put in positions where who is going to speak for the class? OK Jean will, because they knew that I would not freeze up; I could do it. So, I learnt to do that. And I used to ask the questions if something did not sound right; I'd say excuse me but that doesn't

make sense and they would get irritated, but they'd put it down to the fact that I didn't know how to behave.

As far back as I can remember I have always wanted to be a teacher. Secondary teaching did not interest me in the least; I wanted to teach at primary school. Basically, High School was getting ready for Teacher's College; I had no idea when I was interviewed at the Teacher's College that at that point there was no provision for a foreign national to enter this programme. I heard years later that they had had to change the regulations to allow me to start. I entered at the time when New Zealand primary training was transitioning from two to three-year courses. I was in the first of the three-year courses at Christchurch and this meant that the whole course had been re-written; it was very heavy; it was full on and we had some extraordinary lecturers. You know we got what they had missed out on. I had a superb three years of training. All my practicums were at the senior end of the school with either ten-year olds or above. So, my focus was to go into an intermediate school.

Her career in teaching did not quite turn out like that but instead took several interesting turns. In part this was due to her moving to Wellington and later Auckland as part of her husband's career moves. She characterised it as:

I moved because my husband was moving and learnt very quickly that while I had no path, I was one of the few people who was prepared to jump sideways without too much terror of doing something stupid. If it did not work out, it did not work out; nobody died type of thing.

Thus, began a series of interesting career moves and further study that led her to become the principal of the then largest Private Training Enterprise in New Zealand with six hundred plus international students and where I met her and became her academic director. Along the way, this included completing Bachelor and Masters' degrees from Massey and Auckland, the youngest NZEI representative in New Zealand representing teachers' interests in Auckland and Northland. She also set up and successfully ran the Continuing Education programme at Auckland University for several years.

What helped her achieve this significant development? Her sense of capability and its development was one such process:

I think capability is like say a six-year-old learning to make their bed for a while from the first time when it is a dog's breakfast to when they have been

doing it 25 times and they get pretty good at it or say you work in a five-star hotel you would expect to someone to have a much better capability in terms of an acquired skill at that level.

Then we moved onto the sort of capabilities that helped her:

One of the extraordinary lectures I had at Teacher's College was the art of asking questions, to which you either already knew the answer or you knew the boundaries where the answer should come from; or if there was no answer to be had, or you knew the answer was just to confirm your best or worst suspicions. I learnt how to question and how to delve into things.

This would include characteristics concerning confidence in your delivery mode, whether it's one-on-one or in front of a group; or the confidence to deliver supporting skills so that if part of the delivery requires writing you can write in a coherent logical manner and if you don't know you have a capability of finding out; a capability of asking questions or being open about you being stuck.

For example, my printer would not work this morning. I had enough knowledge to know shouting at it was not going to help; so, I checked that it was properly plugged in, that the wifi was on and then I went through the settings until I found that there were noises coming from it and found that some paper had got stuck.

I acquired these capabilities through combinations really, reading, asking questions, training or background in really understanding an investigative process.

When I became principal at, at the PTE, there were 155 students. And every week we got 30 more students and I moved that school; I moved a third of that school every six weeks to another building How did I do that? Well, by the time I arrived in this country I had moved as a child 13 times internationally.

I knew how to pack up a building and get it from A to B. Now nobody taught me that, but I learnt it from watching my parents packing and unpacking a house. I was like a sponge, I am very observant; I watch I absorb, I remember, and I can competently do it again. So, this is a process.

In the first six months in my job as principal, we had to apply for the Code of Practice and since that was the first time, I just sat there and wrote it because previously I had access to Government processes and regulations with NZEI. Similarly, I did an entire quality management system definition in six weeks, it had to go on a certain date. I learnt deadlines. When we moved into our final building it was all offices, so it had to have rooms planned. I was able to do that because I did art, I knew about how buildings could be laid out. At the same time, when I was an NZEI Field Officer the office next door was an architectural office, so every so often they would show me what their plans were for a building and I would ask them dumb questions as to why the kitchen had been placed so far from the boardroom and that refreshments would be cold by the time they had arrived. And at one stage, they were testing out photocopiers, and they had nowhere in their office to locate them. So, we did a deal, where they were being tested for a month each and I had them all in my office and could use them free. So, you know people say to me, "how do you know how photocopiers work?" I had the opportunity to test a range of them over several months. So, a lot of things I learnt was because I was in the right place at the right time, and I took advantage of the circumstances to learn about them.

A significant part of the interview discussed her understanding of her own learning and associated processes.

I am a good learner because I can read well. I have good process thinking skills in terms of taking something from over here from the left field and the right field and applying that to the new learning and integrating that. I am good at exploring you know when I am learning a new concept, does it work with this and asking the next set of questions My ability to synthesise my learning into diverse fields and creatively apply it is probably quite different to many other people. I put that down to the fact that I have always operated in two languages and two cultures.

Regarding other processes, I look at the questions being asked, I look at my diverse knowledge, I look the areas that needs to be examined or defined more clearly. I will do reading or research to find out what it is I want to know more about and then I try and create a picture that I can explain to myself in relatively logical terms.

If it is doing something that I have not done before, it's basically read the instruction manual. So, for example, I have a new kitchen and you know the oven and the tops I am learning to use again; I read the instruction manual, work it out and if it does not work why doesn't it work? Then when it does work remember what you did or write it down and practise it.

I would say most of my learning is more intuitive; I follow a set of instructions but intuitively it is about understanding what it should look like at the end and how it goes and how it ought to look. I am going from the known towards the unknown but does the unknown meet the meet the picture of what I want?

If it does not turn out as I expect then I review what I have not done. Or what have I not done long enough or what do I need to do to fill the gap? So, for example, if it is burnt pull it out, if it has not been roasted or tanned long enough, leave it in there a bit longer. If I am writing on a computer and there are some gaps, I will print it off and then look at it as it is easier for me to identify what the gaps are and then fill them in.

As the interview progressed it became clear that Jean had a sophisticated and well understood comprehension of her learning process and its subordinate processes. This I have subsequently identified in a cycle of developmental practice. She naturally and effortlessly moves between the common processes of experiential learning, problem solving and research without separating them as such. This is because she regards them as a holistic whole. When she tackles something new, she talks about it in an analogous way of needing to see something as a whole and then breaking it down into parts to build sequential stages of activity.

Let us say for example, this client that I have been working with in relation to getting a programme approval through is in the phase of "My God all this stuff has to be done?", It is like a 1,000-piece jigsaw puzzle and how do I get all the pieces of the jigsaw to fit? If I have got something already, I tend to break it down into manageable parts.

Even If it is something that I absolutely know nothing about, then I still use the same process. Here is the picture, which bit can I look at first to get an understanding of it, what are the component parts of this idea that I might want to explore, so I can manage it?

To progress it further, it is the same as the jigsaw puzzle idea. I kind of do the outline and think what it looks like and then I think all these bits and pieces

belong to this idea or part that I am exploring and then I re-arrange the pieces. Within a couple of days, I begin to realise that the component parts that I have thought about are not going to fit, or I do not have all the parts or some of the parts are going to have to be modified. So, I try and make it so that the parts are independent of each other, but they can be easily moved around until there is a cohesion to it.

Another analogy she uses for her learning process is that of narrative:

I am also really into a kind of narrative approach. What is the story that is being told, what is the story that needs to be told, who are the characters involved in the story, and then how does it all fit together? How is the solution able to be done and what is the next step that covers all the characters in the narrative?

This active approach to learning is also supported by sub processes of reflection, both conscious and subconscious, intuition again both conscious and subconscious, problem solving, analysis, synthesis and evaluation all being used as needed.

Talking about reflection first:

Sometimes the reflection is very active; usually my active reflection takes place when I am walking on my own. Now and again, it happens when I am driving and that is scary because I suddenly realise, I am at my destination, and I have no idea how I got there. I think reflection is really an integral part of my work. I have been working with problem solving processes for many years and I must reflect on how I am going to deal with difficult and frequently sensitive situations.

For me conscious reflection is looking at what has happened or looking at the situation, looking at the story as I know it, then looking at what the meaning is, or what has that story created and then how that can be further developed in a positive manner.

What it is that I want to know or complete or find out? And when I have got what I want or I am at the stage where I can rest it, I need to just let it go, so that the next time I approach it I can move on with it.

Because, I have let it all bubble away, I can then come up with "oh I haven't thought of that" "oh yes that's why" and I kind of put it back into part of my

practice, my thinking, my world view, the way I change and the way I do things differently.

Passive reflection followed on from our last meeting where we agreed that these were dealing with hard questions where I had no idea where it was going, and I put it to one side. I realised I had things that I needed to think about and every so often I would realise that some ideas started to emerge in a narrative way. Some of my passive reflection is done when I am ironing. I find it a wonderful way for reflecting passively, because you are working with your hands on something familiar, but at the same time I am passively sorting through something.

The use of intuition is another integral part of her practice:

At this stage it is incredibly difficult to be specific as so much of what you do automatically or intuitively is based on. You know the 10,000 plus hours of experience effect. So, for example, if somebody comes to me with a particular issue then I know bang, bang, bang this is the easiest way to solve it or here are three or so alternatives. Or we can solve it this way, but these are the consequences. And people look at me and say "how did you know what to do?" Well, it is because I have done some version of that at least 25 times previously.

I think there is a huge component of my prior experience that guides my intuition. Knowing I know, knowing what is going to work or not work.

As a highly experienced educator I would say nine times out of ten that it is based on confidence from the past that it's going to work. Or, in areas where I'm less experienced I would say a lot of it is based on does it matter if it fails?

My intuitive process has been very strongly developed, probably far stronger than most, because from the time I was two, I have lived in other cultures. So, I must sense what's going on in what space, what can I do and why are other people doing these things?

When I have worked with people for any length of time, one of the things that I used to do as a leader is to make sure I set eyes on every person that worked with me in the morning. Because, I would only have to be able to see them when they walked in the door to tell whether they were in a good place or not.

Jean has integrated her learning and problem-solving processes. Analysis, synthesis evaluation and reflection all go hand in hand to both make sense of and to progress with what her current need to develop or achieve is:

If I suspect that something might not work, I will give it a go and if it does not work then I analyse why did not it work, what was the issue, what should I have done and then go back to how it should have been done at the beginning. Usually, I can very clearly identify why it did not work.

I would describe evaluation as a constant realigning of ideas, concepts or questions so that when I'm looking at a situation, is this really the road that I really want to go down or is this the road that's going to get me to fit other parts together or am I going down a rat hole?

If I sum up my learning capability, I think I would have to be at the high end of a skilled independent learner.

One, I think I have the confidence and the realisation that if I need to find out something or need to gain some knowledge, understanding or skills in an area, I need to be able to identify the gap; then how I am going to go about filling the gap; finding out what I need to do and then working my way through the process.

That process might include reading, finding information, talking to people, having a few practice runs, getting someone else to critique it, or going out looking at quality examples and then replicating it. And I can do that independently. And, then having the interest and maintaining persistence to close any gaps.

We moved on to talking about the qualities needed in modern education system to re-create the experiences Jean has had and now understands intimately.

Well, you need the fundamentals like how to read and write, do maths, to be disciplined and how to deal with others. And they can have some control over their learning and then to give them the space and the time that some of our generation see as playing but manipulating equipment or whatever until they have their 'aha' moment. Now, that is a different learning, that requires space; it does not require a desk and a chair it requires movement, and it requires time to have conversations and to ask questions. And it requires time and space and quietness to do the thinking and the doing. And it requires time, space, and opportunity to make mistakes. What was it that

Winston Churchill said? "The right to fail is not failure, it is the opportunity to try again".

It needs practice. You must do the hard yards. you must have played with it, you must have made the mistakes, you must have tried it in different ways, you have had to think about it, you have had to talk about it, until it's embedded; it's basically the 10,000 hours of practice concept. I believe a contemporary programme needs to be designed with five things. The five things include what it is that you already know, what the end point is, understanding the steps that must be taken, practising by identifying and fixing any errors and then practise and practise until you have reached the standard of performance required.

And when I see students, who I have worked with achieve a programme like this they look back at who they were at the beginning, and they see their progress and they have become disciplined, worthwhile young adults. And irrespective of what they tackle afterwards their base intrinsic reliability, validity, personal integrity has been put in place.

Because in the end irrespective of what the knowledge is, irrespective of what the skills base is, irrespective of what, what it is that you end up with, whether you are an engineer, a teacher, a nurse, a doctor or a vet or a supermarket cashier or a bag packer it is reliability, validity and integrity that must have to form the basis of the process.

If you had asked me that when we started these interviews, I would never have thought of that but what I have come to realise is that these fundamental values are paramount, and the skills and the knowledge are actually the by-product of that.

To sum this all up, the first thing is you can bring a horse to water, but you cannot force it to drink. The teacher may be the expert in the group, but basically the methodology of standing and delivering knowledge where the students are passive, they write what you say down may get basic knowledge to large numbers, but does it impact a learner, change the way the learner behaves or change the way a learner thinks? I do not think so.

What I know now at all levels of education is that you might still introduce a topic or have a conversation, but then you intersperse this with a greater amount of time of interactive learner activity of some kind, that gives them

the ability to play with the knowledge that has just been delivered. You give them the information they need, and then you give them something to do or to act or to interact with each other to deliver understanding solving some kind of problem. The research by Hattie (2012) shows that that is the most effective way of learning.

The important outcome is the journey you have made, the actual journey of the learning, the learning product, the skills used and the increase in confidence of writing, researching, or logically articulating complicated processes. The ability to listen, the ability to ask questions the ability to interpret complex reading materials or to think of an idea in one context and transfer that idea into another context.

As I look back on this series of interviews now, I realise that despite my focus being on learning, Jean has provided very interesting evidence of the processes by which learning and general practice are developed. She has included the significance of experiential learning, problem solving and research naturally in her narrative. These are relevant and significant to practice and continuing development for herself and others.

Aside: An important realisation for me is that by doing something, you are already in a different place from where you started. So, you have now scoped a problem or learning need and that helps you progressively refine what you do to realise a practical solution.

Geoff Smith's story

Geoff has come a long way from both his roots in Northern England and his current station in life as a project director and business owner. This journey reflects the story of many others like him, who have come from humble beginnings but through determination and effort have been very successful in building their current lives. His parents were publicans and moved quite a lot in his early days. This bred self-reliance and Geoff was already used to hard work and paid work by his early teens. School was less of a focus than outside activities. One of these was his musical ability and playing in an important brass band. He was also good with his hands and at the school leaving stage faced a choice of joining the armed services to play in a band or to undertake an apprenticeship. In either case it meant leaving home and I am trying to recall whether he tried both, but what he settled on was a carpenter joiner apprenticeship working with Leeds City Council.

He made good progress with this combining practical work with theoretical study at Leeds Technical College. At that time, apprenticeships were mainly practical with paid day release to attend study. He followed appropriate City and Guild programmes not only gaining these to the necessary standard but progressing onto the top licentiate level of City and Guilds. This was followed by more academic programmes at a technical and para-professional level, qualifying with a Higher National Diploma in Construction Management.

His practical achievements mirrored his academic achievements so that by his early 20's he was already a foreman to trade teams restoring council houses and then later leading shop fitout teams for a private company. Within a short time, this led him into setting up his own shop fitout business and his experience of project and construction management began. His self-confidence both with his own team and others shortly led him to undertake a refurbishment project of branches of a major bank in the North of England that lasted several months. And so his meteoric career rise continued in this fashion for several years from one project to another culminating in being part of the Terminal 5 project at London Heathrow.

A few years later after visiting relatives in New Zealand Geoff was attracted to the idea of bringing up his young family here and joined a project management company in Auckland as their project director. He and his team looked after major projects like the development of the new Telcom Head Office in Auckland and several schools for the Ministry of Education.

When significant changes in the New Zealand construction industry occurred, at the time of the global financial crisis and the Christchurch earthquakes, this led Geoff to set up his own project management company in Christchurch. Later he set up a housing company constructing factory-built homes. Change has continued and this finds him today consulting on projects for his own and other clients. An important thread in this story lies with his resilience and ability to work hard, succeed and if things change to start again.

So, what are some of the competencies he has used to come this far? Firstly, he has understood how to relate and communicate with others as both a leader and with clients. Secondly, he has gained a great deal of experience both as an employee and business owner, operating within the construction industry here and the UK on a range of projects in which his original field of training is one of many. He has learnt from both his successes and failures to be confident in what he is doing and to know what he needs from others to achieve successful outcomes. This arises from the nature of project work, which is both cyclical and iterative, and the extension of an organised building discipline from house renovation to large industrial buildings and schools. He has largely been unconscious of his own professional development until I started to explore that with him in this series of interviews. And together we discovered some useful findings.

His professional development has principally been gained from personal experience which has staircased from undertaking carpentry and joinery tasks, to related disciplines, then combining and managing others undertaking these tasks, to planning and managing projects based on these tasks.

I think the big thing that stands out for me is you have a set of skills and you have gained some knowledge and experience from working in the sector and then for whatever reason you find yourself working in a new sector and you can find that those skill sets can be transferred without any formal training which allows you to diversify from one sector to another.

This has subsequently extended to undertaking projects for others or finding clients who need construction projects done. More recently this meant building and marketing a business based on construction projects as the product and of undertaking the business and financial management associated with that.

If we consider the processes that have wider applicability to this study, a key underpinning capability of all of these activities has been his experience with problem solving:

As a project manager whilst you are there to manage a project you also need to understand the fundamentals of that project. If a designer comes along with a particular design and says this is what I want built and you then you look at the design and you say that cannot be built, then you offer back an alternative solution which allows to reach the same outcome but with a slight change to the design. Likewise, if you have a design you think works and you start constructing it and then you find something does not quite fit, it is about coming up with alternative product selection or construction methodology which gets around the problem.

As a result, there is learning derived from the problems that has a lot of times been unconscious:

At the time, it was unconscious, and I believe that is so purely because life and work were so busy that I was on the journey, or the wave and I did not stop to think about what was going on. I was just so busy and I either overcame the challenges that presented themselves or it beat me in which case I registered the mistake and try not to allow it to happen again. It has only been in the last four or five years discussing this sort of thing with you that I realised I was not conscious of what I was learning. It has only been in retrospect that I understood that all my learning was 99% subconscious learning.

At the same time reflection has been unconscious too.

I think now is that you have both a conscious and a subconscious process working in parallel all the time. I can sit there contemplating an issue for half an hour trying to rack my brains, then forget about it, go in for a cup of tea and suddenly, my brain and memory throws something up and I go why did not I think of that earlier. So, whilst I am doing it consciously, I think there is a subconscious process going on too. I do not understand how that works, but sometimes the harder you think, the further away the answer becomes.

The benefit of becoming conscious of my learning now is understanding the way in which I learn as an individual I do not know whether younger people stop to reflect on their career or education, but I never stopped to reflect on my career and my skill base until I ended up meeting you and discussing it because it is what you specialise in. Until analysing it now, I was totally oblivious of it and I was just on that fast-track career.

He sees both intuition and 'aha' reflection moments as essentially coming from memory of prior experiences and recognises from our interview conversation that a lot of practice is built on embodied learning which allows practice of something you are proficient at to flow:

My reflection and intuition pretty much present themselves in the same way and it is purely a mind's eye thing when something just pops into your head and it tells you quietly here is something that may be of use to solve a problem. So, I see it as a memory that comes forward.

Here is the way he expresses embodied learning:

Well, to be able to do something subconsciously means whilst I am still aware that I am doing it, it becomes more fluid and the thought process just flows; I start a task and whilst it might be made up from many smaller tasks, each one follows the next one and I do not have to call it up and think about it.

Whilst Geoff has not proceeded beyond a para-professional qualification in his youth he has worked with many professionals who have. He finds that in his current leadership and management role, the benefits of a degree-led or practical education are much the same. Earlier in his project management career he found his practical experience provided an edge in terms of solving technical and project problems:

I think that if you have come out of university with one or more degrees in a specialised area, then by default you have been exposed in that learning environment to understand the profession in which you are going to work within. But I think the subconscious learning and the experience is then only gained once that person gets out of fulltime education and into full time employment.

if I was to compare myself at my business partners age back then, who has a degree, I was far more knowledgeable about construction, construction management, construction and project management than he is right now.

At his current level of experience and awareness of his own field, he also feels that he could benefit from another period of academic input. Not to tell him more about what he already knows but to expose himself to the more strategic aspects of contemporary business practice. This is tempered by the view that the academic process needs to proceed hand in hand with practice so that the relevance of the learning is embedded, in the same way as in his technical career.

He feels that by and large the education process at the start of life is still relevant:

I think personally that education and the early formative years, ie 5 to 12 years can pretty much stay the same; from 12 through to 17 or 18 years, I think there's too much emphasis on kids acquiring a knowledge based qualification with too much pressure on them to learn, too much too soon and not enough time spent on life skills. Thereafter, from 18, 19 onwards whether you choose university or vocational education, I would not want to change it.

In the case of a professional or technical career, he thinks that a degree qualification could be improved by the addition of more practical experience than there was before:

I think the degree model should include more placement type work where you are going out under placement for work for a period of time as part of that degree.

To sum up, Geoff has had an extremely successful career and it is only now at the top level of his field, where the emphasis has shifted to strategic business development, is there a need to return to formal education. The awareness of his own learning and development processes has helped him understand how he has grown this far. In the same way, this awareness can amplify any other learning he undertakes in linking it to the extensive experience he already has, and the means to work with it in a new way.

I recognise as the writer of this story that this conscious self-awareness of highly experienced people, of their learning and associated processes, is an important factor for their future self-development, whether they pursue further formal education or not. The statement above was made before I made the participant aware of the developmental framework of practice I had identified.

Charles Hulme's story

Charles Hulme and I came to know one another in more recent times, although I may have met him previously some years ago at a job interview in Unitec. This time we did connect, not because we worked with one another directly, but that he was a person who liked to know what was going on in my current workplace and we fell into conversation casually and I was attracted by his blunt Northern UK sense of humour.

His story and life journey however proved to be a very interesting one and clearly demonstrated how success in life can arise from both determination and a fear of not failing. This has led him to significant successes within international businesses and more recently Australian and New Zealand polytechnics and universities.

Charles was born into a humble background in Northern England and was adopted at six months of age by a childless couple, a railway wagon craftsman and his wife who worked as a school dinner lady.

Times were tough and due to job changes and job losses his parents had to spend a period back with parents in a state house before his father brought a house. This was much to the chagrin of friends and neighbours, who thought they were getting above their station in life. Charles was told he was privileged and understood from a young age that if he was going to succeed in life it had to come from his own efforts. A major gift his adopted mother provided him with was a love of reading and this together with drive and natural talent gave him success at primary school, transferring to a grammar secondary education and onwards. He was the first in his family to attend a grammar school and first from his primary school to go onto grammar school. It was his understanding that money was a pathway to a more desirable future that had him working and excelling in paid work from his early teens. He was then noticed by business owners and started socialising with such people from this age, as he was very used to being around adults.

Instead of going onto university as a natural progression from school, he studied full time at college to gain a Higher National Diploma of Business Studies alongside a range of part-time manual and part-time sales in retail and steel. He then got into a growth area of business system sales. The years of working, socialising, and playing sport with a huge range of people paid off big time. He was able to purchase and pay off his first house within 18 months and to continuously upgrade over the next few years till he was living in a manor house. He was able to retire for the first time at 26 years of age.

What were the characteristics of that success?

I do not think I have ever had a very high level of technical skill. I think the skill I have is with people. And I was no great whizz with technology even though I was selling computers and computer stuff. I understood them because I could just concentrate on that narrow field of knowledge.

But I have always been good with people. And how to manage people and how to treat them so that they felt that they were a part of what was happening rather than just brought in like troops. The first supervisory job I had was when I was 15 on the farm where there was a whole team of school kids, and I ran that team.

I used to drive 1,000 miles a week for years and years. All over the UK. While doing that, I listened to so much debate and so much discussion and so many documentary programmes and daft quiz programmes. I was pretty good at trivia, and I've got a memory that just locks things in; I don't have to learn things.

I could not fail. I could not afford to fail. There was no safety net.

I used a lot of common sense. Trying to work out what is significant, what is important, what matters and then getting rid of chaff because otherwise your brain gets bogged down.

I think the biggest surprise I had was when I did the strategy exams in my MSc; I came out with straight 'A's and I'd never really thought of myself as a strategist, but I'd always had this very clear idea of where I wanted to be.

I suppose I am like a sponge. I have always tried to work with people who I can learn from. I would work well within organisations that I can learn from and where I would find individuals I could work with. And to a large extent because I am empathic; I listen; because I understand, because I understand I make the right decisions.

This career progress continued as during his first retirement he decided to undertake a teaching degree. Before he had finished this he was undertaking a MSc master's in Management. Due to his prior sales success, he was a marked man, and several companies came calling for his services. This resulted in him working for several large and small companies including international ones like BASF in Germany. Here he quickly became responsible for large accounts with organisations like Barclays Bank

and the British government, as a preferred supplier. This springboarded him to higher levels of the organisation from being an accounts manager to a regional manager managing sales and telesales teams.

Then, in 1993, a new move to an academic career in New Zealand was made.

I think I picked up on what are sometimes called mega trends. The reason why I moved to New Zealand in 1993 was because in my head the 21st century was always going to belong to Asia. It was always in my head that the 21st century belonged to Asia, and I have always liked Asian people; I've always had huge respect for the Chinese because they're so hard working and, and I've never really liked America to be perfectly honest. I knew that Europe was dying, and Brexit is one more death throw as far as I can see. As I do not like living in big cities, I had the choice of either going and living on my farm or another one in either Australia or New Zealand. And New Zealand appealed much more.

When I came here, never been before, to have a look around and I had a job by morning tea on the Monday having got here on Saturday afternoon. But there was never a fallback plan if this had not worked. I remember my job at an Auckland Polytechnic was to head up the marketing academic group. And they said can you teach relationship marketing, I had not a clue what it was, and they gave me the textbook and I read it on the plane going home, and I thought well I have been doing this for the last 20 years, I just didn't realise it was called relationship marketing. So, there was never a hesitation.

And a further stellar career ensued; Head of Department, then Head of School as student numbers tripled; a move to a University in Australia as a lecturer: Head of Department again within a few months and after completing his PhD, becoming Associate Dean of Research for a few years and graduating more PHDs in this period than in the university's entire prior history. Finally assisting with a strategic reorganisation at another Australian University.

Subsequently he has retired back to New Zealand and continues to provide consultancy advice to tertiary institutions, design graduate and post graduate courses and deliver an international strategy MBA course to an extra mural programme in Vietnam.

He has achieved this career success and progression in several ways:

It was all about relationships. I remember because I was based in Manchester at first and head office was down in London and I had the all the distributors for the north of England into Scotland, so it was a huge area to cover. I built very strong relationships with the senior management of the distributors and worked very hard to agree joint targets and then help them achieve those targets. If the phone rang, I always answered, because I had one customer who was a Muslim and he phoned on a Saturday, but I always picked the phone up and I always sorted it out because that was what my clients expected. I always made that personal commitment.

There was also raw ambition. You know not a desire to succeed but an absolute necessity to succeed.

I have got a string of qualifications at undergraduate and postgraduate level; I would doubt whether they comprise more than 2% of what I know and do. It may have pointed me in the right direction on how to learn, but it is out here in the real world that you do your learning.

I think one of my principal values is that of integrity. If I say I am going to do something, I will do it, or I will die on my sword trying to make it happen. You know I do not make false promises to push myself ahead and I always treat people as equals. And I expect to be treated as an equal as well.

I have developed my professional capabilities because I am very good at planning. And, based on those planning skills, I am an effective decision maker. This is because I go through a process. I must articulate my thoughts a lot. And I must talk to people about my thoughts as a way to committing to a plan.

My style has always been to talk to people about my ideas, so to have a team meeting, and I mean a team meeting not a group meeting. So, I have always spent a lot of time with people explaining where I am at and explaining where I would like to take things. In the Australian University where I found a shambles, I came up with the idea of delighted staff and delighted students which everybody thought was rubbish, but it was the only thing that I could think of that would bring everybody together to identify some sort of achievable common goal. When I talked to them, they come back to me and would say "Well that is a daft idea because of this", then I reflect that, "Yeah, you're probably right, OK so we'll change that." I do not just say "Right that's it, these are the six things we are doing full stop." By

vocalising it, it helps me clarify my own thinking and then I also get the feedback I need.

The one thing that I seem to have always engaged in which has involved having to learn is fixing things. My adopted father was a bit of a DIY guy and most of the time at weekends were spent doing his house up. So, when I started buying houses, I worked out what needed doing on them and I also worked out what I could and could not do. Ever since that has spilt over into my roles working for companies. I suddenly realised that most of the organisations I went to needed fixing. They are not well run. I do not know how many jobs I have had, well into double figures, but there's probably only been four or five decent managers in all those years. They do not seem to spot what is wrong and what needs fixing.

I think step one of problem solving is observation. Observing that something clearly is not going to work. And then, why has it got like that, what can be done about it, and is it within my realm of influence, not necessarily my expertise to do something about it? If it was a big problem, I would go about finding who could make decisions, who's got the money, who cares and sometimes you can, but they don't care, so you leave it alone as otherwise it would be a fruitless source of frustration. When it was smaller problems, I would use experimentation or make models but that would arise from prior learning.

There are a few significant cognitive processes that have supported Charles's ability to learn, problem solve and successfully develop his professionalism throughout his life. These include active and passive reflection, intuition, and making use of light bulb or 'aha' moments and realisations from subconscious acts of learning. These are described by him as follows:

Reflection is more active. I think somehow intuition comes when I am fast asleep. Where reflection can come is when I am sitting on the ferry going home. I will go through an issue specifically and sort of deconstruct it. Oddly enough these last few years I have got this ability and I can just think of an issue, go to sleep and I wake up and it is solved, and I don't know how's that happened. It is like some sort of synapses have linked up somewhere. And, that is really good because before I used to sit and keep wrestling with it and trying to model it.

It happened first with my PhD as well because I felt out of my depth and then I remember having this sort of breakthrough. I was driving back from Brisbane to Rockhampton, six hours of roadkill and gum trees, and it came to me I could do it. It was a wonderful moment, and it was to write up 12 case studies as a narrative to explain my data. Up till this point, I was wracking my brain, and nothing seemed to work. And then subsequently, when I was swimming, I continued making similar connections. It is not really serendipity; I think it is just joining the mental boxes up. I check it and test it, but yes, I trust it.

Whilst this description of subconscious reflection above came unbidden, he said very similar things about 'aha' or lightbulb moments when I raised the matter later, so they have been a feature for most of his life:

They came first when I had a phase where a lot of things were going on for me; I was thinking of a lot of possibilities and a lot of opportunities I learnt how to capture it because I would wake up at three o'clock in the morning and my mind was nagging me to wake up and write my ideas down. I used to use old computer punch cards and then I could go straight back to sleep knowing I had got it down on paper. When I used to drive 1,000 miles a week all over the UK, I again had some punch cards on the passenger seat, so if I came up with something cruising up the motorway or driving over the moors, suddenly several mentally unrelated boxes would join up to create a lightbulb moment.

I do not know if I made conscious sense of it at that time, but what I concluded recently was I no longer worry about solutions, because I know if I just leave my head to sort them out it will come out with a good answer. I know that if I send that idea off into deep memory, it will come back in the next couple of days with a light bulb moment which is really helpful.

An important point about the last statement is that it has moved from a passive acceptance of the process to actively priming the process. This is what I have found, independently, in the past few years. This is a significant cognitive contribution to creativity and problem solving.

I think intuition must come from experience a bit. Also, I think it also comes from a deliberate learning process. I would say less than a third of my decisions would be intuitively based. Some of the entrepreneurial guys I used

to work with in the UK for a long time used to call intuition, the smell factor and looking at the financial factors in a business deal they would either say "Yeah that smells right or not." It is part of what entrepreneurs do in terms of assessing, evaluating, and managing risk. They are not gamblers.

Most of Charles's unconscious learning arises from his childhood:

Obviously, an early one was the reading thing. I remember that very, very specifically; it was a pivot point in terms of developing my language and vocabulary capability.

Another thing I realise talking about this now is I developed two coping strategies for getting bullied when I was about 7 years of age. One was a sense of humour, so I could turn a harsh word or make somebody look silly. And the other one was to fight.

Charles' main careers have made him familiar with both the development aims, processes and outcomes of education and how these are applied in the real world subsequently. He has his concerns about the motivations of the former compared with the needs of the latter as indicated in the following discussion:

There is the simplest of things. Everybody says it but nobody does it, and that is education should be student focussed and it isn't. And as soon as you try and make it so, the status quo stops it happening like NZQA and the teaching profession. And there are those in the Government that don't want it either because that is what they had, and they think that it is still OK in a totally different world. The status quo is good if you are a senior academic in the tertiary sector with secure tenure and a top-level salary. Why would you want to wreck that situation? And since this inertia is so powerful, it is very hard to get rid of it. I think artificial intelligence and technological development will sweep it away like a Tsunami very soon.

I hope what replaces it is something that is about developing student capabilities not simply knowledge because you only have to go to Google to get the knowledge. But, to develop a set of capabilities in students that help them achieve their full potential. They will not all be great, but they can all be the best that they can be. The sort of capabilities I have in mind include the ability to develop an enquiring mind and where you can do some enquiring. The capability to communicate effectively with people, other people; particularly who are different in that they look different, they have a different

religion or a different cultural background. Because what Trump is doing now with immigration is likely to devastate the high technology industry in California, because a lot of the people that work there now are no longer white Americans. Two of our cleverest guys here are from Iran.

I think technological competence is very important, and that is hard to keep up with as you and I both know. I was very technologically competent 30 years ago, but I am desperately scrambling you know to sort of keep some window open that I can continue to use it now.

Then there are areas like conceptual thinking, leadership, followership, and teamwork. Education does not really encourage students to work in teams as it complicates the assessment process. One local university, for example, has 2300 students on a compulsory year one course in team learning which are split up into about cohorts of a 100 and then into teams of 7 none of whom know anything about managing a team or how to get a team to work effectively. And none of them come with or are shown team working skills either at school or now but are dealing with a situation where most try to work on their own or want to let others do the work for them. They are not aware or used to the idea that other members of the team will stimulate their thinking and they can all get more out of it.

What I have taken from the above section is the need to use learning in a practical way which helps build real world capabilities and skills during the academic programme. It is not simply about knowing but being able to apply it in many different contexts.

Capability in language is also an important key. You read so you can access the language. If you do not have a decent vocabulary, if you do not understand what you are listening to, what you're hearing, you are lost. And the Sun newspaper; I think their publication is designed to suit a seven-to-eight-year reading age. I suppose all the class system is built into education as well. Forty per cent of the UK Houses of Parliament are still from two secondary schools Eton and Harrow, 75 years after the second world war. So, we need to have some sort of education that gets around that.

I do not think the way we learnt language was particularly good. I was good at language. I did English, French, German, Latin, and Greek. But all those hours spent on literature reading Cicero and reading Sophocles in the original Latin and the original Greek did not really help me speak the

language and did not really help me when I first went to France as an 18-year-old on a sister city exchange. I could not understand a word to start with. Luckily by the end of the week I could understand very well because I had had deep immersion basically staying with a family that did not speak any English. And, oddly enough, because I was with the brass band, there was a few guys that had been there during the second world war, and they had a bit of French and a lot of gestures. And these guys got by with a vocabulary of about 15 words basically.

This was very similar in my case except I went to France in my mid-thirties and within a couple of days all the vocabulary came back to me. Because I knew the grammar, I had the confidence to practice my speaking and my French friends were happy to help correct any minor mistakes. This would not have been the case at age 18, because by the later age my experience with English language allowed me to explain myself in many ways.

In terms of my own education, I can say with absolute certainty that I was bored to death with all of it except my PhD. And what was interesting about that was because I was able to devise my own questions. I was learning about something I wanted to learn about.

The following is good evidence of the effects of intrinsic motivation to learning:

What I wanted to look at was how new NZ migrants dealt with discrimination, particularly successful businesspeople. How they overcome that discrimination to be successful and I wanted to look at Indian, Chinese, and Jewish migrants. So, I started talking to Dalmatians who came over here to set up the wine industry. This was another interest of mine anyway as I had worked for a French company in Paris and a German company in Frankfurt and visited Spain a lot. So, I had become interested in wine over the years and I originally came to New Zealand to buy a vineyard, not to do academic work. I went talking to Dalmatian families because they would talk to me. And they would get their family archive out and show photographs of Grandad after he had been delivering milk all day out in the paddock at night with a jam jar with a candle planting vines and that sort of thing. And they established their business and route to market with a handshake with other Dalmatians so the whole supply chain worked through personal contacts and friends.

Charles's PhD study not only served an academic purpose, but more importantly served a personal purpose for something he wanted to achieve, by having a vineyard, which further supports the observation above.

Charles then reviewed what he would like to see in future education provision:

In terms of what might work better, I thought nobody knows the speed and the way technology is changing, the speed of artificial intelligence, the speed of robotic development, cyber security, all these things. I just let it go away in my head for probably a week and then I came back with the answer that the only people who might have some idea is the Ministry of Business, Innovation and Employment (MBIE) because they know in the macro situation of the employment market and what skills we have here, what skills we need here. So, I think all we can do is to build both an undergraduate and a postgraduate model where we have student capabilities as the core, you know understanding the world of work, leadership, technology and then the thing that gets you a job like being an effective communicator and conceptual thinking for building a career. So, we build a programme with an eight-course core, at level five, six and seven to give you a career. And, then you bolt on what MBIE says people are going to want. I know there is a huge shortage of construction management people, quantity surveyors and building inspectors. I know this because my daughter works for Auckland Council.

And so, the way to do it with the masters is there is a core which is about capabilities for managers and then there are specifics such as an Information System's major or an entrepreneurial major. If MBIE say we need more health sector managers or education sector managers, we can just plug in another four-course major which can be developed and accredited in six months. So, you could certainly use Government statistics to model where demand is coming from.

But 10 years ahead. I have not got a clue. But what I did think and again this was an intuitive thing, I knew when I was 15 that it was good to be a salesman because I can talk, and I can listen. Then you identify what the problem is that they have when clients are talking to you. Then you can present a solution of some sort. And that stood me very well, because I am a still a salesman basically. I sell curriculum research concepts these days, but I am basically a salesman. And my son-in-law who is a lot younger than I am,

is also a good salesman and he is a senior sales guy at Vero. And I thought probably by the time my little granddaughter is of an age to make a living, still having good sales skills, good interpersonal skills, and critical thinking and problem solving are still going to be important and perhaps it's not going to change that much. So, that is how I kind of thought this through Some of it is intuitive and some of it is reflective.

The important realisation contained in this statement is that Charles has implicitly realised the stability of the processes that underpin contemporary work practice at all levels.

My reflections on Charles's narrative is there is Charles acting as a conduit between the client and the services he can offer to solve a client's need or problem. There is Charles solving his own problems through planning, discussing with others using active and passive reflection. And there is Charles suggesting that current education should be helping people develop capability to solve problems and through 50 years' experience he can help people solve a lot of their problems. His responses imply what I have come to understand for myself and from others and have connected in my developmental framework of practice. Development and learning is not simply a passive process of comprehending things but one in which you actively engage with issues and problems and through engagement and reflection continue to build more capability for oneself. It is a lifelong process of accumulation and building on what you already have and can do. It is also recognition that it is a growing process linking one state of being with another through both novel or planned experiences one undertakes.

Jeremy Green's story

My sense of Jeremy is that he is in a very happy place having arrived after quite a diverse range of careers to being a fellow colleague, helping to facilitate other's learning, combining his interest in people with a passion for music. This has not happened by design so much as him intuitively responding to opportunities that have come his way. And like me, he has arrived at this place in middle age, which is likely to be home for him for the rest of his working career.

Life started on a farm in rural New Zealand where he and his siblings were expected to muck in from a young age. Both his parents had their own careers, his father a taciturn engineer whose passion was all things mechanical, his mother a nurse, a people person and a life led providing to others in a very public way. Jeremy learnt from both of them; how to problem solve and fix things from his dad and how to react and communicate with people empathetically from his mum. Growing up in the country meant that life was stable and people around you were always familiar. So school, play and work were all undertaken with others who were part of your life for the whole of childhood. School was school but learning was everywhere. Music and sport and things technical like aeroplanes and flying were all part of his passions at the time. But life meant work, and work had to be started as soon as school finished, and so Jeremy found himself undertaking an apprenticeship with the Ministry of Works focussed on civil engineering and roading. This was not what he had really hoped for and, as is often the case, his next venture was the complete opposite, and that was the police. A need to work with others; a need to serve the community in much the same way as his mother had. It was hard work, but Jeremy loved it. There was plenty of hard work and study required you to pass or else you were out, so it was something Jeremy was used to. What transpired in this new role was that Jeremy found himself to be a very good interviewer of people; he related well to the public and the people who had transgressed the law and he had the knack of getting to the bottom of events and matters that had led to their being in custody. As a result, within a couple of years he moved into the CIB branch and remained there for more than ten years. He was highly successful at what he did.

Other things were still very important to him, and his next breakout was to decide to take a fulltime music degree. The discipline and expectations were the same but this time the environment was an academic one. As a mature student he coped well and this probably enabled him to succeed, even though others had more natural talent than he did. There was something he gained from this learning experience, both as a musician and also from his learning process, that indirectly became a pathway to the

present. Following his music degree, he returned to the police but quickly moved on to become an instructor at the national police college. There was completion of a cycle from his journey through the police, but even more it was his experience as both a policeman and a learner from his recent degree that gelled. It was still people, but this time it was creative rather than sending a person down. And time and experience continued.

For reasons I am not clear on, there came a time about four or so years on, when Jeremy decided to take a Bachelor of Applied Management degree with Capable NZ at Otago Polytechnic. This was an accelerated programme of study because it was based on accrediting his prior experience and of him seeing how his experience both prior and during the 1 year accelerated programme could create a step change for future opportunities. On reflection, I am sure his sister had something to do with it as she had been a significant staff member of the Capable team at that time.

Following completion of this programme, his personal experience, the prior experience of training young policemen and an opportunity to help others in mid-career to achieve a formal qualification, the desire to be more independent and play more music all came together to become a facilitator with Capable himself. This is where he remains today in his element combining love of people, the ability to be creative in helping them achieve a life changing ambition. Most of all he connected to who is and doing what he loves passionately.

At the time I interviewed Jeremy, I had realised that professional development was arising from a range of developmental processes and so my interview questions were no longer specifically focussed on their learning processes. As Jeremy was also a Capable learning facilitator, his perception of learners and their processes was much more extensive than other participants. Also, his self-awareness of his own processes had come more into focus due to his deeper reflection on his developmental journey. The following are some of the significant areas of development he had identified.

Firstly, that the climate and context of learning was an important backcloth to the learning process itself in that success bred confidence and confidence led to motivation to try new things. Because he had been a learner himself, making mistakes and picking oneself up and trying again: because he had extensive personal interviewing experience with individuals and putting them at ease; he was able to relate at a deep level with his learners and to reduce their anxieties about making mistakes. In fact, making mistakes and plenty of them helped one overcome the issues. For example, a

strategy in learning to develop his musical proficiency was to deliberately try and make as many mistakes as possible so it resulted in more and better learning outcomes.

So how does Jeremy see his learning process? He finds that his best way for learning is to try it out himself, see what happens, reflect, and evaluate on that, make some adjustments, and then repeat over and over. Also, not to try to rush things and to let things cook though space and time. His understanding of passive reflection and 'aha' moments is an integral strategy of his learning, and it particularly came from his musical experience. I like the quote he provided about it.

I do not know what you would call it, but I call it cooking. It goes in and it cooks and I don't know if this my subconscious working on it and it is not a concept which is something that has just dawned on me; this happened a lot and I remember having my professor at university say "It may go like this and lots of you who have studied over the years can learn something one day and it can be innate in your practice the next day. However, there are other people who will learn something here today and six months later it emerges".

An interesting realisation of our discussion was that although he described his process as cyclical and repetitive, he had not been conscious of that until I had raised it with him. Now, having this awareness he feels it was both helpful and sensible for him as well as for his learners.

It has always been one of these things that has mulled around in myriad of my own consciousness or subconsciousness, and I perceived it as my personal shambles with learning and now to have to articulate it, has made me see there is some method in there. It has been good to just to have to dig a little bit deeper and try and articulate some of my thoughts and processes and it has been very beneficial for me. And it is good because it makes me reflect on things and all of this will help me with my facilitation work.

While Jeremy now has two bachelor's degrees, his higher education did not commence until his late 30s. As often is the case, there were very specific reasons and motivations to achieve this and those were not necessarily the same as would face a younger person at school leaving stage. At the same time, the employment context has significantly changed with more advanced roles needing tertiary entry qualifications. However, his observations as a school music teacher and adult facilitator were helpful.

Firstly, certain aspects of school learning do not appear to be relevant. Secondly, because it seems unrelated to future interests or what they imagine they might do in

future, students are inclined to give up too easily. At the same time, apart from subjects like music and sport, not a lot of practice is involved in enabling students to think about the processes involved from knowing about something to becoming proficient with it.

Another significant area appeared to be a general level of self-confidence and how single incidents at any stage of schooling could metamorphose into significant barriers to conventional learning achievement. These are still uppermost in mature students' minds coming back into education half a lifetime later.

In summary, Jeremy's life and career have demonstrated several things that are common in a professional way of life and that are well understood. These include a stable family life, values that demanded hard work and commitment and passion that were not solely derived from formal education. Less well understood are how people who move into work without higher education are still able to become highly successful in their careers and from their successes derive both the understanding of the components and processes of that success. This then provides the confidence and motivation to bring to formal education later.

The things I have noted from Jeremy's interviews were the development and initially subconscious understanding of a cyclical and iterative development process; a highly developed sense and practice of subconscious reflection which he called 'cooking'. Also, the inherent empathy and understanding of other peoples' positions based on his own experience and putting himself in other people's shoes in both professional and learning roles.

There is a personal framework of development that underpins Jeremy's capabilities, but there is also a significant social one; firstly, his own life of development and learning with others such as his family, his work peers and fellow musicians and then more recently the nature of his interactions with his own students and the power of a facilitation role in supporting other's development.

Dean Robert's story

I have known Dean Roberts for over twenty years now. We met through a mutual friend in Christchurch and since we both undertake consultancy work, I in education and he in business improvement, there were areas of mutual interest that developed between us. Ultimately this reached a point where we attempted to set up an international language school together, with other parties. We both worked on this for a fulltime period of six months, but this did not fly due to other parties' lack of transparency over the main course materials origin and start-up funding. We each went our separate ways but have kept in regular contact since. Dean was a qualified schoolteacher and has spent different periods of his career teaching in secondary schools and then for a while in tertiary polytechnics. I felt that his combination of academic and wide employment practice would make him a good candidate for my study, and he kindly agreed to participate.

Dean was born and grew up in Otago. Both his parents were professionals, his father a master mariner and his mother a nurse. He grew up in a rural area where the country was his playground. Both parents believed strongly in good education and the importance of reading and music.

This background has had an ongoing influence on him throughout his life, starting with his education at Otago Boys Grammar School and subsequently a university degree in science and geography from Otago University. This was consolidated by his teaching experience in Waitaki Girls High School, and later developing personal tours for paying customers exploring the Southern Alps and surrounding areas.

I had a good range of disciplines from school and university in terms of the subjects I chose. I have never been really focussed on one thing, I am more eclectic, and I wanted to have an overview of a lot of things. But it was all solid in terms of not being aware of any agenda or bias in what we were being taught. It was a good questioning Socratic sort of education; I questioned everything which is the way education should be.

I was always curiosity driven and as an example of that I remember when I was doing psychology at Otago University, I went over to the medical library off my own bat and got stuck into the anatomy of the nervous system, eyes, and ears and all that sort of stuff and started to theorise on how the memory

worked because I was kind of intrigued. I came up with some mechanistic idea which I totally reject now.

I started with what I would call as a good reasonable all-round education with the Bachelor of Science and Geography. I think that gave me a good platform from which to move on from. I gained a basic understanding of the physical and social systems and that got me into jobs relatively easily in my early career. And my learning took off from there; you learn a little bit about that industry because you are focused on it for a few years and then you move through that and get onto something else. But lifelong learning gazumps everything else.

For example, I was involved in doing documentary research in my early career for film and television treatments for the media and, and that led me into teaching because I was writing education documentaries. And I got more and more interested in the education side of what I was doing so I ended up dipping into teaching and some university and polytechnic work.

This led onto several project-based activities. I have always been truth orientated and curiosity driven in all the projects I have done. My work history has been based around both research and the generation of ideas that make changes for other people and companies, both at a personal and a company level.

A lot of my work for 25 plus years has been centred around getting close to a customer's situation and understanding it. Then going away and thinking about what needs to happen; what is the approach that is going to make a difference and then going back to them with a proposal on a way forward.

These proposals are centred around three areas –research on business strategy, new market and product development and its execution. You could say it is the usual consultant role, but I have never called myself one. It is just a specialist in doing things that companies could do, but they tend not to, or they do not have the perspective. This perspective of an external person coming in was often helpful and where my intervention was most successful was where we had a good relationship and where there were good ideas generated, received, and acted upon.

That has been the heart of my professional life with work that goes on behind the scenes to produce a research analysis, strategy document or marketing

plan to take them forward. Then a further key activity would be to monitor and to provide feedback on how progress was going because of that work. I always used to say that it was not my report that counted but of having senior staff taking time out to focus on where their company was going in the context of a changing world and whether they were adapting or capitalising on that change.

I have also had a tourism business on and off through the years because of my interest in the New Zealand landscape and natural world and so a lot of what I have done is related.

I have now really transitioned out of a corporate type of role to a much more personal one working in the tourism industry with customers who are experienced professionals who want to get out in the hills and get time and space for both exercise, social interaction and contemplation with others.

Overall, I think it has been getting alongside people, wherever they are at, communicating in terms and language that they understand, and I think that's key whether it is in a classroom an organisation or as a tour guide.

If we move onto how Dean has continued to learn and develop throughout his life, it has two distinct characteristics. One there is continuous curiosity and motivation and the second the successful acquisition of several processes which enable him to fulfil his curiosity and to continue to progress both personally and professionally. Education was the starting point, but it has been what and how he has used that that is significant to this story. And research and problem solving have played a major role in that.

In relation to his specialist analyst role, supporting organisations he described it like this:

I was conscious of coming up with a process that got to the heart of the matter and communicated directly to clients' needs. I knew the outcome of various alternatives; for example, being too prescriptive with the outcome; I had to just be open and confident that if provided a process in person and on paper where clients could see where I was going that gave them confidence that I was putting in place a process of facilitation and encouragement for them to work with.

There would be a series of steps and at each step the exact nature of the next step would be determined, so it would unfold according to the needs and situation that we would find ourselves in. So, while there was a broad

process, there was a lot of flexibility within that, and I was not trying to get to an end before an end was ready to emerge. I would not jump steps because that would mean ignoring the input of large chunks of the organisation or certain key people or market feedback and other elements that needed to be part of the puzzle. So, there was a step-by-step process I shared with them at the beginning that they could see in front of them, and then we would work through it over a period of weeks or months.

He also supplied me with considerable insights into his problem-solving approaches:

I am conscious that if I want to do something from building a shed to fixing the car to fixing some elements on the stove, I must be a problem solver. And I know that I can find a way to fix it, even if it is something I have never done before. I do not shy away from it because I guess I have some confidence from general problem solving. I have a problem-solving approach which is always there and if I have the time and energy, I know I can fix or solve things.

it makes sense to pose the right question, to engage with others when I am trying to solve a problem because others have been there and so it makes sense to go where they have been and to learn from them. This can often be the quickest route to look at and whether it fits or adds to my practice.

I give it a go. If I attack a problem, I can generally find a way of solving it. And there are lots of tricks to do that. I can think about things logically myself and say this or that needs to happen; or I can also go online, look at a YouTube lesson or something. Because engaging with many minds is better than one.

There is also the dimension of an iterative approach.

For example, looking at a recent tour with a group of tourists, you realise that there was not quite time for that activity to do it properly or maybe you do something different elsewhere, so you are juggling things all the time based on the experience of your recent tours. So, I take all this on board as cumulative experience so when I go around the next time, I can tap into that and change it accordingly. It is giving me constant improvement; It is also incremental. By just gently working away at small things, it is the accumulation of these small things working out well that makes for a good tour.

And then there is trial and error he talked about regarding setting up a water sprinkler to irrigate his potato plot and in his teaching too:

Well, the first thing I do is to set up the sprinkler line. As I have done this before, the whole plot is planned so I have a wider gap to walk the line up and down in the middle row. But I realised through trial and error that the reach of the irrigator if the wind was blowing was not going to cover the whole block width, so I needed to move the line a few rows across to complete the spray coverage. Since it must be trial and error, I imagine it in my mind first, then I draw it out on paper, and then I go out see if it works and if it doesn't, I modify things until it does.

By being reasonably inventive and using little trailer to put the sprinkler on I was able not only to move the sprinkler up the rows more easily, but by adjusting the sprinkler height a further metre above ground extended the sprinkler spray radius by some more metres.

I have used trial and error quite a lot in terms of the kinds of activities I use with students. I need to have a repertoire of activities and approaches to learning tasks that I keep using with them. I used to get them teaching each other to increase their interaction and engagement with each other. I used group learning, group tasks, getting them to take individual responsibility for certain tasks and to share roles around, so that each were getting different turns at leading and following. As a teacher, I like to mix it up so that it was not a monotonous process or one size fits all. And through trial and error I found what worked better.

From my perspective his sharing of these processes demonstrated how Dean was learning and developing in a seamless, coherent, and integrated way outside of a conventional academic approach.

He appreciates the contemporary medium of the internet and the choices it offers him, and his eclectic background and curiosity enable him to pursue many topics:

The thing that draws me in now to influence my education and learning would be the nature of the internet. It has opened my eyes to what is really going on and giving me a world view, which has expanded hugely in the last few years. My interests and perspectives on learning have always been there but having a bit more time to dwell on things has opened huge areas of knowledge and because I am eclectic, I am just as likely to get into

astrophysics or soil biology all the way through to pursuing musical interests and looking at classical concerts all around the world.

I am also mindful that it is all mediated by some companies that have dark agendas, like Google and Facebook. I do not use social media, but I am very aware that a lot of one's personal information is collected by them, and it is not quite as free as you think it is. So, everything I see, I do what investigative journalists do, which is to try and find at least three independent sources. I do not get too excited about something until I have used this sort of self-checking process.

I use YouTube a lot in terms of presentations and lectures on various topics. I am also doing quite a lot of work on climate change and I have done independent investigation on that over the last few years and read a lot of scientific papers and conference presentations. I am looking at various conferences around the world where you can view a lot of the keynote speeches and there is a lot of material to learn from.

Whilst these are Dean's main processes, he uses a lot of supporting sub-processes or techniques to get the full learning benefit from them. These included active and passive reflection, intuition, planning, questioning and research with books or searching the internet, as well as jointly learning with other people.

This makes him a successful independent learner. It is also a characteristic of the professional approach he takes regarding all his teaching, consulting, tourism guiding and farming activities.

Let me illustrate the scope of these practices with further extracts from the interviews:

I would say my delivery of services was enhanced by my personal research and education. I remember several books, some of them I still have, that I would read just to get an overview of a field that I was working if it was new to me. That would just give me several hooks and pointers so that when I spent time with a client, I would put a step-by-step process in front of them and take them through that process and get them focused on the job.

When I take my process, which was worked out by experience, then I would read some academic texts on strategy, planning, innovation, brain storming, I would add my own ideas to it. I had the basics pretty much OK and what I could get from texts would be just a bit more precision and a few deeper

skills in the process. Basically, my fundamental process was fine. It was just an amplification of my own skills through more learning if you like.

In the case of a guiding tour there is a certain amount of mental preparation that goes into running a tour and in terms of getting your head space right and doing the mental rehearsal of the day; so that normally happens the day before or each day of the tour, when you're waking up, just going through the day, click, click, click, this has got to happen, that's got to happen; I have to make these calls, talk to my fellow guide. And you just hope that it rolls the way you want it to roll.

if I am not clear, then I am not going to communicate with my tour clients well. I have mentally rehearsed what are we doing, where are we going, what are we going to do when we get there, how are we going to be dressed, what is the weather, what is the activity, how long does it last, when are we back, when are we due for dinner tonight. I have all these key points for the day, but I am only going only to inform the clients at the time that they need the information. I like them to relax as they are on holiday and so it is a part of keeping people at peace with themselves just giving them enough information without overloading them. All this requires a technique in terms of communication in and both the quantity and the quality of information given. And you pick it up over time and refine until it is smooth.

Dean uses conscious reflection to improve his tours:

I use some reflection time to go back over tours. I am doing the same tour five or six times per season at present. So, you get the opportunity to compare each with the last one. That activity, that stop, that was worthwhile; that was a waste of time, so I am not going back there. You have all this on board as accumulated experience so that when you go around the next time, you can tap into that and plan accordingly.

However, in other areas he uses subconscious reflection to get 'aha' moments:

I think they just happen by launching some sort of study or question in a certain area and I am very conscious of letting the sub-conscious take over. If I have a problem, I have become accustomed to the technique of just planting a question in my mind before I go to sleep; what it is I want an answer to by clearly articulating the question to myself. Then the first thought in the morning tends to be what I am looking for. It might take two or three

mornings sometimes, particularly if I have an issue that I want to get some clarity on. I think a few 'aha' moments have come out of just letting the sub-conscious organise itself overnight.

A similar process also works for getting a good idea:

I am not aware of a conscious process of going looking for a big idea. But what happens is just through my day-to-day work I might be browsing through various areas and suddenly I see a connection between different things and an idea pops out of that. For example, one of the things with the electric car interest I had, was I realised that New Zealanders are good at fixing and adapting things. And, against that we cannot afford new electric cars but have a lot of front wheel drive cars that are relatively easy to convert. All this came together in a project which I tried to get Dunedin City Council and others to go with to no avail. But I see that it now happening in Dunedin, exactly the way I described it to them seven or eight years ago.

The other area I was going to talk about was in my business world, where going back 30 years, one of my basic ways of operating would be to have an idea. I am not conscious of them coming from anywhere else. And those ideas will come in a gestalt form if you like, as a complete idea. What always amazed me about this idea's process is that I would not just get a little bit of an idea, but I got the whole thing in one download of a few seconds. Often this would happen at night or in the morning when I was engaged with other material and the idea popped out in an 'aha' moment and suddenly there is a whole project there. This has included the heavily insulated house building programme in Christchurch, renovations of cars with electric power and working with the physics department at Otago University to try and create a centre for electric battery exchange. All these just came as a complete idea download, in no more than 30 seconds and then I would spend more than an hour to write the idea up.

Then there is Dean's experience with intuition and judgement:

There is not a logical conscious process behind intuition as far as I can tell. Intuition just happens for me when it seems my whole body and energy is directed at sending and receiving signals. And if I have got the mindfulness to be aware of them, I have found it extremely useful in business or in any other endeavour in life. Intuition is not particularly conscious for me;

sometimes it just jumps out at me. It feels like a very slight emotional tug; it just pops up boom and passes and if you are not open to it, it has gone.

Intuition is extremely important for me and I find that the more I use it the better. When I go against my intuition, I find that I often run into problems and this was the case with education project we worked on well as others where I am looking at the people involved and a little bell goes on with someone or something that there is something that is not quite right, but I cannot put my finger on it. Then other things take over and even though there was that little warning, sometime later that little warning turns into a major problem.

I think when you get to an ultimate in something, I think there is a click, an intuitive emotional response that says that's it, that's how it works and I can throw all the academic rigour at it I like, but in actual fact I think all human beings actually have got quite a sense for what is true once you've peeled back all the layers So, curiosity learning for me, is peeling back the layers to get at what is really going on or driving things.

Judgement on the other hand involves a more conscious disciplined approach of gathering information and assessing between reinforcing or conflicting pieces of information and making a judgement on which one to go for. It is based on a conscious awareness of facts, or information that has coherent implications.

I think one of the things that learning does is to create lots of mental hooks to hang things on. I have got a little bit of knowledge about all sorts of things; everything from steel cutting to composing music to growing spuds to thinking about what colours should be used in a playground. And when I think about all the things I have been professionally involved with; I have covered off a lot of different fields. When I start on something new, there is nearly always an automatic trigger to something years earlier, because I have got a mental hook to hang it on Since I already have lots of hooks, it makes it a much more natural process to add more stuff onto those hooks because of my prior understanding.

This appears to be an important dimension of experience and potentially feeds intuition, creativity, and subconscious cognitive processes.

Finally, our interview discussions turned to what he would recommend in a contemporary education system. While he reflected on this, he heard an interview on an early education curriculum called the Trivium, which he felt still had a lot to offer:

The Trivium uses an approach which focusses on three areas called “grammar, logic and rhetoric” The grammar has a special meaning to do with language in general, not simply grammar as in sentence construction; logic is the driving principle in the middle which provides the linking process between grammar and rhetoric; and rhetoric is skill of demonstrating the first two through dissemination and logical argument. For me, I see grammar as the basis of information; logic is investigation into why at multiple levels. And rhetoric is how well one can communicate that to others. I found it very interesting in that was a process which a scholar needed to master in their own unique way to make progress in whatever field they took up and that resonated with my development journey. It also underpinned the contemporary approach of a liberal arts curriculum.

In part this was Dean’s reaction to the considerable level of media distortion he felt existed in current times, which was not simply political, but had also spread into areas of science and history. He was also disheartened by the contemporary programmes he had taught in polytechnic where little attempt was being made to encourage students to develop independent and creative thinking needs for their future lives in a societal context of increasingly significant and rapid change. His sense of his educational base was as follows:

For me, there is a theme that runs through everything, and that nature is boss. I guess that goes across most of the stuff I do. Principles of nature, which are elucidated through the scientific disciplines, I guess that is a key driver. In terms of application, I am very conscious how I apply it; in terms of my tour guiding. I am coming from a natural eco system approach to what we do, to what is going on in the social, the physical, the geographical landscape, the agricultural landscape. I am always coming from a natural historian, ecological platform as I talk about it. That is my reference point.

Dean felt that the process he has engaged organisations and teams in, and what he talks about with his tour clients, offer some insights into a better educational process:

There are probably aspects of my organisational SWOT workshop that would be a good place to start in terms of group-based working. In terms of getting young people to articulate a personal vision, I think it is very important to help

them to see where they could go and having them formulate some goals for themselves at a young age. As part of the process for that, of course we would have to help individuals delve into themselves and ask "Who am I? What am I here for?" And I do not mean just here in this place but "What am I on the planet for? What is my vehicle for doing it in? What is my vehicle for self-development?" If now they are in a college or university, "How is their choice going to work for them and how can they make it work for themselves?" All the pathways and processes we choose are very important. Probably this process should be done before they make the decision to go to university, but many have probably gone there automatically.

The process needs to ask who are you, where are you going, what is your vehicle and pathway, how you are going to get there, what strengths and weaknesses do you currently have? There is a big range of tools to help young people to reveal that to themselves and I had some of them my How to Market Yourself programme, but I've come up with a whole lot more now.

But this is just one side of it, being classroom or workshop based. There are other approaches and I have had some of my best learning with students out in a natural environment, sitting around a fire at night after a day's walking exploring nature. So, there is retreat type of approach with strenuous physical challenges involved and you review your participation and success in that and then ask, "How can this be generalised to other aspects of my life?"

It comes back to being creative because as part of the initial process you would be getting these students to start assessing their strengths and weaknesses and my thinking is that you learn to work to your strengths, and you work with others to minimise your weaknesses. If you have, a vision based on certain desires, opportunities, and strengths but it is limited by certain weaknesses it is what I would call a mission critical weakness. So, you might get individuals to reflectively work their way through it with others to get peer feedback on what their mission critical weaknesses might be. Then you develop an individual programme to address it. It is also important to become aware of some of the processes which you may not be conscious of because they are already inherent in your daily practice.

It would be necessary to have a range of processes that students could use to start developing their personal and emotional skills, because if you are to

understand the significance of how and when you best learn, you need to have a good sense of self. I am not sure how young you can be to learn this sort of thing, but if Tony Robbins and everyone else is right about the fundamental importance of one's emotional state, then understanding how to reveal that to yourself would be important.

Physical fitness and diet would also need to be part of it so that learning and motivation could be optimised between the physical and psychological side of our human state. And using the interaction and relationship between group members to help develop individuals. I have not had a lot of experience with that side of it, I have been much stronger on the one-to-one and one-and small group motivation in facilitation.

Dan Douglas' story

Dan Douglas has been part of the significant technology revolution that began in the late 20th century and continues apace today. But the key to this has been integrating novel technology solutions with sound marketing and business practices for 40 years. This has enabled him to staircase himself to offer strategic measurement and control systems that are at the forefront of distributed system monitoring and control that can now take advantage of the fast-developing Internet of Things environment.

Like many other professionals I have interviewed in this study, Dan's success has not happened by accident, but through steady growth and self-motivation through a range of professional roles that have been informed by technical and business academic programmes, but equally dedicated professional career development in instrumentation and control technology businesses. This arose first from sales and marketing roles that expanded from supporting UK companies to heading up a European sales team. An American buyout of one of the organisations he was involved with led to him operating at a much more strategic level of the business and this enabled him to take on a consultancy role, where the sole purpose was to find ways of reducing organisation headcounts for increased profits. Later, another organisation wanted to diversify and offered Dan the opportunity to set up his own organisation with their financial and some manpower support. This came at a time when the first board-based microprocessor systems were taking off and involved linking them with other technologies and sensors and using software to operate a customised system. Dan had the people networks, sales and marketing and strategic business experience to pull these fast-developing opportunities and technologies into a coherent business model. This operated in a similar fashion to the personal computer industry sector where large players provided adaptable componentry and small players built customised systems and programmed the software for them. This suited the needs of large manufacturing and service industries that were seeking cost effective and distributed solutions to their operations that supported growing customer bases and increasingly competitive market segments. A background of continuous fast-moving change in both business and technology provided the context for rapid self-development. Dan's ability to identify the right people to work with and to sense the strategic trends enabled him to harness international opportunities for business and personal growth.

This has allowed Dan to establish himself in one part of the world and to operate in many other parts. His main business operation has been based in the UK during the period he has been living in NZ and Australia. This necessitated understanding and harnessing all available internet technology to enable him to be available to both staff

and customers at any time. This also exemplified the remote distributed based technology solutions he was selling.

A key to Dan's success has been to understand and develop his competencies, not from single fields of knowledge but to combine them in ways which suited the strategic needs of his own and his clients' businesses. For example, whilst he undertook an electronic engineering degree, he began his career by marketing technical solutions, not designing them. After he had undertaken an MBA, he used his new capability in software development by applying it to a Welsh council seeking to realise its economic investment needs with government and private loans based on the demographic profiles of its population forecasts. He identified his employees in his technology business by seeing their other work and then motivating them to see how they could contribute to the strategic and operational needs of his customers. He mapped the big picture and others supplied the details. He saw his work as solving complex technology related problems but of delivering those through practical and measurable processes that provided his business with adequate returns and maintaining achievable cash flows. These activities provided multifaceted problems which he reflected on and evaluated in terms of financial and technical systems successes, rather than consciously linking them to his own experience, growth and developing range of capabilities.

How has he identified his development throughout his career?

Look, it would be dependent on the demands, because to a great extent my development once I started running my own business was very dependent on the needs of the business. Once I was out there practising and making a living, I then had to make quick decisions about the things I needed to learn to make this work or more successful now. And I think the thing I also evaluated was how big a learning process was involved; do I need to learn all this stuff, or can I learn enough just to be able to solve this problem I have to deal with now?

The process components that helped me provided successful business solutions were based on three things. I needed to know how I could apply the technology that was available; which direction technology was going in so I could acquire new technology that was going to be marketable; finally, to see how I could apply that technology to new market opportunities I could identify.

I guess it is a combination of several processes. I have done some research, or I have found these things that are analogous to something I know of or have seen before which works, and now I can think about applying them. However, the world has moved on, the markets are not the same, so I need to research the market to understand exactly what the new market is, but I know there is an opportunity. So, this is my professional process; I pick up research, I pick up opportunity, I pick up technology and then once I have looked at these aspects, then let me look at the business model; what do I need to invest in terms of time and money to make this viable? What value of income would make it viable in the first instance? Now I am into a new discipline, I am into finance, and I am into model building and by bringing all these different disciplines into a business model this will tell me "Yeah it's worth doing or no it's not worth doing." Finally, I bring it into a personal model which weighs it up alongside other choices and whether I want to spend more time on this opportunity. It is all about a holistic viable outcome for me. My professional learning is arising from a motivational mechanism that will provide an opportunity for my colleagues and I in the future.

To be successful I feel you must have lost or screwed up several times. There is this whole process to undertaking any new venture. More importantly, the only way in which I can be sure that I have the necessary knowledge and skill is when I have applied them and been successful in doing that. The sort of process I use to get to a solution is like being on a road somewhere where I have a feeling that this is the right direction, but I need to experiment a bit here or there, try this out to see what happens. If it is looking positive, investigate more. And so, it goes on. Or you call on previous knowledge. I do not need to go back and remember every detail, because essentially once I have been through the process, I find it is predictable.

To do what I do, there must be motivation. I look at how I just set up this new business, and the start of it was this kind of looks interesting; I could get really into this technology, and then looking at the opportunities and figuring out what detail would be necessary, I could make this happen. Essentially, I am building on the foundations I have built in the past. There are basic learning processes I have gone through and there details I have forgotten, but fundamentally I can figure out how to solve a problem. I guess I get motivated by problem solving.

In terms of linking learning and research with his development he suggested that his behaviour as a learner changed as he became more expert:

I see myself as having a certain amount of learning I have acquired through experience, through research, and through study. But since then, my process is enhancing that in a very focused way. I think an expert, by definition, operates in a scenario where they practise their learning and knowledge but also is very focussed about their learning. Whereas, when I am looking at an entirely different discipline where I am not an expert, there are analogues or synergies, but my learning process is very different, not as focussed and far more general.

My professional learning these days is almost exclusively undertaken independently. I am not dependent on any source or body to support my learning. I have full control over my learning. Inevitably, at my current professional level, it has become a lot more research based than it used to, and far less human interaction based. Whereas learning used to be through the process of I need to do this, I need to get this knowledge and I need to practise it; now learning is more of I have this concept, I have this model, I need to motivate other people to implement it.

Learning for me these days involves measuring and evaluating as it is much easier to do that. Again, research is much easier too because information access is infinitely easier than it used to be. Whilst I used to gain learning through direct practical experience, the practicality is obtained through the implementation of my ideas and models with other people or systems.

Through these different processes I build models. I have a set of tools I have developed over time and fundamentally that is how I leverage my learning. And I need to build models to understand that little bit of the world that I want to do something with. For example, in this investment decision I am going to look at, I will look at the various scenarios around it, I will try and understand and learn the legal, the financial and the professional inputs I need to incorporate into this model. Within this process, there will be a range of outcomes, and this will include a set of knowns and unknowns. I am fairly sure that I could illuminate the unknown scenario by consulting with experts or doing some research on the internet. Now that is a learning process and obviously some of that expertise will cost, but that that is part and parcel of an investment I am making in myself and my learning process.

Dan makes significant use of intuition in his professional life. This is linked, he feels, primarily to his range of experience which manifests itself as gut feel:

When I use experts and I do that intuitively right, I just do it, I do not do that as a measured process. I have enough expertise and experience in dealing with professionals to buy their time, because I know whether they are efficient and know their stuff.

Another practical example is when I am looking at a project and trying to cost it out, I guess intuitively that this sort of thing is going to cost that sort of amount. I know without going through the numbers that I am going to be within ten grand of the final number and usually I am pretty much spot on with those intuitive assessments.

He also is continuously reflecting on how he operates both consciously and subconsciously:

Well, it could be all about understanding. I basically do something; it works, yes or no, then review. Why did it work this time and not work another; what has changed? Go back and address the model.

What is it you used, does it now function or what has changed that makes the model less useful and have things changed to the extent that your model is no longer of any use, and you really have to write it off and start over again?

Or, I am undertaking this project, it is incredibly successful; I now think I have almost got everything correct, and therefore I shall go off and do this again. Or I have undertaken this project and it was a dismal failure, so am I really in a position, am I skilled or expert enough to do this or was I just unlucky? Maybe I will have a quick look to see exactly what went wrong here and if it is minor, I can readjust it; if it is major, I can move on and understand that my level of learning and knowledge was not up to the job. Finally, am I motivated to do anything about it and if the answer is not significant enough, the answer is no.

He is familiar with the concept of staircasing his learning with other people:

One example right now James is that I am in a learning process in this interview. When I meet up with my son to discuss our business, we both go into a learning process, trigger off each other and come up with some really

good ideas and concepts that work. But it is an exhausting process, and I can only do it in short bursts.

Dan also feels that he can connect himself mentally to a universal field of cognitive resonance in which his own thoughts are picked by others and vice versa. This particularly arises when he creates something new or has a new idea that has not been seen or heard about before.

He recognised that the iterative nature of his professional practice and problem solving helped provide significant professional development and this arose from the cyclical nature of these processes:

I test and apply iterative processes in my professional practice. If I look at the cyclical nature and I see something I recognise then I will say “mmm that’s interesting, I’ve seen that before” and now that I could possibly end up doing that, I’ll test it and I’ll monitor it until I can see some analogies and some pictures, and then I realise I have then gone through a further learning process in terms of the thing I was studying.

He felt that it was important to distinguish between levels of learning between his own field of expertise and other new fields:

I must be aware that if I am in an area where I have no knowledge or expertise then essentially, I am a naive apprentice. And I must learn the rules of a new game. I mean one of the big mistakes that businessmen make when they become investors is that essentially, they think because they are clever at making money from their business, then that qualifies them for making money as an investor. Well, it is rubbish! I mean it is like thinking that being an Olympic medal holder for swimming, qualifies you for downhill skiing.

Dan reflected on learning, problem solving and research in terms of various scopes and levels of practice between a couple of our interviews.

I came up with a bit of a structure in terms of trying to understand what learning is about. I have developed these learning processes and I have also then tried to combine them with a set of drivers. I see drivers as things that motivate one to succeed with the learning processes.

The way I see it is that there is something I call foundation learning. Foundation learning is all about learning to read, write, speak and computer

literacy. And whatever subject one is looking at, what are the fundamentals? What are the basic learning requirements that one needs for any discipline that one is trying to learn? And then what are the tools needed to make this foundation learning useful?

The drivers that are going to support students in these learning stages in those areas might include things like social, motivational, pleasurable, professional, natural and remunerational.

Then the next stage in learning is what I call practice learning. One has as much stuff as you think you need to take the first steps and you may not have all the foundation learning but have enough to move you onto the next stage which I call practice learning. This is where you physically and mentally go out and apply it in a context.

The next stage I call expert learning and this is where one gets to the point where you are moving beyond practice, and you are now developing specific areas of expertise and interest to follow up by oneself. While you are in any of these modes of learning you may find something that you have missed, and you need more foundation or practice to help learn more. So, this is the kind of concept I am kind of developing around learning.

In terms of problem solving, I would see a scenario where one would problem solve and have greater confidence to problem solve, based on one's previous experience. Then you can increase your problem-solving capability either by solving similar problems in a much shorter period of time or taking on board more complex problems.

I think research also could fit in foundation, practical and expert levels of learning, but it would more likely be finding information at the foundation level and undertaking practical formal research and experimentation at the practice and expert levels.

I find a useful part of my discussion with my participants is to identify what educational processes they believe would have been more helpful to them or to young people now as this often reflects their developmental preferences in a different way and in a more general context.

In Dan's case, he made some useful comments:

Oh, I think totally interactive problem solving and really knowing part of the real world. And being exposed to real world problems and learning to work independently and as part of a team undertaking research, developing practice, and then deciding whether it was discipline that was sufficiently interesting to become an expert in it. I think an iterated process of learning would certainly have been probably a lot more enjoyable for me than the tedious process I followed. However, in saying that would I have really been motivated? Where is the starting position? Would I have been really motivated without the foundation which probably was force fed to be honest? Would have I be able to do any of my stuff now? Where would you start this with an average person? I mean obviously there are people that are highly motivated, and they are just born with these characteristics and just kick start themselves and who are totally interested in the world around them and want to find out more about it and figure out what they need to learn. In the present environment all of this is more than available to them. Infinite data, infinite knowledge available to anybody who has got a couple of hundred dollars to buy themselves a computer.

He extended this conversation to the education needs for children based on his context above.

Some have already got it James. To be honest with you, schools are almost redundant now. The only aspect is early learning. I think that is important because of the socialisation opportunities. I think those are the main aspect because most schools are not as well equipped as most households.

When you can link in and get the world's best on your screen to educate you in any subject at any time, then again most of your average teachers and lecturers are significantly inferior. The only benefit I see them providing is the social benefit in terms of support, mentoring, guiding, and encouraging them emotionally.

Then how he thought education might keep pace with the accelerating changes occurring in the world today.

I was only thinking about this last night actually, prior to our conversation and I was thinking about my seven-year-old grandson, and you are probably thinking about your grandchildren as well in a similar sort of way. In that the time my grandchild, if he ever does go to university because they may not exist by then, and by that time robotics would have taken over a lot of the

manual tasks potentially. We will have self-driving cars; we could be making regular trips to Mars. But if you take a linear progression of where we have been with the technology and where we are going with the technology, it is like how on earth can you possibly educate children of five, six, seven even ten, even 15 years of age at the moment to optimise their learning, so they are properly prepared and equipped to deal with a modern world. I would not even know where to start, other than to have created the foundation, and the motivation to learn and to provide the tools. As far as I can see those are the only three things you can do and then you provide the mentoring support and the challenges to evolve that process.

Given his experience I asked him if he could be a useful mentor to a child of the future right now and what he be doing with them to help them fast track into an arena where they would have all of what he had and more.

Well, first before I started anything, I would try and understand exactly where their motivations were, what excited them, what their skill levels were, what they dreamt about, and to really try and see what things excite them. That would be the starting point, because, then I would build a model around that to maintain that excitement, no matter what the subject was; If it were possible to apply that excitement or to provide a platform where any discipline, any problem they were able to conjure up involved that excitement, and to know exactly how to deal with that. And, they had the skills and the foundation where they could build a set of disciplines, like do the research, understand the skills they need to acquire, try and test, experiment, apply, re-evaluate, and see if their skill had been improved by the solutions they came up with.

Dan is a well-educated, innovative technologist and successful entrepreneur. However, due to being heavily involved in the creation and development of successful businesses from his multi-faceted professional practice and capability, he like other participants has focussed on areas more directly related to his principal field. His learning and development have been less of a focus, so that his conscious view of what he considered significant was engaged and developing as the interviews proceeded. However, he has raised some significant linkages between the processes of learning, problem solving and research and their supporting behavioural and cognitive processes. An interesting behavioural factor that he identified as contributing to earlier motivation was fear of failure. But this has been wholly superseded by his

contemporary capability that has been realised from significant conscious and subconscious learning arising from many influences and intuition, which derives from his prior experience and his ability to draw on models or analogous pictures. Another strong behavioural strength is his intuitive ability to identify and harness the capabilities of his technical and business teams. This probably arose from his extensive marketing and sales background.

Thus, the evidence he has provided, whilst not directly stating my conclusions, does contribute to the overall picture of integration of processes of problem solving, research and learning playing a key role in professional practice and development. Furthermore, that their improvement involves linked cyclical and iterative processes.

Tom Naylor's story

Tom and I met several years ago when I was seeking to establish an Industry Advisory Group for a NZ Diploma of Business Course in a Private Training Enterprise I was leading. We hit it off as he brought a diversity of international and entrepreneurial experience to the table and had a clear sense of himself and what he was about in life. When I was considering participants for this doctorate, I considered he would have some good ideas to offer.

At the time I interviewed him, he was playing a leading role in the Auckland Cricket Association which reflected him taking up causes that were of natural interest to him as much as making a living. It also reflected his interest in others and their developmental pathways in life from his high level of curiosity and his early involvement in community and civic matters.

Tom mentioned that he started working in real life young and that much of his secondary and tertiary education was spent combining the two subconsciously. For him learning was not simply an education thing but simply part of normal life. As it turned out later, it was a highly successful combination where he has been involved in building education companies and then later supporting companies as a consultant in an entrepreneurial and strategic marketing role. I believe he owes this to his father who was a successful businessman and encouraged him to get real business experience as young as he had done.

Currently, he is a man of many parts, primarily focussed on his role with Auckland Cricket and bringing young players on towards the senior game. He is still associated with another online education business in business ethics as well as being on multiple community and volunteer boards with school, sport and in his local community.

He was able to describe fluently how this came about and his current consciousness of his own actions in whatever he does as to why and how. The following provides a flavour of his thinking:

I do not like things staying the same; it bores me, so I am quite open to new ideas and working with people to make things happen. I like to see action as I do not like to just talk about things. Probably relatively uniquely amongst people, I like change. I use a process of collaboration and checks and balances through that to make sure my actions meet the outcomes I am after. When I get involved with something, I want to know it and know it in depth, so when I am faced with other people who are not up to speed, that

can be frustrating, but it probably helps me make sure that it is better in the end.

For example, in my job now, I believe that sport is important, and cricket is an important game in terms of some of the lessons it can teach in life. I think if you believe in something and you have got as one of my friends would say, "A lighthouse that everything must look towards", I can process a lot of information, bring it together and see ways forward where other people do not and that is just normal for me.

He explained some of his career highlights and what brought that about:

There have been a lot of career highlights. Currently what I am doing now with the changes we are making to the sport of cricket, is quite fulfilling. I have helped several companies achieve success; taking a New Zealand company and making it global in the online education space was significant in that it was a new field at the time; then taking another very US centric company and making them global and seeing a large change in an industry sector in which I had a large part to play were all very rewarding.

These successes have been built on a career history that started with an undergraduate commerce degree at Auckland University and later an MBA at the University of Virginia Darden Business School. At the time I was undertaking my MBA and beyond, I spent about 10 years working in the online education space for two different companies mentioned earlier. They were providing online business simulations for postgraduate business schools. I am still involved in that with my business ethics company. More recently, I have been providing consulting in the sports space, my business areas and mentoring a variety of companies in New Zealand with their marketing.

The success of my professional practice I believe is the result of my interpretation of all the different things that I have experienced between my career and study. I think there are probably elements to it that are a little more unique than simply coming up with good brain storming ideas. I like to start with understanding an issue and coming up with a solution and then having it critiqued and working it through. I guess I personally like to try something out as it helps me see the scope of it; it helps frame it to others that there is going to be change.

I think it is inevitable for a professional to have their own models of something. I think you are going to have it in any organisation which is delivering best practice. It is like a golf swing; you have the fundamentals, but everyone has a different golf swing. If we were all the same, it would be robotic. I think there are elements to the way I do things that would not work for someone else. There are some core principles that I think everyone should do, like collaboration, but some people do not want to do that. I do not necessarily like them, but I do see value in them.

I had 60 people in my MBA class; I am sure we all used slightly different variations of the things we learnt. It is not hard and fast like an accounting or a maths equation. When you are managing people and you are going through business ethics or other things that we do, there is a lot of grey; so there is no right or wrong answer. I think we need to have some good foundations and some principles, but then add some of our own flavour to it.

I consider I am learning all the time. Some people might take my willingness to change as not having a position myself, but it is my willingness to listen and learn from other points of view that enables me to achieve an effective outcome. I am generally happier with the end version than with the one at the start, because I learn through hearing different stakeholders and their viewpoints which would be impossible without collaboration and having that process.

When I start, a lot of the stuff is theoretical until you put it into practice. It does not matter how much research one does; it is still not proven. Even if it fails first time, you have got to know the factors; but it is about understanding and working together with others to make sure they pay attention, talk about it, try to understand it, and consider the actual data before repeating the same process again. Hopefully by the next time round, it is a faster process and the people I have involved are able to let go of their pre-conceived notions about what should or should not happen.

I consider myself to be a contemporary professional, as I genuinely believe that teams and other peoples' ideas make things better. I am willing to adapt and be influenced by others; I can still demonstrate leadership, but it is not feeling that I have always got to be the guy running out front and having my stamp on every idea. This is how it has been throughout my career. I have always been willing to work with others to get the best idea, regardless of

whose idea it was. I think that is where you end up with businesses and organisations going down a wrong path, because someone is so hung up on getting their idea implemented, rather than looking for a collective goal.

If I were mentoring someone, I would talk about the value of collaboration, the value of other people's ideas and that one person is never going to be able to do everything that is needed in the complex scenarios we now deal with. The value of a team is always more valuable than you are, no matter how good you think you are. And no matter how frustrating some others can be, they might have some good points to make in achieving a desired outcome.

Tom's professional practice has been very much focussed on getting people to collaborate, whether in the business development, marketing, or sport fields where the ultimate practice and performance is more than the sum of its parts. He has a very clear understanding of the Johari Window concept in which the "don't know you don't know" perception window is much larger than the "know you know" window. Notwithstanding that, he also sees the need in these professional fields not simply to rely on theory alone, but to work with others through several cycles of practice and to learn from the practical evidence gathered as result. He also makes use of these iterations to improve and refine organisational teams and his own practice.

The continuous iteration to improve practice is an important dimension that I have realised with my own developmental framework of practice from evidence like this.

We then discussed how he has progressed with his development during his career. And that he is very conscious of is his passion about continuous learning and practice:

I keep wanting to learn, keep talking to people, keep reading articles trying to understand things from many different areas. It is just a constant for me. I also learn while I am doing things, enjoying them more by doing it. Having used that slogan "Learning by doing" at enough conferences over 18 years I cannot say anything other than learning by doing! But I can also learn from other's experiences. I read the book by the Ecoman, Malcolm Rant, and then applied some of his ideas and realised how can I use them in other areas too. Ultimately, I need to experiment in my own career and life.

I can sit in a meeting and look at how someone says or does something, and I will go "Hey that was actually really well done and what can I learn from that?" I will learn from positive or negative practice. I think one must be willing

to learn from every opportunity. It does not matter what it is, I will learn from kids if I see interesting things they are doing. I guess, I am always looking to learn.

I became more aware of my own need to improve myself doing my MBA. It is nearly nine years ago since I graduated, and while there was a lot of focus on the management area, there was also the need to understand oneself to understand how you manage others; how to lead, how to follow, right through to doing simulations and really eye opening when you do 360-degree feedback. It was exposure to that type of thinking and the intense focus provided by the MBA, that really made me more self-aware and needing to improve myself further.

Both his thinking above and further discussion of his components of self-development have wider practical implications for my research. He provided further details as follows:

The difference between my academic life and now is I spend more time doing. And I get more information and learning from others than textbooks. If I want to find out about something, I will talk to people, see what their knowledge is and triangulate that by talking to others and support it with some theoretical stuff. Earlier on, it was much more theoretical, and I would have had less access to people with whom I could share relevant information.

As I progressed, I felt I was able to try things out and do more. That would probably be the major difference; it is just being able being able to experience more major projects, experiment more, whereas if you are more junior you are less likely to do so. Simply because if you are in a more junior role, I feel it is less acceptable to fail or recover from it without prejudicing your career.

I guess the learning process probably starts either with a need or a curiosity. Usually, those two things are linked closely. And then diving deeper into it and try to gather information, gather knowledge from other people or other resources. And, then from there I guess try and make sense of it and then reflect on it. I think it is only completed when you do it in the end. Just coming up with the theoretical side is only half the story. I need to experience it and reflect on it and where it is ongoing. then the reflection enables me to start all over again and to repeat the cycle. As I consider it now, it is very hard without

the doing part. I think it is easier to have done something first, then analyse and improve it for the next time of doing. Because I think it is hard to have a context for theoretical learning without having a lot of practice first. Not impossible, but more difficult, I think.

The linkage between his learning and problem-solving processes is quite well illustrated in the following exchange where because I knew he was a golf player; I began by asking him how he improved his golf swing if it dissolved into rubbish.

Oh yes that is a good point, because my golf swing is poor right now! So, I look at it and ask myself what I am doing and what is it that I need to do. I know it is not going to be a turnaround in one day; I might hit the percentage I need if I practice but first, I need to come up with a vision where I believe I can hit the shots and plan a way forward. It might be that I need to go and talk to mentors or read the right books. Then when I go to play, I will consciously practise my strokes; I am analysing every single one; I have done this, and it did not work; what did not work and why didn't it work? Do not throw the reflections away but try and understand how to improve it the next time.

I use the same approach for every business meeting; what worked, what did not work and how did I gauge things? Also, it is helpful to watch how others do it too, as you can see their successes and mistakes and draw on that for your own practice.

The way I can pull it together to move forward is part of my leadership ability. I can process many different things and sum it up as a complete picture. For others, it might take two or three people, or take longer, but the solution is much the same. At the end of it, I come through because I believe in continuous improvement and I can be better still even as I am winning, If you have such beliefs, then there has to be some progress no matter how hard it gets because change is hard for people, especially when you have been successful. Another important lesson is learning through failure. It is through examples where it has not worked and then being able to adapt that enables one to progress much better in new situations.

We also discussed other related processes which helped both his development and professional practice. The first is reflection, which he considers to be very important:

I think most of my learning comes in reflection. When I am in the moment with something it goes on constantly. Every night this week I have been waking up in the middle of the night and have some thought on how to do something the next morning. Or because I am working on those types of tasks where I am trying to develop new ideas, it is constantly with me. It is both conscious and unconscious for me.

I do not think there is a huge amount of difference about what happens when I am driving or waking up in the middle of the night. Maybe that says a lot about how I drive! I will have the same urge to want to stop and write down what I am thinking when I am driving as I do when I wake up in the middle of the night. It is the same as when I am talking about something else and then it will occur to me that there is a way forward. I remember reading about it once about how your brain works in those states, that it keeps working on stuff and solves one's problems, so I guess I am just kind of in an unconscious state driving too.

I am confident that by giving myself time to reflect I come up with a new way of looking at an issue and this will continue if I have that matter in mind. The other day, I had this brilliant thought and when I went into the document to change it, I realised I had already changed it the previous day!

Tom also talked about another form of reflection, which arose through questioning by others, questioning himself or having challenging discussions where contrary points of view were aired. This is discussed further in his recommendations for education later. He felt that gaining real experience or practice in something always enhanced his understanding more than a lot of his conventional education. It forced him to address issues he would not necessarily have thought of himself.

The other process we discussed was the contribution intuition made to his development and problem-solving processes. He felt, probably, that most of his intuition was based on prior experience:

It is like you practice a sport and some of the core skills you just do without thinking. It is all based on having a lot of repetition over time and being reinforced by reflection. So, you get to a place where you are no longer thinking about it, but you just do it. I feel a lot of things that I do now are a conscious result of me developing them over the past twenty years.

The final part of our research interview was concerned with what differences Tom would like to see in the education system.

This had two purposes for my research; one to do with providing me with more insight on what his experience has given him about education in general and secondly it was a natural way for him to compare his current development practice compared with an academic one. I have found there to be useful data for both aspects in most of the interviews I have undertaken.

When I think about education, it still strikes me as being too theoretical even when you are using simulations. It is getting that ability to learn by doing, learning, and working as a team and then other wider groups in the real world because this helps you see how other people think. And becoming aware that own your way of thinking is not the only way is also invaluable.

Another key element is reflection. I do not think there is enough use of reflection in a lot of the traditional learning that takes place When I talked earlier about my undergraduate degree, I was working the whole time, so any theories or models that were there, I would be using them at work. I think having that ability to experiment to get to understand them better, made my learning better. It is getting out there, getting into the workplace and I can see that with the interns that I have had. They have learnt as much with me as they have from their classes.

For example, a recent intern would have learnt a lot more about presenting because I had him make a final presentation on an investigation to two of us. We asked questions and critiqued it thinking this would help him with his final academic presentation. But, to our surprise this had already happened and none of these types of questions had been asked. Though he did not answer our questions well, when we talked further for a few minutes, he gave us the most insightful information of his whole internship. I said, "why was that not in your report or presentation?" "What you've just talked about is what I've been trying to get from you the whole time" It is that ability to not just do what you are told to do, so whilst your research and findings might not be perfect, your insights were really good. But you didn't see the value of them". He needed to see that different people would expect different things, so I think his work experience enabled him to see that reflection is important. It is something that I would like to see more of in traditional education.

An interesting dimension of reflection that Tom illustrated in the above piece was not self-reflection, but how an imposed reflection of questioning and discussion he and a colleague had with the intern forced him to review what he was doing in the moment and to understand how other involuntary insights he had gained could be more significant. Thus, the external critiquing process provided the jump start for the student to not only recognise what was valuable but also to kick start a better self-reflective process for himself in the future.

Tom's most significant academic experience occurred with his MBA programme at Darden Business School in the University of Virginia. The programme was principally based around the study of significant cases in business successes and failures:

The first day they discussed trusting the development process that I was going to be engaged in. The process is you get a case, you read it, you analyse it yourself, then you work with your learning team of five people to gain more reflection and then you re-work the case in the whole class cohort of your professor with further reflection after that. By the end of the two years, this process is ingrained as you have analysed over 200 cases and you have got really used to working collaboratively with people and to understand their differences. But the very clear overall message is that you are meant to use such a process to be successful at school and then beyond that in life.

I think a similar sort of thing could be done from high schools upwards. These days with online gaming, you can put together some very powerful simulations. I remember running a simulation our educational software company had developed nearly 20 years ago at Indiana University which had an MBA programme in the top 20 list. We ran it for 300 students and then ran a debrief with them that was considered essential. We were talking to some very bright people who I am sure have made millions of dollars since but at that stage they could not understand how pricing worked. They had priced the bicycle product they were selling for less than it cost them to build! But it was only through playing this game then seeing how their concept had failed, that made it a major learning for them.

There were a lot of other cases too when I was talking to students who said: "We had this operations course; we should have had this before we had the course because we would have paid more attention; because I can see the significance of the theories now but if problem comes too late, we have not actually learnt what we should have".

I believe having a bit of experience where you can see the consequences of failing is good. Fail in a safe environment, was what I used to say when I was selling the education software on ethical practices. It is not just winning the game that matters, it is what you learn from the experience. Thus, I would like to see this process of theory and real practice from high schools upwards.

Again because of Tom's combined academic and practical experience he demonstrates the understanding that learning means learning and practice in a real world. Also, that consequences start to matter when students have skin in the game. Additionally, that the real world is a natural learning environment throughout the whole of our lives and to effectively operate in it requires exposure to a variety of problems that have a multiplicity of solutions and that issues can be viewed in many ways by different participants. Models of practice are simply what we have at a given time to deal with a particular situation and then our learning from that and anything else we interact with makes it different the next time.

I have also practised these ideas quite a lot with my own children. I like to see them try stuff, fail, and learn from it. I want them to experience different opportunities, and then I talk to them about it. In sport for example, it is relatively easy to what worked, what did not, as well as having fun at the same time. It is easy to talk about how someone did this or that rather than looking at a book. As much as my son reads a King Williamson's book over and over, he learns more from going out and playing and discussing what happened afterwards. It is the same when it comes to help my kids perform; I do not talk or worry about specifics; it is just about the processes they know and use.

For example, I was talking to my son today; he has got to do something with natural disasters, and I told him to look at some actual examples that are closer to home, like the Christchurch earthquake or the current volcanic eruptions in Hawaii that he knows and to discuss the processes he might use. My son did a speech last year and as well as praising him I was asking him how he could improve the details like painting a picture and to provide an example statement to compare with one he did and to see the differences he could identify. I am there to help them both and they know I am interested in what they do, and they like me for that.

Tom provided some good information concerning his practice and development. He has a clear sense of how he undertakes his own development and that learning, and development are a continuous part of his professional practice. He particularly values the iterative inputs provided by the communities of practice he is involved with.

Another area that has struck me during the write up of Tom' s narrative is that his progress and success in life has been predicated on intrinsic rewards that have arisen from prior career successes, and the motivation he gains from actively developing himself in everything he does.

Martin Fry's story

Martin Fry and I have been close friends for the past 33 years. We met on a weekend programme for distance learning students on our MBA programme at Warwick University. This relationship has progressed through the years with him recently being in New Zealand for 6 years. He has been in the role of an associate pro vice chancellor for a New Zealand University, responsible for leadership education of the business school. Both of us have had different careers in the intervening period, including consultancy and tertiary academic careers for me and outsourcing, executive development, and university careers for him has led to the development and delivery of a behaviourally based leadership programme which has become a very successful master's programme in two countries, with over 100 graduates. Our friendship has endured because of our mutual passion for supporting the development of others and of using that to help them have "well lived lives". There is also the glue of enjoying technical things, finding out how things work, fixing problems and being passionate about the respective things we do.

Martin came from a humble background in the Scottish Highlands, with a Polish father who had been a demobbed conscript of the Polish army and therefore a refugee, and a mother with French/Scottish heritage both settled now in a different culture. This brought about close family ties as well as unconscious separation from the local culture. This was exacerbated by Martin losing school time for a year at primary level due to a bus accident. It was his prodigious intelligence and memory which enabled him to recover all his education with ease. However, learning was achieved less by formal education than being an avid reader and observing how his father went about repairing all sorts of household things and motor vehicles, as well as being an accomplished chef at the Dunblane resort hotel. For some time, his father was only able to come home at weekends. Both of Martin's parents were keen dancers with a passion for music. Martin's social skills developed as a teenager by helping with hotel reception work, working in retail and undertaking part-time hospital roles during his undergraduate days. At the same time, he developed his practical skills building and repairing motorcycles, then moving onto building hi fi systems for friends.

Since Scottish universities tend to start a year younger than most universities, he undertook a mixture of subjects including psychology, medical and computing subjects, all of which took his interest without any definite career in mind. Travel and relationships became a focus for a time before Martin undertook an educational degree to become a secondary school science teacher. He was motivated by this because of

coming across many young people who had not succeeded in the conventional system. It was an important breakthrough for later:

I was mainly driven by the fact that a lot of secondary school pupils have been turned off learning and no qualifications and ended up in the workforce unable to solve straight forward problems. I met many of them in that time, wandering around lost. By getting a teaching qualification, I learnt how to teach a class, how to put a lesson plan together and how to relate to students. There was no other place to discover this but the Teaching College and to practice in schools dynamically. That year, with teaching practice in dramatically different schools and rough areas of Edinburgh, taught me a huge amount. The students do not necessarily understand the professional concepts and processes that you are using to deliver a learning environment to them. But it was good for me to see how I could rely on my own process capability of teaching and using my personality to forge relationships.

The theme that emerged through all of this is that I like to join things together for others, in the same coherent, practical, and sensible ways that I experienced them. This helped me with non-certificate pupils in a science course, where I helped them to co-create problem solving processes for wider issues in their world.

It is not much different today, when I am working with a group of raw leader participants at the beginning of a programme. I must get to know them all individually very quickly and see the differences between them where they might clash and not clash, but I do not need to articulate that to them that I need a fairly broad field of experience to do that work. It is not easily teachable and that is a dilemma for me, because I would like more people to be able to what I do. I have been a teacher all my life and I do not want to pretend to do what does not work.

Like me, Martin then moved on through a series of ostensibly different careers that have led to the present day. Though they did not initially predict where he would end up, there are enough clues from how he described them as to why he has come to where he is now with a sense of self identity and purpose.

Following teaching, Martin moved onto a sales career with Gallenkamp selling scientific balances and later other scientific equipment with Fisons Scientific Equipment. This combined his ability to relate to people but to also understand how his customers could fully benefit from the scientific equipment he represented. This drew on his prior

psychology teaching experience, along with his ability to quickly understand his customers' scientific processes and problems.

I never wanted to become a head teacher; I was tired of the bureaucracy and the relentless groundhog days of teaching year in, year out. I looked to see if I could get into some lucrative but connected career, and an obvious thing I found was the selling of scientific equipment, into a variety of markets, industrial, educational, health etc. I took to it like petrol to a fire; I was very successful at it, but I do get bored quite quickly. I find I reach a point of diminishing returns even in areas which have great personal fascination, like photography and Hi-fi. This is a theme that I am uncovering in myself that my biggest reward are outcomes that makes a useful difference. I was promoted to a point where I was considering what to do next and heard an ad for the Warwick Distance Learning MBA. My organisation saw me as a worthwhile investment, and I was able to make a transformational change in my career direction and what I could do with my physical and mental assets.

The way in which he was able to transform himself was to use all the up- to- date information he was learning in papers like operational research, manufacturing strategy and operations to apply to both the customer service function in his organisation, and later to improve the related manufacturing system when he was promoted to new product development.

Later when the company downsized, Martin decided to go freelance. He quickly built a network of varied clients and found himself in a unique position with an oil industry project to combine all aspects of prior skills involving software, relational databases, design, and graphics, where he facilitated the bridging of several hitherto separate functions.

During this freelance consulting period, Martin became associated with summer school MBA programmes at the Open University, where he actively created cross functional case studies to simulate the types of work environments that MBA students were likely to meet in real work. He also helped provide instruction manuals to academic tutors to help them design and run similar work. Later, he decided he wanted to bring together more of his psychology and sales skills and was contracted by a leading UK outplacement consultancy to support current outplacement projects with some leading companies such as IBM. Due to his proficiency and performance this quickly led onto organisational culture assessments and supporting the outplacement company through a hostile takeover. Subsequently, this led to spending a couple of years supporting an

international pharmaceutical organisation with the development of a psychometric assessment that could help pinpoint sources of values-based conflict during mergers. This involved hiring and managing a team of associates, some of whom had capabilities beyond his own, but were not used to working for a common cause.

The reason for describing these career developments in some detail was to demonstrate the development of Martin's capability to apply all his experience gained as an adult to a continuous range of new challenges and new combinations of problems in organisational, technological, academic, and human behaviour fields with significant success and self-development through professional practice.

His career trajectory then paused for a while as he had to take on the sole responsibility for his young daughters' upbringing and a move to Ireland. The Irish Management Institute kindly provided him with a two-year journeyman role to provide support to fellow faculty members as well as to explore and develop a subject specialism of his own by researching and utilising a range of contemporary international research and adapting this for delivery in an Irish context. And this is where his interest in contemporary leadership practice emerged. And this has formed the basis of his career development and practice for the past 20 years.

This period of his career provides a good illustration of how he has continued to develop himself and how he has integrated his development approaches. Excerpts from his description are provided below:

At that point in the Irish Management Institute (IMI), I pursued with a small budget anything that I wanted to explore. I went off to a few programmes in Cranfield and examined their Praxis unit; went onto London and noticed the rise of Arts in Business. This was about bringing arts processes and techniques into organisational spaces. And there was a rising fad of getting executives on the floor with sugar paper and charcoal to draw visions and to participate in forum theatre techniques. These were all basic theatre techniques but wowed the corporate world possibly because they had not seen them since childhood. I saw a significant growing market there. My scrutiny determined some worked, some turned people off, some were irrelevant, and some were just a money spinner.

At the same time, there was a shift happening in psychology in the mid-1990s with the field of positive psychology and the emergence of strengths-based practice, which I had already experienced in my previous

outplacement and career development work. It became apparent to me then that this practice had evolved into a taxonomy and lexicon that was now being more widely adopted by organisational and development consultants.

Then of course Daniel Goleman wrote his famous book, which is a collection of essays by people working in the field that loosely came to be called Emotional Intelligence. I investigated this with my usual insatiable curiosity. I knew psychometrics and had developed a multilingual psychometric tool a short time before and normed it, could easily do the related maths, conceptual pattern recognition and related programming. I was quickly able to link several parts of my earlier career to this area. I assessed several instruments and related research from Canada, the Henley Institute, and Goleman Boyatzis Hay McBer. There was a lot of questionable science in this territory, and I determined to back myself with the best instrument I could find. I identified the Reuven Bar-On EQI model, which the Irish Management Institute also decided to fund, and we brought it in as mainstream means of assessing emotional social intelligence. I also considered aspects of sports psychology and proprioception; that is body memory, and the ability to be in a space and in a time and know where you are within it and know where you are going with it, which I was familiar with from high diving and gymnastics experience at school.

In sum, I had theatrical practice, sports physiology and psychology, emotional and social intelligence, and the field of positive psychology and strengths all coming together to allow me to create a range of programmes in the Irish Management Institute. These were all practice focused, experiential, challenging and worked. This then allowed me to produce my speciality, which was leadership practice development in what is now called the neuroscience space by combining these developmental techniques.

All the time, I was looking for something that worked and how it fitted with the other materials and processes. Anything that did not work, received poor feedback, or was not understood by my clients was dropped very quickly. I found that all I was doing was working with basic human processes that were already parts of familiar skills or behaviours. At the same time, I was able to interface knowledge from one discipline with another to advance overall practice, which is what I looked for all the time.

These developmental experiences formed a suite of developmental programmes called The Edge and their resulting success and reputation led me to being head hunted to a Scottish University and its Institute of Leadership and Management, where I had the opportunity to combine them into a MSc of Positive Leadership Practice. This was organised around a series of workshops and led a person on their own individual journey alongside their career and personal contexts. And this was now a coherent expansion of all the outplacement and career development work I had done in my earlier career.

What I now realise was that even if people had similar psychological profiles, the impact of their contexts could affect them in profoundly different ways. So, if my academic programme could help them mitigate that context, it would help them examine different directions for their further growth and potential for other contexts. That has been the basis of continuing its refinement until its present iteration as a Masters of Advanced Leadership Practice at a university here in New Zealand.

This extract from my discussion with Martin concerning the most significant output of his career to date illuminates some useful points concerning how he achieved this.

Firstly, nothing he learnt earlier in life is wasted. It is being used in more and different contexts.

Secondly, there are many cycles of iteration of his practice from one delivery of his programme to the next. This is being continually improved by the trial and error involved in its application.

Thirdly, he is both researching and reflecting on new areas all the time and identifying topics or processes that will help his students break through barriers and find measurable improvements for themselves. Thus, it is not one size fits all or one stop solutions that appeal, but the ongoing journey of innovation and growth of emergence through professional practice that he applies.

He not only recognises the significance of holism but that every individual can be successful in the field of leadership with their own version of holism. It is expansion of practice rather than reductionism to a singular theory.

I was interested to explore some of the components of his development that could contribute to a wider developmental framework of practice, and this forms the next stage of this narrative:

The learning theme that emerges through all of this is that I like to join things together and be coherent, practical, and sensible in the ways that I experience them. Now you could say that goes right back to me working with non-certificate pupils where I helped them to co-create problem solving processes for issues in their world. I do not think it is that much different when I am working with a group of raw participants at the beginning of a leadership development programme.

Leading is a contextually driven set of behaviours that either succeed in moving something forward into the future successfully or they protect and diminish the damage of a particular context and situation in which a leader looks after their followers. Where I come from in my approach is that any group of people in the corporate or organisation spaces have got a wisdom in uncovering their experiences and being able to make sense of it, and to rehearse different ways of being leaderly when it is needed, and without faking it. And to be ready but waiting. Because that is what a leader is, ready but waiting. It is a big ask for them to have the capability to be able to go into action quickly, concisely, and carefully and to bring this all together in the right proportions at any given moment as great leaders do.

As I look back at my learning, what gets me ready and capable is to have as many experiences as possible that work and do not work within a safe context. Just as you do not learn to swim in 20 metre swells off a trawler in the North Sea, if I am going to develop leaderly capabilities and resolve some bad habits, I am going to have to take some time to do it. This is tough work and needs to be carefully developed, organised, and applied. Thus, my understanding of learning for myself would be to experience something, try it, see if it works, and if it does not work ask if it was the wrong context, wrong people or the wrong materials. I then apply a scientific examination within a reflective frame but am looking for a synthesis that resolves the issues in a usable way. It is not enough for me to understand everything about something, but then not to be able to do anything with it. So, getting to the level of understanding where the edges of it all work is essential for me and always has been.

I know that I conceptualise quickly so I will try to learn a process by which I can hold a concept as a useful utility. For example, the simplest example I can give you is an equation $3 \times 2 = 6$. Now $3 \times 2 = 6$ has been my friend forever and the combination of $6 \div 3 = 2$ and $6 \div 2 = 3$, and $1/3$ of 6 is 2 and $1/2$ of 6 is 3. I can see them in many forms of multiplication, division, and denominator forms. That has been useful to me to manipulate that simple three-part equation as a process, rather than learning every combination discreetly. Thus, this process provides a series of useful outcomes from first principles. I like to try and work from first principles with my learning.

Whilst Martin is at heart a scientist, and understands the philosophical principles behind ontology and epistemology, he is also a conceptual and pragmatic person and likes the ideas of bending the principles of paradigms to extract practical benefits, particularly in the space between arts and science which he considers was crudely separated by CP Snow's influence on education in the middle of the last century. He describes his bending conventional rules as follows:

I look at a lot of stuff in terms of whether it fits with some people's experiences and has a synthesis not necessarily to break a paradigm but to enhance the scope of a paradigm. And I like the idea of an over-arching conceptual space in which certain outliers can be examined that we do not have the knowledge to truly explain.

If I take the book behind me, "The Heart Aroused; The preservation of soul and spirit in corporate America", I came across that book by accident working with Laurence Olivier's son and saw him use a couple of paragraphs to illustrate something. It reminded me that I had used books and such like to illustrate things before, but this application was particularly powerful. I thought there is a whole area of literature and poetry from this domain that has powerful implications for enhancing peoples spiritual and reflexive capability, but they were turned off it at school.

I now introduce that aspect of arts and aesthetics into my programmes on the basis that I see them contribute in 'aha' moments and enlightenment which not only cures people's distaste of Shakespeare and poetry but becomes absorbed and part of their way of future being. I then ask myself if this is true, what about other stuff? By asking myself the questions of why they do or not do this, I am delving into some of the deep dark secrets of getting leaders to be more flexible, more capable, and to have them experience many more

things than their prior narrow path allowed them to. This of course must include the darkness that many of them see when you mention science or emotions.

I find it a useful way of human being's learning to be more adaptable and to give them a more existential and epicurean existence. I said before well lived lives and well led organisations drive me so anything that I discover like this I will store and experiment with, and the etymology of that word of course contains a sense and need to be aware of the dangers. Thus, I need to be courageous, but careful, in facing the danger of using such material in this context with a wide variety of participants.

An example I shall give you is every year I take the Master of Advanced Leadership Practice participants to the Pop-Up Globe to experience a Shakespearian play as "groundlings". I reckon that they should experience some sense of aesthetics, because life is not just about economic return in this neo-liberal world. I try to open them up as much as possible to other disciplines knowing that if I can create what I would call a translatable learning and development experience that they enjoy, that this will enhance their capabilities as a leader and potentially be contagious to others.

When somebody says "Oh Shakespeare, I don't like it", they are able to say "No hold on a minute, I was a groundling with Richard the Third looking into my eyes and promising me eternal fame if I would follow him into his darkness." An experiential re-interpretation happens in those one-off moments. I know that because of all the work I do. I want them to wake up as learning needs to be conscious; it is paying attention to what we fail to notice, that we fail to notice. When I make them experience it as a groundling, they do notice what they fail to notice using those other dormant senses, that the groundlings, who were the common people used, and thereby get a feel and view of the politics and contemporary life that was being played out on stage. This is the same way that the groundling's reactions gave the gentry in the circles above them a view of the people and they listened too. They often suddenly understand leading and leadership influence in those times and that Shakespeare was trying to influence the leaders of the time with his plays.

The significance of this to my study is by placing students in unfamiliar experiential contexts, they become conscious of new things, new ways of looking and experiencing

those things physically and emotionally. This will echo onwards in other aspects of life and will bring about changes in perspective. It is an effective way of accessing the don't know you don't know portion of their Johari windows.

Martin considers many people do not have a good sense of their learning based on how they have learnt formally in the past:

In general, people are not asked how they learn and therefore they are largely ignorant of their own processes. It is difficult to find out unless you spend time to get to know them and to see how they pick things up. And a tremendous amount of people still considers it as simply the relationship between knowledge acquisition and memorisation due to their own education experience. I think it is probably useful to examine what others think, who are not in academia or higher education, or those assuming a cognitive knowledge paradigm. I have found the word learning is in fact a bit of a stumbling block in our disciplines.

We talked about some current examples of learning relating to how he goes about choosing equipment like coffee machines or planning how to obtain rare spare parts in this part of the world and the steps he takes in planning, analysing, and solving these issues:

In situations like this, all my ways of learning come together; through research, reading, assessing, analysing, knowing what I am reading, knowing what to disregard, working out which manufacturers are likely to be making parts for their coffee machines in 10 or more years' time and no matter what they look like on the outside, will probably be built the same on the inside. When I was assessing all the brand names, one I looked at was Jura, because it was the most expensive, Swiss made, and nobody tended to use them unless they were running a café bar. Contrary to expectations, they had a wealth of available user and service manuals which indicated they did not want the public to feel uninformed. It was also the way they said, "Now you have one of these machines, you need to play with it and make lots of kinds of coffee, make mistakes and know that you that you can now make any kind of coffee," that I found attractive. Critical thinking and analysis come into it and then I am iterating that to see if I have optimised my analysis and my choices as to what I am doing about it.

Process is more important than content because if you have poor content and a good process you will still develop something. However, process still needs to be adapted to a desired outcome. In the case of my leadership programme where there are many different human beings with different visions, values, and everything you can think of, the process must be adaptable as we should never regard these people as the same either at the beginning or the end. You can measure how motivated they are for money for example at the beginning and the end but that is a singularity. Nothing in good process design for people adapts or accommodates singularities well. Because, as these people are going through the process, they are interacting and changing by the very nature of the interactions and the process unless you keep them separate. I am not looking for singularity in my leadership work. Becoming a leader and being able to exhibit leadership is a current reflexivity that grows adaptability to the future without carrying a huge amount of subconscious and other baggage from the present.

The important understanding, I take from this extract is that rather than attempting to produce clones, the complexity and dynamism of our contemporary world needs people who come at things in different ways. It is the combination of different people working in harmony that delivers the most effective results. At the same time, people can recognise that a process moves them forwards from a starting point to a new point or perspective. But this will only be temporary too, before moving on again.

I explored with Martin some of his techniques he uses as part of who he is and what he does. This covered areas like subconscious reflection, 'aha' moments and intuition.

My modus operandi is that my time is divided into two parts. Some of it is divided into the here and now. I am working on the engineering of problem where I am gathering information, I am analysing and trialling the results; I have a set time limit in which to get to the point of knowing enough to do it. Thus, apportioning time for part of the problems solving process needs to be done carefully.

The second way I utilise time is much more meditative relaxed and Zen like. Here it is nothing to do with control and you can be talking to people about coffee or coffee machines and suddenly somebody says something about something else that connects to something significant. I try not to let the context constrain my receptivity. There is this bit of learning that is self-resourcing but gathered in other ways. In my experience, it tends to happen

within an acceptable time frame. I can also go to bed and go to sleep and maybe one thought strikes me that I need to check out and that is a kind of a reflection on where my obstacles are because I have parked them to consider them later. The word reflection to describe this process could be a misnomer in my view because in some respects, what I am doing is identifying a block or a problem.

We talked about 'aha' moments a couple of times which reflected two different perspectives Martin had of the topic. In the first, he likened it to a lightbulb moment, where he saw an important way of progressing his DBA study in the field of leadership in a powerful way because of how Martin could use his tutor's self interest in his own research work to support Martin's aims even though the focus was very different. And the second referred to his concept of 'aha' moments and his vagueness with its definition.

I must write a literature review, the trap is that I go and write a literature review about all the literature I like, I go down the PhD route, I only talking about embodiment instead of wanting to talk about poetry, about painting, art and leadership and art and science. I want to think about putting together a professional doctorate in leadership arts. So, how could I make that attractive? Well, I discovered part of it had already been written by my supervisor and a few others who looked at leadership development in tertiary education worldwide. They produced a directory, together with a ten-page summary, on everything they could find for the Educational Institution of Leadership in the UK. The summary is practically my literature review of all the leader development provision that is currently going on and with my supervisor encouraging me to use his work it was like a lightbulb went off in my head. It was not so much an "aha" moment as a hehe moment. None of them work in leader development. None of them have had my experience in personality assessment and outplacement, where I have been able to influence the transformation of "arrogant status driven habituated individuals" into relating human beings. What is needed to solve the problem is for me to work in partnership with them in terms of their learning, their scrutiny, there critical analysis and what have you, and to co-create/produce something that solves their problem without them having to spend many years trying to invent something.

My learning moment was again to meet these researchers and seek their support to link their domain of understanding with my domain of

understanding. And if we can bring these two domains together and I can undertake this within the academic scrutiny and critical acceptance of the DBA process, then we might just be able to create a professional doctorate in the leadership arts.

I do not think people create 'aha' moments for themselves, but they can enter situations in which they may happen, or they can leave them alone. Curiosity is the key to that for me; being open to what you are seeing in front of you. Also, trying not to close something down because of unconscious bias, and being open to what the experience, sensory, cognitive, verbal is telling you.

My problem is that so much of acceptable learning appears predicated to the cognitive written domain when I know 90% of it is experiential, existential or an impact of it. And this is the catalyst to the utility of anything in the world that you might wish to know.

For me, conscious reflection is not a separate thing. I do not see it as an iteration where you take big chunks of stuff away and analyse it or reflect on it separately. I am aware of it as a holistic almost parallel process. This type of attention on an object is like a useful supplement to the main process.

Another subject we discussed was his understanding of intuition and whether it was related to prior experience or not:

I understand intuition works for all of us in every sense of the word, all the time. And mostly we do not notice it because we are built as human beings to intuit. It is a natural human condition which can be inhibited by creation of risk aversion by our our-frontal cortex because naturally it poses some risk. Since it is a known way of arranging things to produce other possibilities or to see things in different ways. And this is where I take issue with most learning and development in schools which relies on conscious logical practices that will force us to compete with artificial intelligence and machine learning when such machines will never intuit. Yes, I have used intuition a considerable amount in my life. One example being helping me to decide how best I could conceptualise my DBA study and how my intuition helped me reach a desired point of knowing.

In my conceptual frame, intuition means openness, not trying to immediately classify something but letting it wander around. For example, finding out that venomologists, have identified that a gila monster's venom contains a

potential chemical that could help the treatment of diabetes in humans. I find that realisation by those people fascinating and that to me is where intuition sits, in that many answers already exist but are not obviously apparent, but intuition uncovers things because you are not locking things down.

I do not consider intuition anchors itself in specific experiences. it is a free-floating contingent process; it is the spirit of human survival, and it is at the very heart of getting ourselves out of situations. I have no better way of putting it. It is a magic ingredient that we should reinforce and reward in all children so that they never lose it; not that it's going to be useful to them 100% of the time, but not to condemn it either.

Martin has a strong sense of how he defines some of these abstract processes of reflection and intuition, which I find useful. Even more useful is that he is making use of all of these in his day-to-day life. His approach is coherent and integrated, and he is open to adjusting how everything fits together and then it changes again, like a kaleidoscope. I believe, like he does, that the multiplicity of human perception and practice is a benefit rather than a disadvantage when facing the contemporary challenges of a complex world. He also makes full use of both conscious and subconscious processes in his professional life.

The final part of our discussion looked at the contemporary education system and its utility in our modern world:

I do not think modern education is preparing people in the best way it could. There are lots of great teachers, but I think a lot of them are beholden to a sack of research on their back and their tendency is to focus on that rather encouraging their students' curiosity and developing autonomy with their learning. There is still too much control within the system in terms of what it tells you and what you must learn. And what you get from one teacher to the next is almost random which I do not think is helpful. If you were able to structure your own learning and development with some guidance towards competence or capability, there is so much available free if you know how to access it.

I think that current educational systems are laughable in that they are still around saying and doing much the same thing as 50 years ago, when everything else such infrastructure, technology, tools, processes, and the capability to deal with them are so radically different. At that time, there was a

general need to educate the public because of both consumerism and individual freedom in the western world beginning to show its face after two desperate world wars. But the education system failed to re-design itself to be more amenable to produce rounded human beings to live well lived lives and helping them to feel something as important as they matter.

When people have said to me in leader and management development that it is not good to manipulate people; I say if you know the psychology of groups you can manipulate them in any way you want to; it is a matter of whether it is done with good or evil intent. In the same way, I see the education system as manipulative in creating expectations that it will get you a job and if you do not then you do not deserve to have a job and will be a reject on the pile. And so many people are on the pile and judged as sub-optimal because the education system is undeserving in having them. It was neither built nor operates to maintain curiosity, a sense of worth and opportunities to contribute to the real world. That is even more the case now that we do not need so much brawn in the world.

Education needs to be providing positive experiences that make people feel valuable and that they have strengths and capabilities that they can use for themselves and to benefit to others. Also, to enable them to see options for different activities that provide a fair exchange of intrinsic and extrinsic value with other people. But to base it all on a waged economy and job hierarchies with singular value is wrong and inappropriate for this day and age.

We keep talking about jobs, roles, titles, but as I said to you earlier today there is now a niche market of people who cuddle lonely people and get paid for it. It used to be that within our society people would get cuddles and wouldn't necessarily have to pay for that because they are lonely, so why are there all these lonely people? There is a whole raft of change going through our society and yet there is an unchanging assumption that we still need to get educated to get a job. To have a well lived life and to have a job that you love rather than endure; we are still operating in that model which is more about wage slavery.

We need a model which is going to enhance peoples' sense of themselves and their worth, not by getting celebrity status or hits on Facebook, but to start looking at success, not in terms of money, status, or title, but in terms of significance to feel as if you matter and as if you are making a contribution.

Because as was seen with the Maori, if you take away people's sense of identity and contribution to those things that matter to them, they become emasculated.

I think the education system now has not looked at itself no matter whoever is in charge and been able to see that most of it is now run by businesspeople for a business purpose. It is not run to make people have well lived lives, or to feel good about themselves. It has introduced metrics into primary school and there are many things that are completely skewed about that type of system at that level. In my very early days, I felt really good about the education system because I had teachers who said to me "Oh you can read really well, you're going to be telling stories when you get older" To have somebody say that to you, when you can't see it in yourself, is what we need more of, rather than people telling us what we don't know and basing the whole on some form of criterion based assessments that are used to grade people against each other. I am just trying to think where, Singapore I think, just recently decided it's not going to produce tables of class results where people can compare themselves to others. You only compare yourself to yourself. So, you do not know how others are doing, you only know how you are doing. It is all about you trying to do better for yourself.

I have mentioned the holistic dimension of Martin's thinking on education previously and it is once more reflected strongly here. More importantly there is a recognition in which the education needed today needs to fit the purpose of an individual and that our environment is one where more people are less likely to have work that is purely economically focussed. And Artificial Intelligence (AI) is not a chance to replace people with an autonomous non-diverse population of robots, but an opportunity to fully develop the unique capabilities of human beings to transform societies and their relationships. Education rather than being driven by emotionless logic should be filled with joy and creativity so people are able to fulfil a diversity of roles that are harmonious and fulfilling.

Conclusions

It was my subliminal awareness of this overall understanding of the participant interviews that led me to derive the initial developmental framework of practice. It is only now, following completion of each participant's individual narrative, that I can see the origin of this.

The most important finding of their narratives is the coherent way in which the participants deliver and develop their practice. It is their gestalt or identity and how everything they do is guided by the whole of their self-identity and narrative of their lives and experiences. Everything builds on what has gone before. This is not simply derived from conventional learning, but is also guided by the individual's nature, emotions, and subconscious cognitive and metacognitive processes. Due to the nature of our minds much of this can be hidden in the moment, but it is the supporting conscious and desired actions individually and with others that makes lives and actions count. This is very different from the specified outcomes and processes of conventional education and its emphasis towards siloed knowledge frameworks.

The participants clearly demonstrated how they have successfully navigated their lives in meaningful ways during a period of rapid and increasing change. This has not been as repositories of knowledge skills and behaviours, but as human beings and all the diverse contributions and potential they bring with that.

Unconsciously, there are many paradigms we have been inculcated with that suggest our existence is to serve economic and political behemoths and that currently huge amounts of our potential are being overlooked or wasted in serving narrow ends. But these paradigms are open to change, and it is through understanding and control of our wholeness and ways of improving this which will bring that about.

We currently survive and thrive despite our education system. My hope is that the insights from this thesis and related research will help to change this in a new decade filled with more challenges than before and needing our human potential and creativity more than ever.

Whilst my own experiences during this journey have been significant, it is the combination of the participants' narratives together with other experiences that has staircased me to this current point of understanding. Not simply of what the developmental framework of practice is, but how I might apply it more widely in education contexts and with my future students.

Chapter 6 Participants' stories as 'narrative as inquiry'

The narratives of my participants have provided some interesting outcomes which I will discuss in more detail below. Note, the shaded sections included here are my reflective summaries and insights arising from this narrative as inquiry.

The first and perhaps most significant outcome is that each person operates in a holistic manner with their practice, and development forms a natural but mostly subconscious part of that practice. The development is contextual and unique to each individual and is expressed principally in terms of their own professional and personal contexts such as music, teaching, language learning communication and leadership development. There are underpinning processes at play which they make use of, for instance practice, trial and error, reflection and teaching as well as metacognitive processes such as thinking, reflection, 'aha' moments and intuition. The significance of their totality of practice is an integrated whole and not a series of parts. It is a schema of gestalt and an integrated narrative of professional identity that has found its own version and way of success in the world.

When re-considering Polkinghorne's (1991) concept of narrative as being the mechanism of self-identity and how this changes throughout life, it struck me that this is concerned with the holistic way in which we see and operate in the world. Our picture of it is not as provided in conceptual knowledge textbooks divided into tidy schemata; it is who we are and how we operate and learn in our everyday world through having a coherent integrated picture of ourselves which we continuously and mostly subconsciously refine while living our personal and professional lives. This is not done in an isolated way as individuals but is seamlessly integrated within the communities of practice we inhabit.

Polkinghorne aligns his concept of a self-identity narrative with other researchers, in particular Mandler's (1984) schematic idea of knowledge in which parts form a whole as in a scene of spatial schemata or plots of temporal events. This contrasts with traditional concepts where objects, including self-identity were described in terms of the characteristics of their parts.

Whilst narratives as stories can have stable beginnings, middles and ends, self-identity is subject to ongoing events and changes. Our narrative develops and changes through time.

This concept of narrative as identity has developed significantly since this time within both social and psychological fields of research.

In the social space, Field (2012) summarises a number of contemporary researchers' perspectives. They are concerned with learning and our narratives as a natural and lifelong way of capturing learning and providing our capacity to operate in life. He mentions the need for continuous reflexivity, as suggested by social theorist Giddens (1991), as being needed to cope with the speed of change in contemporary society. He also mentions West (1996), whose concept of identity is influenced by hidden and unconscious aspects of self.

Field also considers the important contribution of the philosopher, Bourdieu (1985) to contemporary identity perspectives. Bourdieu describes narrative comprehension in two ways; firstly, as an individual's position in cultural, social, and economic space, secondly, as habitus which is a related set of dispositions in values and behaviours. The individual's position in life, history, geography, and social contexts influence situated learning, whereas their dispositions both influence and are influenced by their learning. Field sees situated learning as an integrative part of generative social practice in the lived-in world. This has been illuminated by the contribution to Cultural-Historical Activity theory by Engeström (2001) which examines learning in a systemic context. Learning is treated as practice based and embedded in everyday related activity where knowledge and practice is valued and shared by groups of members. This situation is both supportive and constraining of learning from Bourdieu's perspective.

In the cognitive space, McAdams (2012) has been one of the leading cognitive researchers to support the validity of narrative and personal identity. He affirms its utility in contemporary developmental, social, clinical, and cultural psychological fields. In his paper on *Psychological themes through life narrative accounts*, he identifies its propositional validity as follows:

People construct and internalise narratives to make sense of their lives. These narratives have sufficient meaning and durability to be expressed as narrative accounts. Psychologists can analyse the structure, themes, and functional attributes to provide meaningful evidence of a narrative's psychological social and cultural gestalt and perspectives. These provide cognitive scientists with information on autobiographical memory study and its role in identity development and personality traits for psychological wellbeing for personality psychologists.

This contemporary research in life narratives is contributing to both forms of empirical research; the *context of discovery* in which the inductive results of qualitative research identify themes, problems, and qualitative characteristics; and the *context of*

justification where quantitative hypotheses are tested with validated coding systems and statistical analysis methods.

In a later paper on narrative identity, McAdams and McLean (2013) discuss how recent interest in the way individuals' evolving narratives support psychological adaption and development. This made use of a range of successful coding constructs including:

- Agency which describes the extent that individuals make things happen for themselves
- Communion that identifies how others are involved in their individual successes
- Redemption in which individuals change a bad situation into a better one for themselves from coping proactively with the difficult one
- Contamination in which a positive outcome for an individual may have negative consequences for others
- Meaning making that describes the extent of adaption or learning from events or situations
- Exploratory narrative processing that identifies the extent of self-exploration undertaken in the self-narrative
- Coherent positive resolution which describes the extent to which issues are resolved and whether they produce a positive outcome

Evidence of some of these constructs in a narrative have demonstrated how individuals enjoy increased personal agency and higher levels of mental health and wellbeing. The emphasis, in application of these understandings, appears to be more to help people suffering from emotional harm than to illuminate professional success, as discussed in my narratives.

A contrasting paper on *Narrative learning in adulthood is provided by Clark and Rossiter (2008)*, where they see a strong link between narrative and experiential learning. They consider narratives help make useful meaning of experience by creating connections between experience and a related social milieu. It is a good way of recording change and provides a critical way of evaluating experience as it develops. They cite Freeman (1991), to indicate that it is also reflective and retrospective occurring after an individual has reached a new phase of comprehension and understanding.

Clark and Rossiter (2008) see narrative learning as forming part of a constructivist learning theory where learning is identified as a construction of meaning from

experience. They identify close linkages between their work and contemporary pioneers such as Dewey and Lindeman (1961). Lindeman identifies:

Experience as the adult's learning textbook (p.121).

Later, the concept of andragogy developed by Knowles (1980) assumes adult learners bring a lot of prior experience to any learning context. Their paper also sees linkage between narrative construction and reflection in action in line with Kolb (1984) and Boud and Walker (1990). But more importantly, narrative learning extends an individual narrative into the social milieu of groups and culture at large and forms part of the social learning identified by Lave and Wenger (1991).

Clark and Rossiter consider that narrative learning helps make an experience accessible by the process of storying it which helps extract the meaning for the author and others. They see it in two ways. Firstly, the practice of learning through stories and secondly, the conceptualisation process itself. The story process includes the hearing of it and what it evokes at many levels, telling it, where learning is occurring through the telling of it and recognising how their stories and other people form part of the narrative in wider groups and society at large.

In the education space, I have become aware of work by Tomlinson (2019) and others who describe how university students are better able to develop their professional identities through work integrated learning experiences and solving real world problems. They describe the professional identity characteristics in terms of a set of granular behavioural capabilities along the lines of Scott (2016). This provides some related support to the conclusions I am drawing here in an integrated manner. My conclusion is that our identity is not simply emotional and behavioural characteristics, but an integrated whole of everything we have learnt and practised throughout our lives.

My further review of this information has led me to consider that our individual narrative is like the tip of an iceberg of our totality of our known and unknown practice and capabilities. This will be discussed further as a context of discovery in connection with other information in Chapter 7.

This gestalt concept is reinforced by the second finding. Specifically, that nearly all of the participants thought that education should offer a lot more choice and interaction with real world experience as the base of educational experience. Moreover, for individuals to become confident at finding their own development pathway was more significant than being pre-loaded with silos of unconnected conceptual knowledge.

Progress is not done in a piecemeal way, but with the aid of both cyclical and iterative processes. We are continually adding new aspects of knowledge and skill to our repertoire. It is a 'just in time' process. Considering the recommendations many of the participants have made, this should be associated with real issues or needs at a time of need, rather than as indigestible lumps of predetermined knowledge or practice.

Given my research focus on development and learning, it is my responsibility to make sense of the personal understanding provided by the participants to propose in general, how they successfully operate as professionals.

The participants provided me with many clues; Jean Clarke and her concept of practice as a picture; John Mason and the need to experience the reality for oneself to be able to understand the interplay and subtleties of many competing ideas; being placed as a groundling in a Shakespeare play to understand the perspective Shakespeare was trying to convey to the elite in society as to how they were being seen by others, from Martin Fry. Such snapshots have helped me to rationalise some common elements of development which have led to my developmental framework of practice.

Moreover, the approach and processes these professionals are successfully employing is no different than the behaviour of young children playing and taking on what they need for themselves at a given point in time. This contrasts with the principal model of conventional education and the prevailing contemporary positivist philosophy of attempting to find uniform answers for our world and ourselves, as opposed to celebrating the diversity of knowledge and practice possible within humankind.

With the above backcloth in mind, my participants have shown me the following:

They have demonstrated their success as professionals in one or more fields of practice and have identified unique ways of both perceiving and undertaking their professional roles. They are undertaking continual adaptation and development throughout their professional careers. driven by vision and passion as much as by professional competence. There is striving for coherent and integrated performances which deliver their professional outcomes with a personal sense of style. They have provided sensible recommendations for education that involve and build the whole person being able to live their lives as responsible adults. They bring their own unique set of talents to contribute to their development and the wellbeing of society in collaboration with others.

At this stage of the thesis, the best way to collectively describe their *modus operandi* is that they are continually engaged in processes that are delivering the outcomes

expected in their professional fields. That is supported by their membership of a relevant community of practice and rewards that are derived from principally intrinsic, as opposed to extrinsic motivation. They are growing and making progress through reflection and self-evaluation of their performance. Furthermore, they are using cyclical processes such as problem-solving, research and experiential learning to staircase themselves.

These processes form cycles of practice that are in many cases unconscious to their owners as learning, compared with achievement of a goal, completion of a project or reaching a successful outcome (Figure 9).

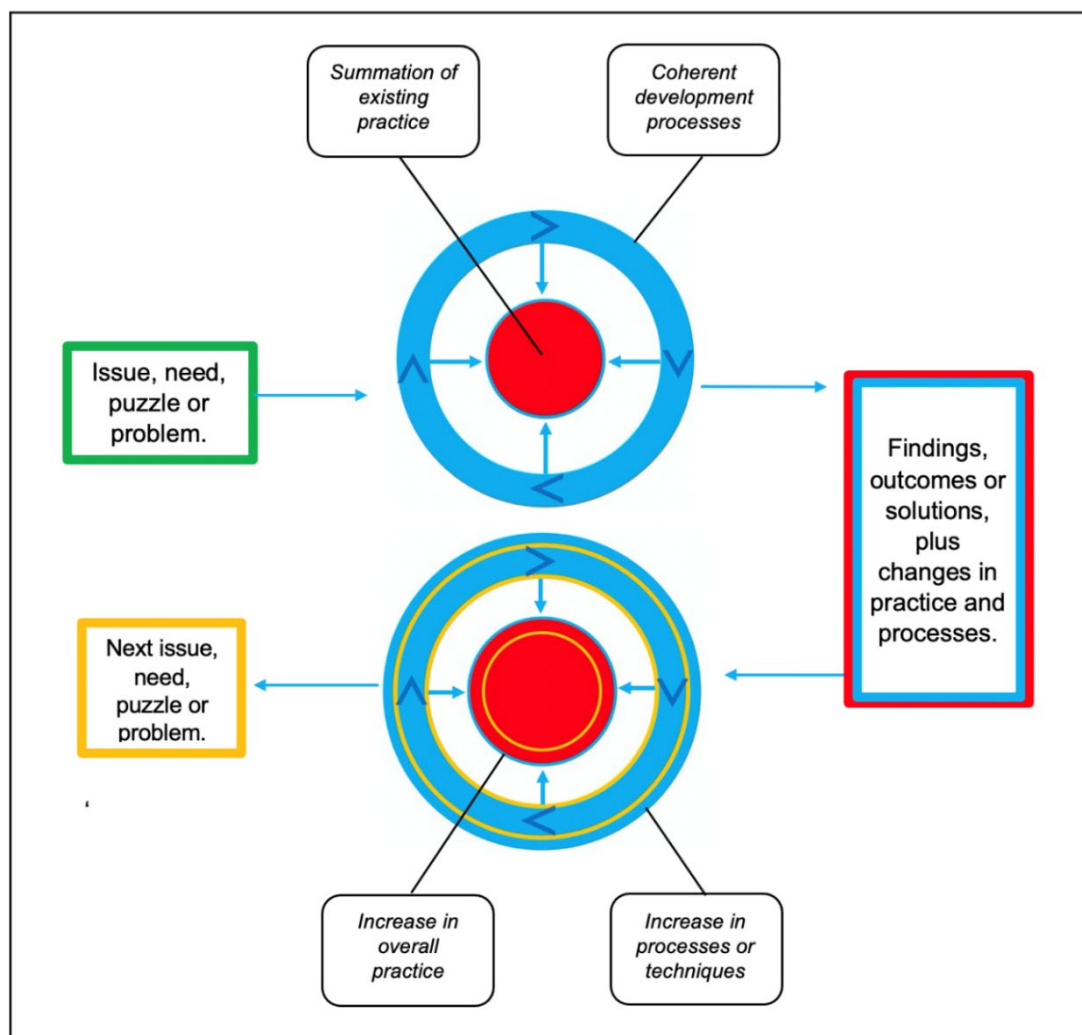


Figure 9. Individual developmental practice
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In each cycle of iteration new knowledge, new skills, and new linkages with other areas of their practice are being realised and added to their professional repertoire for

repetition or further development. This new knowledge or skill is not held separately but integrated as a whole and reused in new activities or projects. This gestalt is representative of their identity and practice at a given point in time.

As Figure 9 shows, the individual at a given point of time can be represented by the sum of their practice in one or more fields and the sum of the processes that enable their enhancement from one cycle of practice to another. This forms the basis of my developmental framework of practice.

A third useful finding has been the participant experiences with conscious, subconscious, and meta cognitive processes associated with their practice and development. These are combined and summarised below to assist with their integration in a refined developmental framework of practice later.

Problem solving, research and experiential learning

The sense of many of my participants is that they have been making positive progress all through their lives. Moreover, they have been reaping the benefits of that in material and more significantly personal ways, without giving a lot of thought as to how they have achieved this.

They are largely fulfilled emotionally, and they are confident with their practice and capability. This is because they have achieved success in their terms and have career records which have provided them with significant outcomes and milestones. They have strong narratives that are congruent with their identities.

Here are some quotes from their narratives which illustrate this:

Rob Macintosh

I understand the big picture or the key idea and then build up from there, build up the detail, the depth that is needed for the matter. Also, it involves practice, figuring it out and putting it to the test to see if it is observable so it is semi scientific and then comparing it with published information or other people, working in the same area.

John Mason

We need to learn information in categories, and we need to have a learning process that helps us in the real world. But each part has a separate function. One is bits and pieces, and one is holistic, and they seem to fit together quite well.

It is the acquired part that provides the fluency. The learned part, the learned part is memory recall, and you tend to forget things when you learn them linearly When you learn things through an acquisition process, they seem to stay permanently in your memory because these are the things that make sense, and they go together in structures.

Jean Clarke

If it is something that I absolutely know nothing about, then I think it is still the process that I use overwhelmingly. Here is the picture; which bit can I look at first to get an understanding of it what are the component parts of this idea that I might want to explore so I can manage it?

And as she progresses further.

Well, it is the same as the old jigsaw puzzle you know. I kind of do the outline and think what it looks like and then I think all these bits and pieces belong to this idea or this part that I am exploring and then you re-arrange the pieces. Within a couple of days, you begin to realise that the component manageable parts that I have thought about are not going to fit, or you do not have all the parts or some of the parts have to be newly created. So, I try and make it so that the components parts are independent of each other, but they can be fluidly moved around to fit in with the others until there is a cohesion to it.

Another analogy she uses for her learning process is that of narrative:

I am really into the narrative, the kind of narrative approach. What is the story that is being told, what is the story that needs to be told, who are the characters involved in the, in the story, and then how does it all fit together? How is the solution able to be done and what is the next step that covers all the characters in the narrative?

Dean Roberts

I am conscious that if I want to do something from building a shed to fixing the car to fixing some elements on the stove you have got to be a problem solver. And I know that I can find a way to fix it, even if it's something I have never done before I don't sort of shy away from it because I guess I have some confidence from general problem solving. I have a problem-solving approach which is always there and as long as I have the time and energy, I know I can fix or solve things.

For example, looking at a recent tour with a group of tourists, you realise that there was not quite time for that activity to do it properly or maybe you do something different elsewhere, so you are juggling things all the time based on the experience of your recent tours. So, you have taken all this on board as accumulated experience so when you go around the next time you tap into that and change it accordingly. It is giving you constant improvement.

Dan Douglas

I guess it is a combination of several processes, isn't it? I have done some research, or I have found these things that are analogous to something I know of or have seen before, and I have a good idea how this works and now I can think about how I can apply them. However, the world has moved on, the markets are not the same, so I need to research the market to understand exactly what the new market is, but I know there is an opportunity. So, this is the professional process; I pick up research, I pick up opportunity, I pick up technology and then, and then actually once I've looked at that aspect then let me look at the business model; what do I need to invest in terms of time and money to make this viable?

To be successful you have got to have lost several times. And you have had to screw up several times. So, I think there is this whole process of actual application.

Tom Naylor

I like to start with understanding an issue and coming up with some type of solution and then having it critiqued and work through it. I guess I personally like to try it, as it helps me see the end of it; it helps frame it to everyone else that there is going to be change.

Even if it fails first time, you have got to know the factors, but it is about understanding and, and working together with others to make sure they pay attention, talk about it, try to understand it and consider the actual data before repeating the same process again.

There are references to the processes of problem solving, research and experiential learning but mainly it is an integral part of their professional practice. It is not several processes to them but one. At the same time, they see it as being cyclical and iterative in that the results need improvement or that improvements are obtained through repetition.

But most importantly, they see it and achieve it successfully in their way.

I have had the privilege of thinking and reflecting about this for several years through this study and it has led me to conclude first, that problem solving, and research are for me inherently the same process. For the former one is dealing with solving a problem where one already has a model of understanding relating to the problem. In the latter, one first must create a model and identify the characteristics which are significant to its behaviour or practice. Moreover, that for each cycle undertaken, new insights are obtained from one cycle to the next until the issue first identified has reached a temporary, but sufficient, state of comprehension. The result is a new state of learning that results in a new perspective, often of an underpinning theoretical model or new knowledge, that extends or modifies a model. This has been directly applicable to the cycles of growing comprehension that have occurred in this doctoral journey. Another factor which is interesting in the above is that rather than starting with bits of a problems, several of them try to see a big picture first before disaggregating it into component parts.

Conscious reflection

All of my participants are familiar with conscious or convergent reflective practice in its many guises. both during and after activities in their practice. Some examples are provided below.

Rob Mackintosh

One of students' measures of performance is their reflection on how successful they have been from the task; whether they better or worse because of the experience they have gone through. And that is the way we measure things in life where we are in an environment with many influences and people around you with different perspectives.

And it is just as true for me too, I go into the classroom, and I undertake a programme or lesson and every day I reflect on how that went in a whole sense from how the learners participate, how I did it, what worked, and essentially that students got it OK. And then there was a further cycle where you compared what you have concluded with other experts. And I was able to work out what worked and what did not. And the only stuff that remained was what I could work with and develop it to be more effective.

John Mason

Reflection is more retrospective, summarising and restructuring my experience. Maybe it helps with the translation between linear and acquisition learning.

Jean Clarke

For me conscious reflection is looking at what has happened or looking at the situation, looking at the story as you know it, whatever that story is, and then looking at what the meaning is, or what has that story created and then how that can be further developed in a positive manner.

What it is that I want to know or complete or find out? And when I've got what I want or I'm at the stage where I can rest it, I can rest it because I've now got to the stage where I need to just let it all filter away so that the next time, I approach it, I can move on with it.

Charles Hulme

Where reflection can come is when I am sitting on the ferry going home. I will go through an issue specifically and sort of deconstruct it.

Dean Roberts

I use some reflection time to go back over tours. I am doing the same tour five or six times per season at present. So, you get the opportunity to compare each with the last one. That activity, that visit, that stop, that was really worthwhile; that was a total waste of time, so I am not going back there.

Dan Douglas

Well, it could be all about understanding. OK, so basically do this, it works, yes or no, yes, no, review. Why did it work this time and not work another? Things have changed what has changed?

Go back and address the model. What is it you used, does it now function or what has changed that makes the model less useful and have things changed to the extent that your model is no longer of any use to you, and you really have to write it off and start over again?

Martin Fry

For me conscious reflection is not a separate thing. I do not see it as an iteration where you take big chunks of stuff away and analyse it or reflect on it separately. I am aware of it as a holistic almost parallel process. In that this type of attention on an object is like a useful focus or supplement to the main process.

Most participants see it as form of review on things that have happened and how the outcome or process might have deviated from what is expected. This is no different to the cyclical models of Gibbs (2013), Boud and Walker (1991) and Moon (2013) and is to some extent a replica of a bigger problem cycle but focussed on specific elements of it. The results can challenge the process, the model being applied or what has changed or needs to be changed from previous similar cycles of application. The net result being that it provides insight on the matters that will be useful to modify in future practice cycles. Martin Fry sees it in a more continuous way as something which is ongoing and parallels the main process.

My own sense of this is that one can use wholly conscious models of active reflection, but like Martin Fry, my mind is actively engaged in the whole problem cycle and all its components, like reflection, simultaneously. And differences and gaps are automatically being alerted which then focusses my conscious attention onto the specific area of interest. There is also more interaction with my subconscious mind as part of this process too and this is discussed further in the next section.

Subconscious cognitive processes including 'aha' moments, intuition, and creative inspiration

In analysing my participants' narratives and conceiving that this was representative of a totality of conscious and subconscious practices and processes, it was natural to look at the cognitive processes that seem to link our conscious and subconscious selves. This became of significant interest to me. The first which came to mind was that of the subconscious practice of reflection leading to 'aha' moments. This appeared to have much greater significance for two reasons. The first was my participants' ability to create the conditions for 'aha' moments with respect to matters currently challenging them. The second was, more broadly, the role of the subconscious mind in providing illumination to our conscious practice in the form of 'aha' moments, intuitive responses, and creative contributions. Specifically, the cognitive processes which are contributing to these outputs and their likely linkage to our narrative and identity.

Firstly, let us see what the participants had to say about each of these processes before investigating more current literature on the topic.

Rob Macintosh

If you want to know the answer to anything, is you must work at it; you have to gather information, you have to pursue it, you've got to throw around ideas, you've got to look at it on all different sorts of ways and then you go to bed, go to sleep and you wake up and you have the answer in the first ten minutes. It is the unconscious or sub-conscious providing the answer; it is sifting out the information provided; some may call it intuition because it is your real brain working at finding a solution. And it is connected for me; there is this kind of a WOW, not just ah, got it thing. It always comes unconsciously for me.

Jean Clarke

Passive reflection is like since our last meeting where we agreed that these were all hard questions, and I had no idea where it was going, and I thought right well we are going to put it to one side. I had the things that I needed to think about and every so often I'd think there's been bits where I've realised yes, I have started thinking about how I do it and overwhelmingly I use the narrative approach; that's how I've done things. Some of my passive reflecting is done when I am ironing. I find it a wonderful way for reflecting passively, because you are hands on, but you are passively sorting through something that needs to be sorted out.

Geoff Smith

Yeah, I think, now what you have got is both a conscious effort and a subconscious effort working in parallel all the time. I personally can sit there contemplating for half an hour trying to rack my brains, then I can forget about it, go for a cup of tea and while I am making cup of tea then suddenly, my brain and memory throws something forward and I go why did not I think of that earlier? So, whilst you are doing it consciously, I think there is a subconscious. I do not quite understand how that works, but obviously you know sometimes the harder you think, the further away the answer becomes.

Charles Hulme

Oddly enough these last few years I have got this ability and I can just think of an issue, go to sleep and I wake up and it is solved, and I don't know how's that happened. It is like some sort of synapses have linked up somewhere And, that is really good because before I used to sit and keep wrestling with it and fighting with it and modelling it.

Jeremy Green

I don't know what you would call it but I call it cooking. It goes in and it cooks, and I don't know if this is our subconscious working on it or not, and it's not a concept which I've suddenly come across, This happened a lot and I remember having my professor at university; he said, "it may go like this and lots of you know people who have studied over the years, some can learn something one day and it can be innate in their practice the next day. Now that is how they go and there are other people who will learn something here and six months later it emerges".

Dean Roberts

I think they just happen by launching some sort of study or question in a certain area and I am very conscious of letting the sub-conscious take over. If I have a problem, I have become accustomed to the technique of just planting the question in the mind before I go to sleep; what is it I want an answer to? Just clearly articulate the question to yourself and then go to sleep. And, then the first thought in the morning is what I am looking for. It might take two or three mornings sometimes, particularly if I have an issue that I want to get some clarity on. I have found that to be quite useful from time to time and I think a few 'aha' moments come out of that through just letting the sub-conscious organise itself overnight.

Tom Naylor

When I am in the moment with something it goes on constantly. Every night this week I have been waking up in the middle of the night and have some thought on how to do something the next morning. Or because I am working on those types of tasks where I am trying to learn or develop ideas; it is constantly with me.

Martin Fry

One way I utilise time is in much a more meditative relaxed and Zen like way. Here it is it is nothing to do with control and you can be talking to people about coffee or coffee machines and suddenly somebody says something about something else that connects to something significant. So, there is this bit in learning that is self-resourcing but gathered in other ways.

I can also go to bed and go to sleep and maybe one thought strikes me that I need to check out and that's a kind of a reflection on where my obstacles are because I have parked the obstacles to consider them later.

It is interesting that every one of my participants has had 'aha' moments and many of them are able to encourage it actively for themselves. At its' simplest, it is getting around a mental blockage or a mentally conscious issue which is not accessible to logical questioning. At a more sophisticated level it is providing creative, elegant, and complete answers to subtle issues or problems. Also, it occurs in either downtime or relaxing periods of time and the insights they get are trustworthy and useful to them.

Prior to my doctorate, I had had 'aha' moments in which insights came to me unbidden and they related particularly to big issues or recognition of trends, but I had no means of creating them at will. After my interviews with participants and before writing up their narratives, I had started to find that if I deliberately put puzzling matters into my mind with a request for an answer, then a useful answer would emerge in a period of relaxation or frequently after sleeping. There were two aspects to this. One of my participants had made me subliminally aware of a process to activate an 'aha' moment and secondly, I was having more 'aha' moments whose veracity I could test out consciously on others as part of my day-to-day practice. There I gathered further first-hand evidence of its veracity.

The biggest 'aha' moment came to me in the form of a hunch about the developmental framework of practice when I linked the concept of capability with a cyclical development process. I then realised how problem solving and research itself were cycles that could be iteratively repeated and in turn created cycles of learning and development. Since then, I have been continually tapping my subconscious mind as I know that it will provide both real and metaphorical solutions to any issue I have. Another word I have used to define this is passive or divergent reflection as I am using my subconscious mind to search all my experience for answers. And that the answers themselves are not from a pre-determined selection of possibilities so much as

providing me with answers and dimensions I have not seen or been aware of before. So, it has become a significant source of creativity too. It also plays a significant role in my developmental framework of practice which I describe later.

Quite how our brains and minds work in detail are still being researched and discovered. However, evidence of the evolution of life has shown that even at cellular level there have always been control processes to protect and preserve the homeostasis or living functions of the cells from both interoceptive, proprioceptive and exteroceptive conditions in their environments. As multicellular organisms evolved so groups of cells took on specialised functions and simple nervous systems developed. Through eons, both life and species became more sophisticated until human life evolved with a reasoning brain that became self-aware. Through evolution of language and self-knowing it has reached a stage of harnessing external resources in pursuit of its own creative goals and a sense of consciousness. As Damasio (2010) indicates in his book, the mind is seen as part of the brain's ability to create mental images of itself, its surrounding environment and of complete imagination. This enables us to interact with and utilise this as part of our daily lives and includes ensuring the unconscious homeostasis of our biological system and its general well-being emotionally as well as physically. At its most sophisticated levels, our minds are both continuously learning and allowing us to envisage futures which suit our curiosity and nature and which we can share through our social cultures. But that reality is our mind's mental image of a reality and can become distorted by emotion or physical and mental damage. According to Damasio, our mental maps that form our narrative identity, behaviour and practice are constantly evolving both consciously and subconsciously.

At the most sophisticated end of our consciousness, we have become aware of processes that provide insight and 'aha' moments, intuition and judgement and creativity and imagination. Each of them provides useful support to our learning and development.

If we consider insight or 'aha' moments first, Carpenter (2019) provides an overview. He defines insight as a sudden conscious change in a person's representation of a stimulus, situation, or problem. Whilst the awareness of the insight is conscious, there is subconscious processing that precedes the insight. This process suggests different cognitive strategies are being employed, compared with analytical reasoning as it occurs in a different part of the brain as seen by neural imaging techniques.

Various cognitive psychological models have been suggested in recent times including Progress Monitoring Theory by MacGregor and Ormerod (2001) in which the insight

arises from an incremental series of micro processes; Representational Change Theory by Knoblich, Ohlsson, Haider, and Rhenius (1999), where the representation of the problem is re-structured after an impasse in its solution is reached and Bowden & Jung-Beeman (2005), where strong semantic associations are replaced by weaker semantic associations and the sharing of this process results in the brain becoming conscious. Another interesting finding by Salvi, Bricolo, Kounios, Bowden, and Beeman (2016) is that the solutions provided by insight in such difficult problem situations tend to provide more correct answers than their consciously analysed counterparts. The consensus amongst current psychology scholars is that insight is primarily a function of previous experience and acquired knowledge and that insight is heuristically derived. A lot of the above background is also endorsed by Sprugnoli, Rossi, Emmendorfer, et al (2017), but they point out that insights can also be associated with emotive as well as semantic outcomes.

I can speak more clearly about my insights than those of my participants here as they have been relevant to this work specifically. I am interested to note the veracity aspect of insights, as expressed above by Salvi et al (2016). My main insight in this doctorate was the pulling together of the cyclical process model of problem solving and experiential learning and realising that it is this process that provided the underpinning stability and linkage between many vocational and professional roles. At the same time, it was the subtle change of significance between the whole and its parts that was the insight. In other words, its combination of a diverse range of concepts concerning development as a process, development as the source of capability and de-contextualised applicability within professional, vocational and research contexts. Also, the initial foundations of the insight were semiotic in form as for me pictures often summarise a concept in a much tighter way than words do.

At the same time, although the answer was singular, and in that sense convergent, I believe the subconscious process itself is wide ranging and divergent before the answer emerges. The other important aspect is that I have used it on my own problems of significance rather than artificial ones devised by researchers. I am therefore able to examine and see the linkage between many prior contributions to this solution. (For example, the relative stability of professions and what underpinned that stability). Moreover, I primed myself and the insight used comprehension that goes back over 30 years.

Other 'aha' moments I have had during this journey are simply the consolidation of disparate strands of comprehension in to a holistic whole where I deeply understand and can use the results in a coherent intelligible way, firstly for myself and then for guiding others. The composing of this writing and continuous reflection contributes powerfully to that whole. For me full competence, is about the alignment of comprehension and practice in a holistic integrated and coherent flow of experience that is subject to continuous convergent and divergent reflective practice.

Here are some of my participants' views on intuition

Rob Macintosh

I consider I am intuitive, and I operate on intuition to start with. It goes back to a feeling and a judgement that if anything is any good, it has two measures; one it matches expertise and second, a very good solution for a particular situation is not just good, it is elegant. I trust it more nowadays. And, then you have the other element of life experience where more stuff is kind of resolved.

And I also see it as part of my learning process. Intuition for me is part of all the right brain stuff along with inspiration and judgment and enables me to pursue different ways of finding out the what and the how. It makes sense to me that way.

John Mason

Thinking and intuition work totally differently. When I try to think I try to analyse something to create something. But intuition comes as a readymade pattern which is based on my experience. It seems to be based on a holistic experience which means my intuition comes from a different map. There does not seem to be a direct interface between the two.

Jean Clarke

At this stage it is incredibly difficult to be specific as so much of what you do automatically or intuitively is based on the 10,000 plus hours of experience effect. So, for example if somebody comes to me with a particular issue then I know bang, bang, bang this is the easiest way to solve it or here are three or so alternatives. I think there is a huge component of my prior experience guides my intuition. Knowing you know, knowing what is going to work or what is not going to work.

My intuitive process has been very strongly developed, probably far stronger than most, because from the time I was two I have lived in other cultures. So, you must sense what is going on in what space, what can you do and why are other people doing these things.

Geoff Smith

Reflection and intuition present themselves in the same way to me and it's purely that mind's eye thing when something just pops into your head and it tells you quietly here is something that may be of use to solve it. So, it's just a memory that comes forward."

Charles Hulme

I think intuition must come from experience a bit. Also, I think it also comes from a deliberate learning process. I would say less than a third of my decisions would be intuitively based.

Dean Roberts

There is not a logical conscious process behind intuition as far as I can tell. Intuition just happens because your whole body, your whole energy being is sending and receiving signals. And if you have got the mindfulness to be aware of those, it is extremely usefully in business or in any other endeavour in life. Intuition is not particularly conscious for me; it just jumps at me. It seems like a very slight emotional tug; it just pops up and passes and if you miss it, it is gone.

Intuition is extremely important for me, and I find that the more I use it the better. When I go against my intuition, I find that I often run into problems and was a case with projects we have worked on well as others where I am looking at the people involved and a little bell goes on with someone there is something not quite right, but I cannot put my finger on it. Then the business imperative sort of takes over and even though there was that little warning, sometime later that little warning turns into a major problem.

Dan Douglas

When I use experts and I do that intuitively right, I do not do that as a measured process; it is like I have enough expertise and experience in dealing with professionals that I buy their time because I know they are efficient and whether they know their stuff.

Another practical example when you are looking at a project and trying to cost it out, I guess intuitively this sort of thing is going to cost that sort of amount. You know without going through the numbers that to the nearest ten grand is going to be the number and usually I'm pretty much spot on in those intuitive assessments.

Tom Naylor

It is like you practice a sport and some of the core skills you just do without thinking. It is all based on having a lot of repetition over time and being reinforced by reflection. So, you get to a place where you are no longer thinking about it, but you just do it. I feel a lot of things that I do now are a conscious result of me developing them over the past twenty years.

Martin Fry

I understand Intuition works for all of us in every sense of the word all the time. And mostly we do not notice it because we are built as human beings to intuit. It is a natural human condition which can be inhibited by creation of risk aversion because naturally it does pose some risk. In that it is a known way of arranging things to produce other possibilities or to see things in different ways. And this is where I take issue with most learning and development in schools which relies on conscious logical practices that will force us to compete with artificial intelligence and machine learning when such machines will never intuit. So yes, I have used intuition a considerable amount in my life.

In my conceptual frame intuition means openness, not trying to immediately classify something but letting it wander around. For example, finding out that venomologists have identified that the gila monster's venom contains a potential chemical that could help the treatment of diabetes in humans. I find that realisation by those people fascinating and that to me is where intuition sits, in that many answers already exist but are not obviously apparent, but intuition uncovers things because you are not locking things down.

I do not see intuition as anchoring itself in specific experiences. it is a free-floating contingent process; it is the spirit of human survival, and it is at the very heart of getting ourselves out of situations. I have no better way of putting it. It is a magic ingredient that we should reinforce and reward in all

*children so that they never lose it; not that it is going to be useful to them
100% of the time, but not to condemn it either.*

In summary, most are saying that it relates to their prior experience and practice, which has been built up over a significant period of time and it is something to be trusted. Some say there is an emotional dimension to it as a warning of something not being quite right. And Martin Fry thinks it is a free-floating contingent process which is omnipresent and available to us all the time.

Also, intuitive moments can come unbidden and not as result of active priming. Their intent maybe different from insight but they become conscious in the same sort of way.

In another text by Hogarth (2001), she indicated that intuition could arise in relatively concrete ways as a result of significant tacit learning and experience or could be relatively nebulous as a feeling about something. It was characterised by happening fast without deliberation and could arise from prompted or unprompted questions. Looking at this again now, she also linked insights described above as part of intuition. Both Hogarth (2001) and Eraut (2000) supported the notion that intuition could enhance scientific analysis and was a natural part of professional performance in that it was an application of tacit capability based on tacit rules.

This is certainly one dimension of intuition, but another based on feelings seems to derive from what Damasio (2010) calls pre-cognitive recognition and expression, based on emotional cues. In humans both processes can be linked, but in more primitive life reflects the current stasis of an organism to both interoceptive and exteroceptive cues. A popular concept for several years with researchers has been the concept of dual process models in which researchers describe there being deliberate conscious cognitive processes and intuitive subconscious processes working together. Glöckner and Witteman (2010) suggest that there is evidence of additional intuitive processes that include simple associative learning based on simple learning and memory retrieval, accumulative based on automatic evidence accumulation and constructive based on construction of mental representations.

Zander, Öllinger, and Volz (2016) consider that intuition and insight are two distinct metacognitive processes. They characterise intuition as being a non-conscious process in which an outcome is realised with little awareness of metacognitive processing or experientiality. This is because it arises from tacit knowledge and intuitive action where conventional and subconscious processing results in a hunch that precipitates action. Whereas insight by contrast is a sudden and unexpected understanding of a previously incomprehensible problem. Or as Jung-Beeman et al (2004) suggest:

A sudden recognition of new connections across existing knowledge
(p.506).

Intuition is defined by both participants and researchers in different ways. It is what you do without thinking about it that results from a great deal of prior experience and success with matters. This in turn allows something new to be addressed without much thought needed. It also has an emotional component which provides an alert on a situation that may need more care taken with it, particularly regarding something that appears to be out of the normal or the way others are behaving.

Having defined insights above as arising from prior conscious or subconscious intent, I tend to regard intuition as a spontaneous and more emotionally based warning of a future possibility that needs reflection and both conscious and subconscious attention.

In the case of my participants, the seeming overlap of these processes individually or collectively is that they all arise from subconscious cognitive processes in that something comes to mind unbidden.

Imagination and creativity are also seen as an subconscious process by one participant, Dean Roberts.

I am not aware of a conscious process of going looking for a big idea. But what happens is just through my day-to-day work I might be browsing through various areas and suddenly I see a connection between different things and an idea pops out of that. For example, one of the things with the electric car interest I had, was I realised that New Zealanders are good at fixing and adapting things. And, against that we cannot afford new electric cars but have a lot of front wheel drive cars that are relatively easy conversions. All this came together in a project which I tried to get Dunedin City Council and others to go with to no avail. But I see that it now happening in Dunedin exactly the way I described it to them seven or eight years ago.

The other area I was going to talk about was in my business world, where going back 30 years, one of the basic ways of operation is I would have an idea. I am not conscious of them coming from anywhere else. And those ideas would come as a gestalt if you like, as a complete idea. What always amazed me about the ideas process is that you would not just get a little bit of an idea, you get the whole thing in one download in 30 seconds and often this would happen at night or in the morning, or when I was engaged with

other material and the idea pops up in that 'aha' moment and suddenly bang there is a whole project there.

This association of creativity and intuition is also described by Pétervári, Osman, and Bhattacharya (2016) who see intuition playing a role in idea generation and evaluation stages of a creativity process. This is based on a longstanding model of creativity first formulated by Wallas (2014), in which a creative process is similar to a 4 stage problem solving process comprising preparation, incubation, illumination and verification, That is intuition contributes to the incubation and verification parts of Wallas' process.

Reflecting on the benefits that these subconscious processes contribute to both development and learning, the significance that I have concluded from my participants and my own practice is that recognition and the capability of using them is an important part of human practice. It should not be suppressed in favour of using just conscious and logical processes. They exist and they provide useful additional information in everyday practice involving creativity, problem solving and personal insight in the complex natural and social milieu. They are worth learning about and using in practice as they support and enhance individual achievement and capability.

Unconscious learning

The definition of unconscious learning for me is either formal learning, where the impact or value of the learning is not consciously realised for a significant period, following the circumstances under which it was acquired. Or, learning which was never consciously recognised or thought of as learning until much later in life. It could also be called informal learning as mentioned by Roth (2015). It classically forms part of the don't know that you know, part of the Johari window model as described by Saxena, (2015). It is raised only as an adjunct to the significance of the processes discussed above. It is yet further evidence of subconscious processes of memory and cognition occurring that are managing a good deal of a normal behaviour and activities that we are engaged with

Some examples from the participants are provided here

Jean Clarke

My English was not brilliant at the start, but by the time I had been in New Zealand at school a year, my English vocabulary was not bad, and I was an avid reader. By the time I finished as a 12-year-old after five years, I had read every single book in the school library. Because, of course, it was the days

before television, and I came from a family home where both my father and my mother were avid readers too.

The NZEI had a good education library, and I was probably one of the few of the staff that used it, which meant that they would send out a circular with our new acquisitions and I would say right I will have that one and that one and send it off because there was no email or internet then. A week later I would get these parcels in the post. And I would read through them and for 14 years I read every educational journal that came into that library. I read about what makes teachers competent because I was dealing with those issues as an NZEI officer and this gave me the latest research in learning. Also, while I was there, they were members of the World Teacher Federation and I was in Auckland and whenever anybody offshore arrived, I would be phoned and NZEI would say "can you meet so and so". And, then I would have to put them into a hotel and show them around, so I had one on one conversations with them over two or three days and I really picked their brains.

Geoff Smith

For a long time, my learning was unconscious, and I believe that was because life and work was so busy that I did not stop to think about what was going on. The challenges that presented themselves you either get over them, it beats you, or you find a way. Yeah well, I made a mistake there, we will register that one so that it does not happen again, but up, up until the last four or five years in discussing this sort of thing with you I had no conscious understanding of what I was learning. It was only in retrospect that I understood that all my learning was 99% subconscious.

Charles Hulme

Obviously, an early one was the reading thing. I remember that very, very specifically. it was a pivot point in terms of developing my language and vocabulary capability.

Dean Roberts

I think one of the things that learning does is to create lots of mental hooks to hang things on. I have got a little bit of knowledge about all sorts of things; everything from steel cutting to composing music to growing spuds to thinking about what colours should be used in a playground. And when I

think about all the things I have been professionally involved with; I have covered off a lot of different fields.

So, when I start on something new, there is nearly always an automatic trigger to something years earlier, because I have got a mental hook to hang it on. Since you already have lots of hooks, it makes it a much more natural process to add more stuff onto those hooks because of my prior understanding.

Notably, reading is one mentioned most frequently, and this is certainly true in my case too. I believe it stems from the fact that learning is most frequently associated with formal education where someone else is leading the delivery of what must be “learnt”. Learning from personal interest or discovery or experience is still not seen as the natural everyday experience it is.

Conclusions

The narrative of analysis of my participants has drawn together several common threads that have not only consolidated a concept of a developmental framework of practice which I subliminally gained from my initial interviews with them, but also that I have been able to subsequently link to my own career experiences discussed in my autoethnography.

Secondly, that common and cyclical iterative processes of problem solving, and research are major and stable contributors to experiential learning and vocational development. It is important to note that by vocational, I mean the spectrum of development at all levels from basic to professional levels of practice and performance.

Thirdly, how the efficacy of experiential learning and vocational development are enhanced by well recognised subconscious and meta cognitive processes of insight, intuition, and different forms of reflection.

Finally, how the expression and delivery of vocational practice is holistic and integrated and can now be an acceptable part of a life narrative and identity in social and psychological descriptions of an individual

It seems sensible to make some autoethnographic conclusions here at the same time rather than to place them in a separate part of the thesis. This is to do with the insights gained with new awareness of and utilisation of my subconscious cognitive processes

as part of my practice. I now make more use of these processes to help me with both creativity, problem solving and learning than ever before.

Firstly, I am conscious that reflection on what I am doing is going on continuously with every conscious activity I undertake. It is like a subconscious holistic observer that is helicoptering over what I am doing and noting anything which is out of the ordinary.

Secondly, I am allowing or encouraging subconscious reflection and the associated time needed for new and complicated memories to consolidate. Thus, for example, in writing sections of this thesis, I am consciously allowing myself time to subconsciously process the various subtleties of what other researchers are having to say about their subconscious cognitive phenomena. This is so that I can link it coherently together with my own comprehension.

Thirdly that I can prime subconscious reflection about issues I am trying to make sense of, as implied by the Progress Monitoring and Representational Change theories of MacGregor and Ormerod (2001) and Knoblich et al (1999), respectively.

At other times, I spontaneously become aware of insights after sleep or relaxation, which not only provide new angles to consciously think about, but also consolidate unrelated concepts in a creative way. A good example was realising that, the capability barriers of Sen (1993) to realising potential, could also be created by implicit barriers of lack of confidence or fear, as much as explicit barriers of access. This then leads onto the underpinning significance of one's emotional state affecting one's competence and capability with problem solving and learning.

In turn, my imagination and creativity has increased as I have got older, where being more relaxed about my situation in life and my achievements has allowed me to not only be fundamentally more creative with big ideas, but to broaden and deepen my learning achievements. This is reflected in the study by Csikszentmihalyi (2007) in his book on *Creativity: Flow and the Psychology of Discovery and Invention*, in which he describes his research with nearly one hundred senior participants aged over 60.

My other main conclusion is that I now see the need to make my students and others more aware of the power and practice of their subconscious, cyclical, iterative, cognitive, and metacognitive processes. This is intrinsic to their effective learning and development.

Chapter 7 My doctoral autoethnography

Introduction

During my 8 years of doctoral study, I have been able to fully integrate all my competencies and capabilities in my current professional role to awaken others to their purpose in life. It has consolidated my narrative and psychological identities (Polkinghorne, 1991; Clark & Rossiter 2008) and shown me how it extends across social landscapes of practice from Wenger-Trayner (2015).

My work and professional interests are aligned in helping others work towards lifting their practice in professional practice bachelor's and master's programmes in a New Zealand polytechnic. These are based on models derived from work-based qualification programmes at Middlesex University (Lester & Costley (2010). These types of programmes require an individual to use or develop their existing experience as evidence that provides equivalence to conventional academic programmes of study. This has provided me with parallel experience and supportive evidence for my doctoral results, as well as being illustrative of a context in which the developmental framework of practice is naturally suited.

My narrative identity has largely matured in this part of my autoethnographic journey. I have found the linkages concerning the ways I have built my capabilities of learning, problem-solving and research form an identifiable developmental framework of practice. I consider that learning and practice go hand in hand, and it is only through continuous iteration of these processes that fluency and mastery are attained.

The story of the framework I have developed within my doctorate began more than 30 years ago. This was when I was one of four project managers leading the development of competence-based standards for many industry sectors that formed the basis of a new vocational qualification system in the UK. It was the consideration of how to make qualification structures stable that led me to consider the unique role of professions, and what underpinned their stability, that has evolved into the developmental framework of practice described in this thesis.

At that time, a functional analysis technique, was used to disaggregate the functions (or stable processes) of industry and business activities. This was to a level where individual job roles were able to be identified, as established by Mansfield and Mitchell (1996). In professional roles, the processes identified reflected the key areas of

professionals in their specific contexts. For example, an engineer would design, test, commission and install technical systems or products to meet defined needs.

Forward 10 years where I used and improved the technique to define occupational role standards and related qualifications for all technical staff in the New Zealand electronic industry. This contributed to a new National Diploma of Engineering in electro technology approved by the New Zealand Qualifications Authority.

Forward to today and the significance of this history is still present and repeating itself. Firstly, the stability of professions is ongoing due to the functions (or stable processes) that describe them. However, an important realisation in this period is that not only are professional functions stable, but many represent contextualised forms of problem solving; for instance, doctors solve medical problems, engineers solve engineering problems and lawyers, legal problems. Secondly, how the inertia of large entities like education systems are lagging in the development needs arising from the accelerating changes occurring in modern society.

The value of being able to research this area of education, of seeing positive evidence of its application and results and of realising an iterative developmental framework of practice is a powerful affirmation of my professional identity and development.

The rest of this autoethnographic journey is described in three parts:

There is a section which illustrates the outset of my doctoral journey and the detailed literature review that was undertaken to familiarise myself with the processes and outcomes of learning, and how the education system was using this currently.

Next there came a breakthrough period of commencing an academic facilitation role at a New Zealand Polytechnic. Here, I became aware of the transformational process of comprehension achieved by experienced learners from producing reflective summaries of their professional journeys. This provided an unconscious frame of reference for the participant interviews I was undertaking. These contexts resulted in an epiphany whereby I was able to recognise the integration of problem solving, research and experiential learning processes as forming a developmental framework of practice.

Finally, there was a consolidation period of writing up this thesis and comparing the detailed narratives of the professional participants with my own autoethnographic findings and linking this with existing research literature. At the same time, I identified evidence of support for the developmental framework of practice from tertiary academic practice described by Fung (2017) and Goldberg and Somerville (2014). They were

using research and problem-solving processes in real world situations to support student development.

Note the shaded sections are reflective summaries and insights arising from this period of the autoethnographic journey

The outset of my doctoral journey

When I started my journey, I had been working in the private tertiary sector education for about 10 years. I had successfully progressed my career from being a journeyman business lecturer to a teaching principal at a three-campus institute. I was accustomed to designing and delivering teaching programmes and assessments along with supporting web-based resources, in several business disciplines.

This background together with my earlier industry training experience led me to consider that experiential learning, which combined theory and practice, was an important field of study to research in my doctoral studies. Since much professional development was undertaken in a similar way, I also wanted to find out how a group of experienced professionals were doing this.

My prior understanding of education and learning had been predicated on experience with teacher centred models in public education. I was also strongly aware of the dichotomy between academic and training approaches for which experiential learning was seen as a practical rather than a theoretical solution of learning as described by Lum (2009):

As knowing how rather than knowing that (p.78).

My initial literature review, therefore, reflected an analysis and separation of the subject along conventional guidelines of outcomes and processes. Here teachers were engaged with delivery approaches and students engaged in construction of understanding, primarily through theoretical knowledge frameworks. At professional levels, most practice was developed beyond initial academic qualifications.

Subsequently, the literature review was significantly revised to cover philosophical perspectives and to ground findings and conclusions arising from data analysis and autoethnography developments in contemporary disciplines of cognitive psychology and social learning. Polkinghorne (1991) introduced the concept of a narrative identity which provided the conscious set of attributes an individual was aware of; Clark and Rossiter (2008) discussed psychological identity which included subconscious attributes and Wenger (1998) explained social identity which included attributes of identity unknown to an individual, but known to others in their social milieu. These

identities are significant in that they provide an integrated description of individual practice.

This backcloth provided impetus to the question of how professionals were able to develop for career lifetimes beyond initial preparation and seemingly without reference to much ongoing academic input. Given my own hybrid academic and vocational experience, I felt my autoethnography might yield useful insights towards some clarification of this issue.

When I started this journey, I enrolled in a PhD comprising an artefact and exegesis. It was only as I progressed through my journey that I realised my findings matched a hybrid of a conventional doctorate and one linked to professional practice. I consider there are two reasons for this. Firstly, I was new to the field of education and learning and therefore did not have a prior knowledge base or qualifications in this discipline. Secondly, I lacked qualitative research experience in the sociology postgraduate space and was not familiar with current sociology and psychology paradigms in which learning and development was situated.

Whilst I had significant practical experience in education and training, I had a limited theoretical background in this discipline. I realised that I had to return to philosophy basics to situate not only my research methods but the probity of the data I sought, from applying them. I gradually became aware of the deeper significance of qualitative methods and the need to examine assumptions which had been overlooked in earlier quantitative research of mine. This was concerning paradigms of belief, researcher bias and the influence of social culture on learning and practice. These have been discussed more fully in Chapter 3 concerning the research methodology I chose to use for this research.

The participant interviews and developmental framework realisation

It is important to indicate how my perspectives have changed through this doctoral process. This has ranged from the increasing amount of subconscious reflection that emerged as the study proceeded; the emergence of a coherent developmental framework of practice based on capability being a developmental process, and the interaction of this with my own professional practice.

When I commenced the interviews with my participants, I was trying to find answers to a research question of the kind:

What role does experiential learning and its related components play in competent practice and development of fellow professionals?

Initially, their answers did not appear to answer that in a direct way. The reason was that my participants saw their practice and development more holistically in terms of their disciplines. Much of their practice and inherent capability to resolve new issues was to a large extent unconscious to them and was not something they dwelt on.

This only became apparent as I analysed their transcripts and found clues referring to a broader process of development. I realised then that I had subliminally picked up on this at the time of the interviews and it was a major contributor to an insight where I linked the stability of professional roles with contextual forms of problem solving. In turn, problem solving was identified as a key process of experiential learning.

This effectively changed the research question I have answered to:

What role does common cyclical and iterative processes like problem solving, research and experiential learning and their related components play in competent practice and development of fellow professionals and myself? Furthermore, how would this awareness help learners at formative stages of vocational and professional education?

At the same time, I also recognised that the concept of capability defined by Stephenson and Yorke (1998) could be defined by a process of problem solving. Thus, the stability of the traditional professions of engineering, medicine and the practice of law were defined by contextual functions of problem solving and their iteration was simultaneously leading to more learning and development. Further reflection on these processes quickly led to the understanding that research was a special case of problem solving where a new theoretical method or model needed to be developed to explain observed phenomena, and where experiential learning was achieved by both processes. Each of these processes was artificially separated by the contexts in which they were mainly being applied; problem solving in professional and vocational roles, research in academic environments and experiential learning everywhere. More recently due to prior experience as an ISO 9000 quality auditor, I further realised that quality outcomes for learners required learners to understand and follow quality processes of learning that were easily comprehensible and practical to apply in their contexts. Given the expectation of professionals to continually develop themselves throughout their career lifetimes, this led to the notion of what an integrated quality model for vocational and professional practice should be. Namely, identifying capability

as the development mechanism and competence, the resulting level of holistic practice and performance.

The hunch as described in the above paragraph has been epistemologically supported by Andrew (2015). One of the gaps he discusses is the research gap that exists in the field one may be investigating and how researchers identify that gap. He defends the argument that many researchers draw on their prior experience and the hunches that may arise to identify relevant research questions. He argues that if a hunch depends upon knowing something accumulated through experience, it necessarily contains an autoethnographic perspective. Hunches occur when divergent thinking or passive reflection, as I call it, meets a convergent moment ('aha' moment). He also draws on the work of Morehouse & Maykut (2002) on inductive hypotheses as further evidence of reflective self-practice from which hunches can emerge. He describes this process as the self being ratified as data. Andrew also drew on evidence provided by a number of PhD students he had supervised, where they have produced insightful research findings based on hunches they derived, in arriving at their research goals. Other useful perspectives of finding new insights from existing learning is provided the papers of Roth (2015) and by Mezirow (2000). Roth found that people often become aware of new learning based on post rather than a priori conceptions of learning. This occurs through passive means such as reflection or 'aha' moments. Mezirow describes learning that brings about transformation of a paradigmatic frame of reference in one's understanding. A good example would be the perspective of the significance of the earth's position in space, and the fragility of life based on it, seen by the photograph of it taken from the moon by an astronaut.

The essence of my developmental framework of practice comprises two distinct groups of processes. The first are the processes and integrated models of practice associated with specific disciplines. These represent current levels of performance as competence. New problems or need for enhanced performance within a given discipline activates a second group of cyclical and iterative processes. This is called developmental capability, which analyses, synthesises, experiments, tests and evaluates the development of the former and are characterised by problem solving, research and experiential learning. Frequently these two groups are seamlessly integrated in vocational and professional roles such as design in engineering, diagnosis, and treatment in medicine, building in construction and theoretical and applied research practice. This framework intrinsically supports the expected development of professional practice in specific and, nowadays, multiple disciplines

throughout a career lifetime. More details of the developmental framework of practice and its application to wider contexts are provided in Chapter 8.

The analysis and writeup of my doctoral evidence

Significant parallel development arose from starting to write the study up as well as to produce research papers for conferences. The act of writing provided a spotlight both on the generality and detail of what was being written and the opportunity to reflect on the sense and comprehension of the arguments presented. The significance of what I now see and write comes from my complete practice of what I am doing rather than it being a partial picture. I now have a coherent framework of explanation and the components are clear to me.

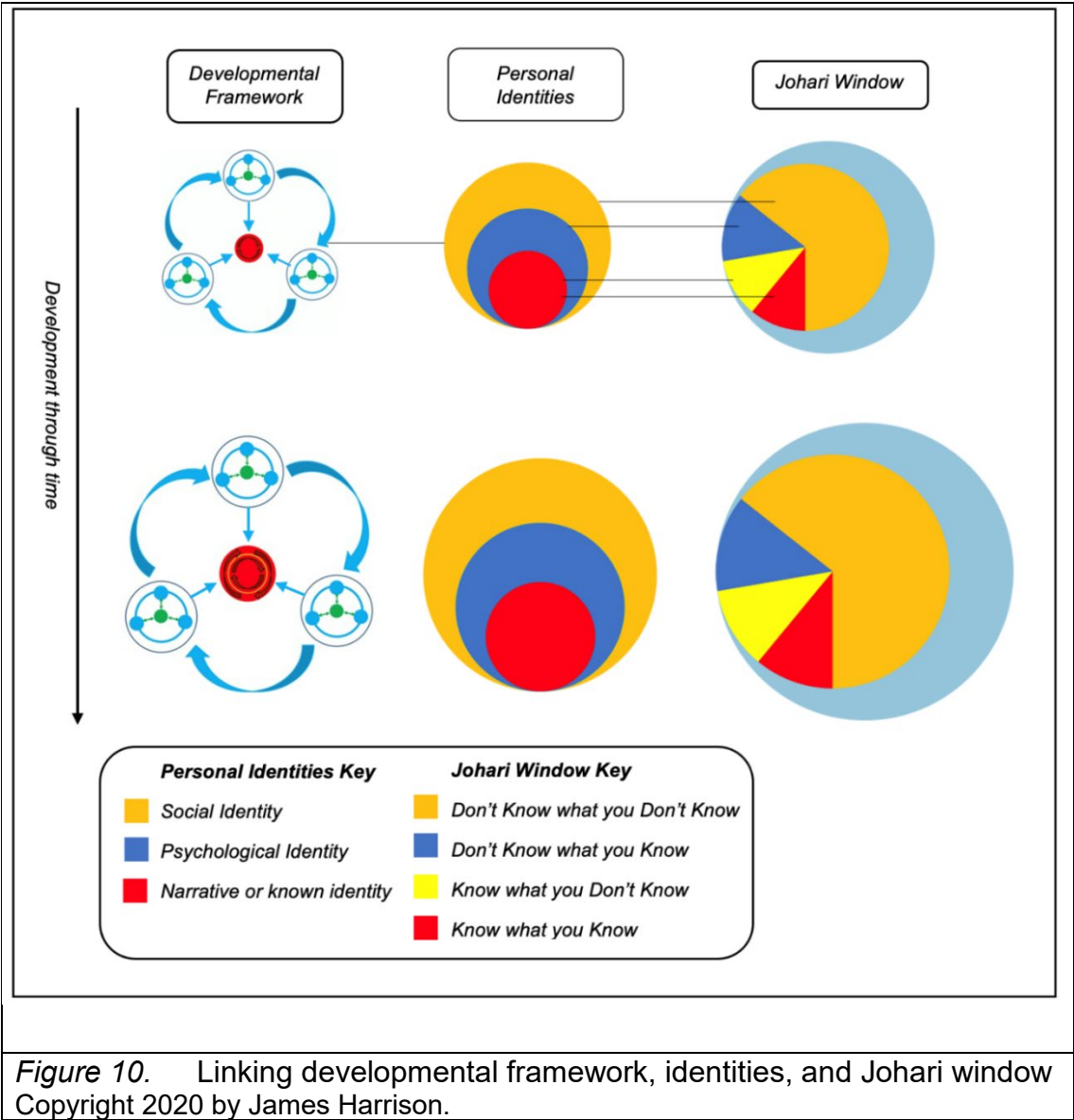
My preparation for conference presentations and their associated papers in the past few years has provided more collegial evidence to endorse the coherence of these concepts (Harrison & Soltani, 2018; Harrison, 2017a, 2019). All these papers show the evolution of the framework of developmental practice and are all separately detailed and accessible from Appendix 10. Parallel links have also been identified with the work of Fung (2017), who created an active research learning culture for students at University College London and the engineering programmes at Ohlins College and iFoundry in the University of Illinois. This is described by Goldberg and Somerville (2014), where programmes have used a series of escalating real world problems supported by conceptual knowledge as needed.

More recently, my attention has been drawn to the linkages arising between my developmental framework of practice and concepts arising from four new areas in the literature review.

Firstly, the explanation by Lum (2009) of the more sophisticated constitutive dimensions of theoretical underpinnings of vocational knowledge which arise from *knowing how* rather than *knowing that*. This appears to be linked to the unconscious norms of practice in communities of practice where activities and relationships are defined by the status, participation and communications present in social communities of practice described by Wenger (1998). Here the learning process is supported consciously or subconsciously by the developmental capability processes identified in my framework.

Secondly, how the differing narrative, psychological and social identities described by Polkinghorne (1991), Clark and Rossiter (2008) and Wenger-Trayner (2015)

respectively are seen as interleaved together to form a totality of practice and personal identity (Figure 10).



With reference to Figure 10, each identity is nested in each other in the following way
 The narrative identity is the known and relatable practice and behavioural characteristics that can be described by an individual about themselves, and which has been partially recorded in my participant research interviews. Whereas the psychological identity comprises all the conscious attributes of the narrative identity together with the unconscious attributes, arising from tacit and informal learning. This in turn sits within a social landscape of communities of practice where parts of an individual may well be unknown to themselves but are habitually contributing to the purpose of each community of practice they are engaged with. This provides the linkage between ongoing duality between individual cognitive practice and the social

influence of communities of practice as needing accommodation in the literature review.

Development and practice bring about continual change in these identities over time. This occurs from engagement by an individual with a community of practice, or directly with a real-world context through the kind of developmental framework of practice I have identified. Engagement in both contexts expands personal habitus, in one's social identity, but also more informal and tacit learning in one's psychological identity and conscious outcomes and realisation in one's narrative identity. This occurs through several interesting pathways. Firstly, the interaction of an individual in either a social or real-world context will reveal subconscious dimensions of one's psychological identity from a Johari window perspective. Becoming conscious of not knowing areas one tacitly knows will then form part of narrative identity. Wenger (1998) sees an individual contributing to a community of practice through engagement, imagination, and alignment. However, as an individual inhabits many communities in a landscape of practice, Wenger-Trayner (2015) refer to the parts of the psychological identity not required for a specific community as knowledgeability. This knowledgeability supports adaption to the norms of a given community of practice and creates further growth of social, psychological, and narrative identity. Finally, they talk about a trajectory of development through a landscape of practice which is very much the same as the cyclical and iterative nature of growth using the developmental model of practice. The emphasis with the latter is that it can be individually intentional, as well as passively absorbing the practices of a social community.

Thirdly, my study of practice as theory has produced some interesting insights into my own professional development. Firstly, by enabling me to appreciate how significant culture and language or habitus, described by Bourdieu (2017), are to our personal identity; secondly how part of that identity is embedded in our landscapes of practice Wenger-Trayner (2015); and thirdly, how predispositions for moving into new areas are built on our current habits which are a mixture of practice and conceptual knowledge, as described by Green (2009). I make use of a kaleidoscope metaphor where at one instant of time the pattern appears in one form and then a minor twist later, it is in another form, not because everything has changed but because one sees a better way of interpreting the pattern than before.

Fourthly, I have become aware of a new field of transdisciplinary research, described by Padmanabhan (2017) where it has been recognised that the contribution of vocational practice and the development of tacit knowledge can interpret and enhance

scientific descriptions of phenomena in many fields of practice. Hence, rather than knowledge and practice being artificially separated into **either, or**, that totality of knowledge and practice can be considered more beneficially in a paradigm of **and** and **and**. In the perspective of Wenger-Trayner (2015), this provides a more permeable boundary between different communities of practice in which learning at the boundaries is enhanced not by the uniformity but by the differences. This is well illustrated by the conundrum in which young people's experiential knowledge is built up through practice and from which knowledge is inductively gained as compared with taught conceptual knowledge. This is where an individual must struggle with an alien conceptual framework that is much harder to comprehend and use. In either case, it appears that the developmental framework of practice offers an approach which lends itself to the conversion of either practice-based knowledge into conceptual knowledge or vice-versa.

In my professional role as a tertiary facilitator and academic mentor in a New Zealand polytechnic, I am currently responsible for supporting more than twenty students undertaking a process-based research master's programme called a Master of Professional Practice. This was derived from a similar programme undertaken by Middlesex University. Lester and Costley (2010) for the past 20 years. The three-course programme allows a student to first identify their current professional practice and then to plan and execute a work-based research project to develop that practice. I have been able to observe enhanced practice associated with their understanding and application of personally contextualised versions of the developmental framework of practice as part of their master's process. In addition, I have also been facilitating graduate level international students with capstone industry projects at the Polytechnic International Centre. Here, I have observed enhanced results from their projects with the aid of a problem-solving capability model. Awareness of their own processes of development has helped all my recent students find more powerful linkages between their vocational or professional practice. They have also become more conscious of the totality of both conscious and subconscious forms of this and the way their practice can build on and adapt conceptual models within their practice discipline.

I have realised recently that whilst I am very conscious of my personal learning in this journey and my need to assert the significance of that, there has been a consistent reinforcement of that from a landscape of practice in which I have shared interests and others have shared interest in me. The latter has tended to be invisible because it has been so much part of an unconscious dimension of my work practice. I now see that this has been there at different times and at different intensities, but it has embraced

me and provided a base and a continuity that is of major significance. It is currently very evident in the relationship with my students and their strivings to recognise and record a lifetime of learning and become conscious of it in ways they never have before. The bonds are formed through the facilitator student process I engage in with them. It is also with colleagues at work with whom I share close ties in our research interests. With fellow staff members it is about belonging and being respected for one's personal contribution both at staff workshops and more recently campus professional development days.

I find that it is in an adult and professional context of the structures and relationships suggested by Rogers et al (2013) in which individuals can thrive. Casting my mind back, I realise this is what occurred to me on the major vocational developments we undertook in the UK whilst working for the Manpower Services Commission, the vocational development qualification work I led for the NZ electronic industry and the building of my own academic teams in New Zealand private training enterprises, where there has been an ongoing collegiality of sharing.

It is only as I defined and refined my developmental framework of practice that I realised my continual engagement in cyclical iterations of development of myself. The initial methodology and pathway of my doctoral journey was perceived as linear. However, I now see it as a progression of iterations, some from the research processes themselves, others from my professional practice and further from compiling this thesis. Each of these provides sources of reflection and progression that link with each other, as described by Green (2009), as recursive optimisation of social practice, by McKee and Eraut (2011) as professional development, and recursivity of learning through writing by Klein and Boscolo (2016).

At the same time, the insights keep coming even as my work on this thesis draws to a close. With reference to the earlier description of work by Lum (2009), of the events leading to the artificial separation of vocational and liberal education by the Oxford University adherence to the philosophy of logical positivism, I formed another significant insight.

This insight identifies conventional education as being based on a positivist educational philosophy that is informed by theory. It in turn leads to quantitative approaches to research and application of knowledge and relates only to evidence derived from existing knowledge and theory. This is bounded and constrained by its specific human derived ontology and epistemology. Experiential learning, in contrast, is naturally

qualitative and inductive as it is based on making sense of real experience or socially based activities in communities of practice. It is naturally reflective and whether conscious or not, personal understanding develops through recursive practice and iteration.

This dichotomy has existed for a long time and enables an artificial separation to be maintained between an academic and social elite and the rest of humanity, who only gain their wisdom through lived daily experience.

The difficulty with this approach in a contemporary education setting, is that many people are disenfranchised by it. It is forcing a didactic construct of comprehension and artificiality which bears little relationship to the prior constructs learnt by young children, whose play and development have been principally based on lived practice of their everyday experience and subject to subconscious reflection and sense making. This is where Robinson (2009) sees problem solving as a natural process of growth.

The conventional teaching of conceptual knowledge leaves many people alienated to conventional education as it lacks a coherent uniformity between disciplines dependent on different philosophical ontologies. This has created significantly different forms of knowledge. In my own case this has taken me half a lifetime to gain a more coherent perspective of their differing but linked perspectives.

What is needed is a growth process for young people which suits their dispositions and talents and makes sense to them. It is not knowledge per se which is significant, but the way in which it can be used in the service of integrated practice and development which enables full personal release of human potential. This cannot be achieved without providing everyone with effective processes of technical and social forms of problem solving that are coherent and integrated, allow creativity and progression, specialism and diversity and can align talent with confidence.

Moreover, looking at practice as theory, the difficulty that people are having in defining it at an individual level is because it does not conform to the rules of conceptual knowledge per se. It is an integrated holistic awareness of one's practice that involves feel and emotion, as described by Robinson (2009) and Csikszentmihalyi (2007). Feel is this embodied sense of resonance with one's skill and practice in the moment. It falls within the habitus that Binder (2012) describes as:

The way things are done around here (p.222).

Yet it is also a performance of doing things holistically in the moment, with a sense of self awareness about what is being done and why. It is about artistry in performance. It is not about knowledge *'that'* but about knowledge *'in'* and *'within'*. Unlike conceptual knowledge, it is seen as a whole and every part of it is enmeshed and synchronised together in the delivery of a complete performance. At this point, the developmental framework of practice becomes part of intuitive practice rather than being conscious any longer. It is not possible to decipher it from a describable perspective, except to comprehend that it works and is the true gestalt of an individual. It is important to realise that at this point an individual is truly performing at their best at any level of role whether it is growing vegetables, looking after children, cutting hair, piloting an aeroplane or designing a skyscraper. They all provide fluent repeatable performance. Moving onto another role requires becoming conscious again and making use of process like the developmental framework of practice to learn and develop anew, although this time, what is common between the old and the new, will accelerate the development process.

Whilst an individual's ultimate performance will meet that of any community of practice they belong to, it will always contain a *'je ne sais quois'* element, which is their unique perspective on the practice and performance needed.

Conclusions

I was challenged to situate this study in an appropriate theoretical framework and the process of doing this has produced further interesting insights.

Firstly, my study has not been about outcomes so much as it has been about methods and processes. The similarities between the processes of research and the conclusions I have drawn from it have linked these closely with processes of problem solving and learning. So, rather than my research process examining some external entity, it is mobius like in that it is examining itself.

My research inquiry method is paradigmatic in the sense that it is constructivist. By design, this allows the outcomes to be pluralistic and this is why there are many different research methods to interpret objects of research. This is in line with Kuhn (1970) concept of paradigm and how change of paradigm defines our worldview as a temporary state of affairs in which powerful groups in society hold beliefs that temporarily freeze understanding and practice in a particular way. Moreover, these form social constructs of specific groups and their language. This has also led to post-modernist thinking in

which progress is no longer linear but is a continual recursive de-construction and re-framing of ourselves in our contexts.

The consequence of this is that the cyclical and iterative process embodied in the developmental framework of practice gives us direction, it helps us to examine our external world and others in selectable ways. This supports the utility of what we find, its repeatability and its ability to create a trajectory from one social context to another. Another benefit appears to arise and that is the developmental framework I am defining is agnostic to contexts in the same way as research methods are agnostic to a discipline being researched. My thesis has identified the overlapping potential of processes of research, to processes of problem-solving, to processes of learning and given the extent of the former, its possibilities for wider application in the latter.

What, then, is different about me and my awareness and understandings compared with fellow journeymen in my social milieu? Broadly speaking we come from developed countries in which we have all received a western-style education and have enjoyed the economic and technological benefits of contemporary Western civilisation. However, within that, as Wenger-Trayner (2015) have asserted, we have all experienced a unique landscape of different communities of practice that have shaped our identities in different ways. My memories and learnings from these experiences have caused me to perceive, understand and react in slightly different ways to others. Moreover, my long experiential journey has given me the capacity to use these memories and learnings in more ways due to the volumes of those learnings and the increasing orders of magnitude of the linkages between them. As a result, I have confidence to be imaginative and creative with my intuition and to be able to recognise useful patterns arising from the cyclical and iterative processes that are associated with my development.

My professional practice has been further informed by facilitating the development of adult professionals in a process-based master's programme, complemented at regular intervals by the delivery of international conference papers. In addition, this has been enhanced by dialogic conversations with fellow professionals within my own communities of practice. This has helped staircase both specific and growing general understanding of the significant factors present in my field of professional practice.

There is another area of research in this journey which needs further attention in future. The fact that being human means we are not machines but are creatures of emotion. This has a profound effect on our confidence, our motivation, and our passions for living and evolving. I have had the privilege to be able to undertake some interesting

opportunities in significant areas, such as national vocational and qualification developments, helping others on their bachelor and post graduate journeys and where my contribution has been acknowledged by others and whose recognition I have valued. As a result, this has increased my confidence to take on increasingly demanding challenges that have deep emotional attachment and motivation for me. These continue to provide me with significant intrinsic rewards at a senior stage of life.

Chapter 8 The developmental framework of practice

Introduction

The developmental framework of practice which is described here has emerged from a combination of data provided by my professional participants, realisations of my own that have arisen from my autoethnographic journey and data sourced from my literature research. This milieu has enabled me to identify that it is the significance of stable cyclical and iterative processes associated with problem solving, research and experiential learning process which hold the key to a significant breakthrough in vocational development and related academic programmes for the future.

I have decided to describe the structure of these findings as a framework for several reasons. Firstly, the framework can be contextualised as a model for many different disciplines at many different levels of scope and complexity. It uses combinations of techniques, but still reflects the generic practice it defines, which is that it allows continuous, progressive development of practice competence and capability through recursive cycles of iteration. Secondly, it enables individuals to participate in shared communities of practice or other world contexts with their own version of the framework as a contextualised model. Moreover, its main functional principles are agnostic to discipline in that it allows a confident and competent individual to progress their development consciously and to apply it in differing ways at differing levels throughout their life journey. Finally, at its simplest, it is a cyclical process engine which supports the integrated holistic practice that underpins a lifelong purposeful narrative of social and cognitive identity.

The remainder of the chapter explains the framework's generic structure and operation, and the important subconscious and metacognitive processes which support and enhance it. Further explanation is also given of practical applications and insights for academic and vocational development and evidence of its existing implementation elsewhere.

Structure of framework

At the present time, the developmental framework of practice that has been derived from this doctoral study combines two main elements (Figure 11):

- A series of processes and techniques that combine to form delivery of a discipline practice at a given level of performance, called competence
- A second self-referential cyclical process called capability that enables the performance of the discipline practice to be improved. This is either undertaken within a context of a social community of practice in which the personal process is moderated by social processes of information exchange, predicated on the cultural practices and language one has in common with others. Or it is undertaken directly in a real-world context with which one is engaged.

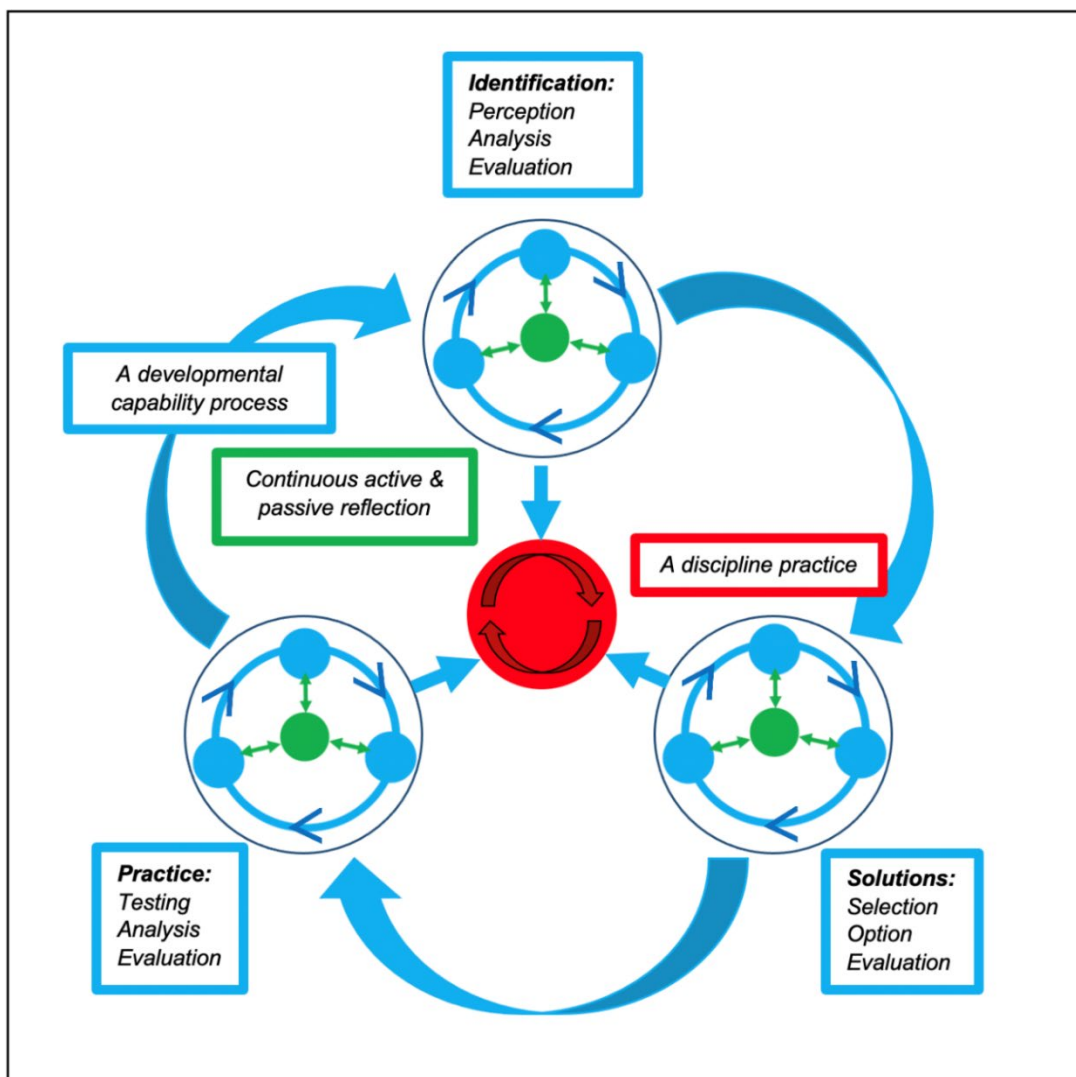


Figure 11. The developmental framework of practice
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The capability process in Figure 11 begins with an identification stage in which something is identified that needs attention. This arises from ongoing application of discipline practice where an anomaly is detected between what is happening and current practice, or it could arise from new linkages from subconscious reflection. This could be a problem, something that needs to be researched or something that needs to be understood and could involve one or more of the developmental capability processes (Figure 12). Within this stage there is a cycle of 3 parts; perception, where the issue is first perceived and defined, a second analytical sub process to qualify the characteristics of the issue, and finally evaluation in which the analysis is compared with the perceived issue to check whether it has been adequately defined before proceeding to the next stage of the main cycle.

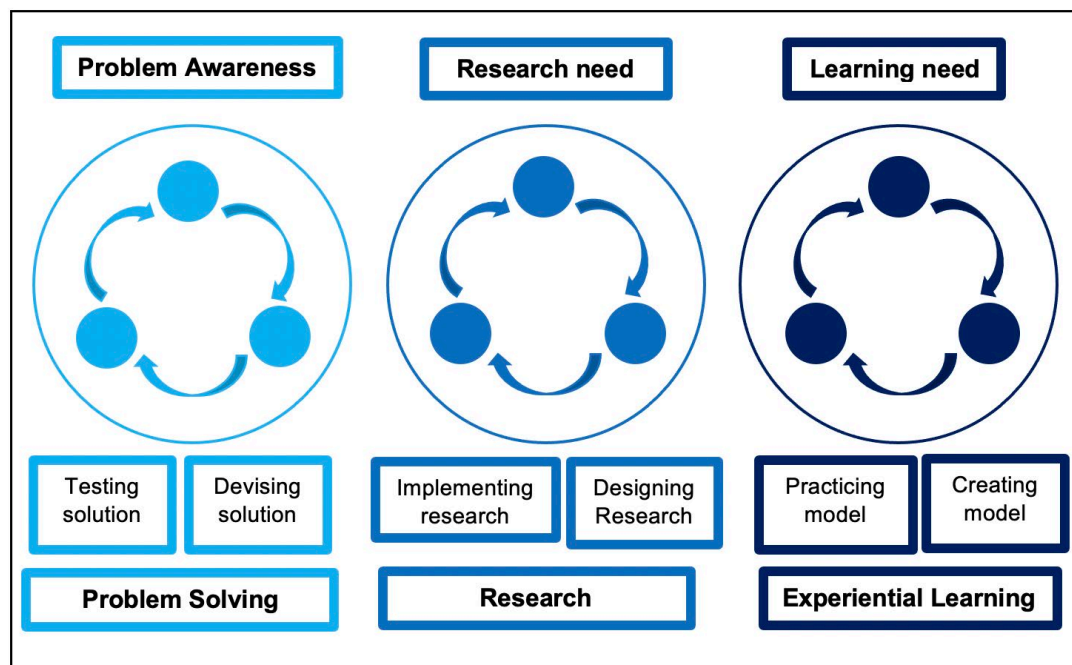


Figure 12. Developmental capability process congruence
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Based on what is identified, the next stage is to determine what needs to be done to resolve the matter identified, using, or developing the models that relate to the issue. Again, the stage consists of a cycle of three parts. The first part considers which process or theoretical models might be applicable to address the analysed issue resulting from the first stage. The second sub process identifies which might be the optimum solution to test, and the evaluation sub process ensures that again the optimum solution adequately addresses the analysed issue to be tried out in practice.

It is important to appreciate that the processes used in any of these sub processes are many and varied. It can involve communicating with colleagues or specialists and asking questions; it can involve reading background on the topic or searching the internet. It can involve writing about the topic to enhance one's learning or comprehension, giving presentations, or teaching and facilitating others. All such processes are allowable and beneficial to the realisation of a cycle of development and its iteration in this framework in a practical manner.

Note that every stage of the developmental capability process is interacting with the discipline practice process from which the original issue may have arisen.

Finally, there is a practical stage where the optimum solution is tested, the results analysed and then evaluated to assess whether the original issue has been adequately resolved or needs further work. If the matter needs further work, then another full developmental cycle is undertaken.

The full developmental capability process has informed and adjusted the discipline practice at every stage of the developmental capability cycle and ultimately contributes improvement to the practice discipline and its competence.

An important part of every stage of the developmental capability process is the contribution of both active and passive reflection processes. Each stage of each cycle is seen as starting in a divergent way to incorporate as many different or useful contributions as possible before converging on an optimum choice or choices. In my view, the divergent part of the cyclical reflection process often makes use of a subconscious insight process or 'aha' moments, whereas the convergent part is using a conscious reflective process to identify optimum choices. In this way, the outcome of each stage through both reflection and evaluation tries to represent an optimised set of choices that provides an input to the following stage. Whether the main result of a complete cycle is fully resolved is not the point, rather that the cycle has produced movement from the starting point and has placed an individual in a new space of comprehension and understanding. This, then provides a new perspective on the situation being dealt with.

Note that all stages of this developmental capability cycle are making use of other common processes or techniques which are cyclical, self-referential, and iterative. These include important component processes such as communication, project, and management practice, teamwork, leadership, and other social processes.

As was explained in the introduction, the developmental framework of practice can be realised at various levels and scope within many vocational and professional contexts. Each will define and use their own language and techniques to apply the generic development process described above and these can be considered as contextualised models of developmental practice. For example, engineers will undertake their development using design and development processes; technicians will do the same for installation; commissioning and servicing processes; doctors, diagnosis, and treatment processes; researchers their research processes. However, all of them are unified by the generic cyclical and iterative forms of problem solving, research and experiential learning outlined above (Figure 12).

The significance of the cyclical and iterative nature of this framework is that it enables the discipline practice and developmental capability to grow with every new need or problem identified. Where an individual moves into another discipline field, the existing developmental capability process is a starting point for a new pathway of development and progression. This type of growth and development is being built upon and added to for the whole of one's life (Figure 13).

The significance of the developmental practice framework shown in Figure 13 is that it not only reflects growth in developmental capability and discipline practice competence, it also shows a pathway through time and different disciplines in which an individual recognises where they have come from and where they are going. It can be considered a total quality management process for human practice and development.

The important difference between capability (the cyclical developmental process) and the ensuing competence (the practice performance) is that the capability provides the growth of competence. Even if the capability is embodied in a contextual description such as engineering design or medical diagnosis and treatment, it is the cyclical, iterative process shown in this framework which enables further development of overall performance in that or any other discipline.

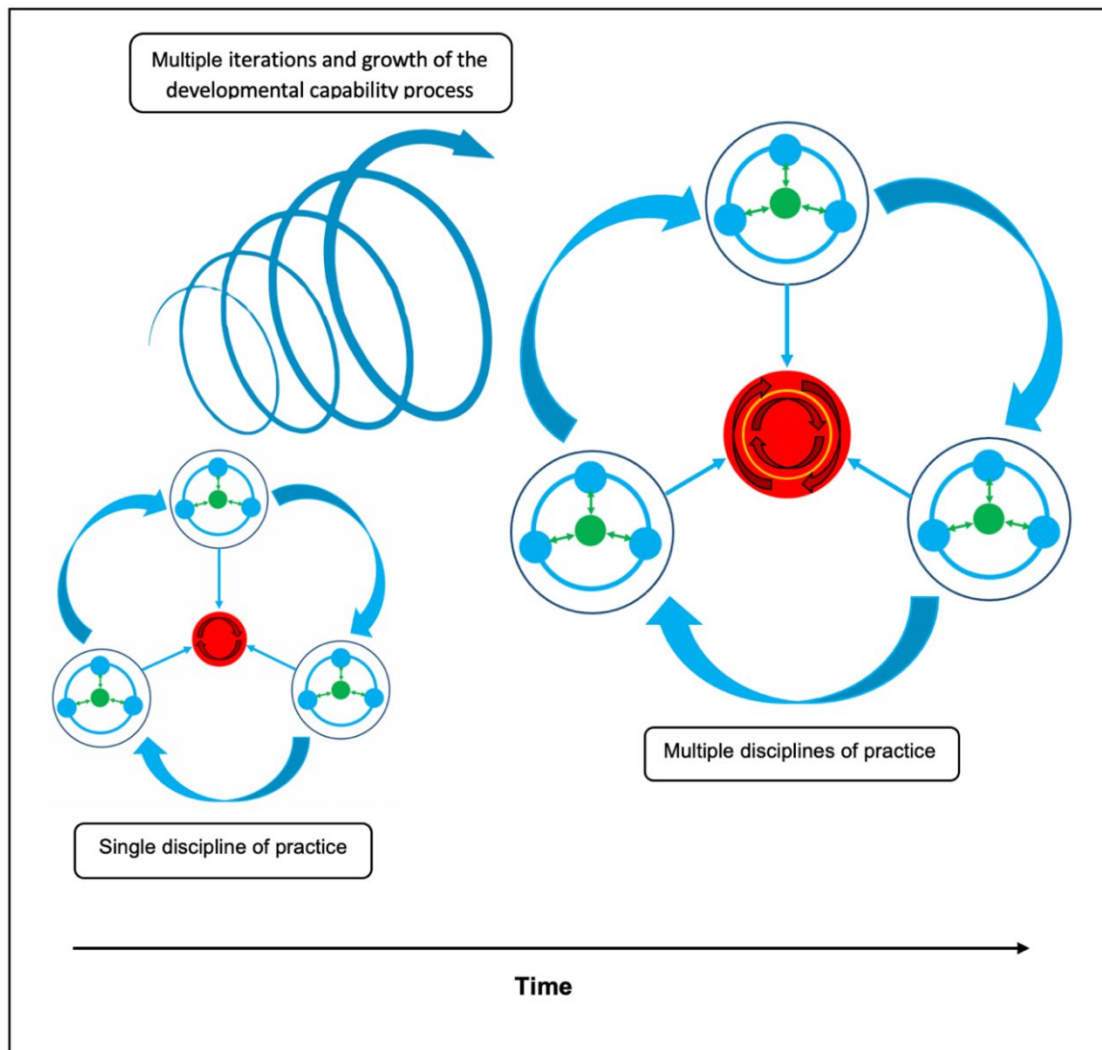


Figure 13. Developmental framework of practice growth
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An important dimension of this framework is that it is holistic in structure and integrated in practice. It combines an individuals' use of their own repertoire of knowledge and conscious or subconscious cognitive processes with social interaction of the individual with their communities of practice to gain support and insights or conversely share new won progress and understanding with social peers. Or it is applied directly to real world contexts. It is representative of an individual's psychological (Clark & Rossiter, 2008) or social identity (Wenger, 1998), in that demonstrates a coherent gestalt of coordinated being, behaviour, and practice in a given vocational discipline.

Every individual will develop their own developmental framework of practice which will have models, knowledge, and techniques in common with all other individuals in each community of practice. It will also have different aspects, what Wenger-Trayner (2015)

call knowledgeability, that relate to their social identity from other communities of practice, real world experiences, interests, and unique expression of their talents.

Further development of an individual's developmental framework of practice is defined by their own purpose which can be subject to the norms of the communities of practice to which they belong or to the needs of their real-world contexts (Figure 14).

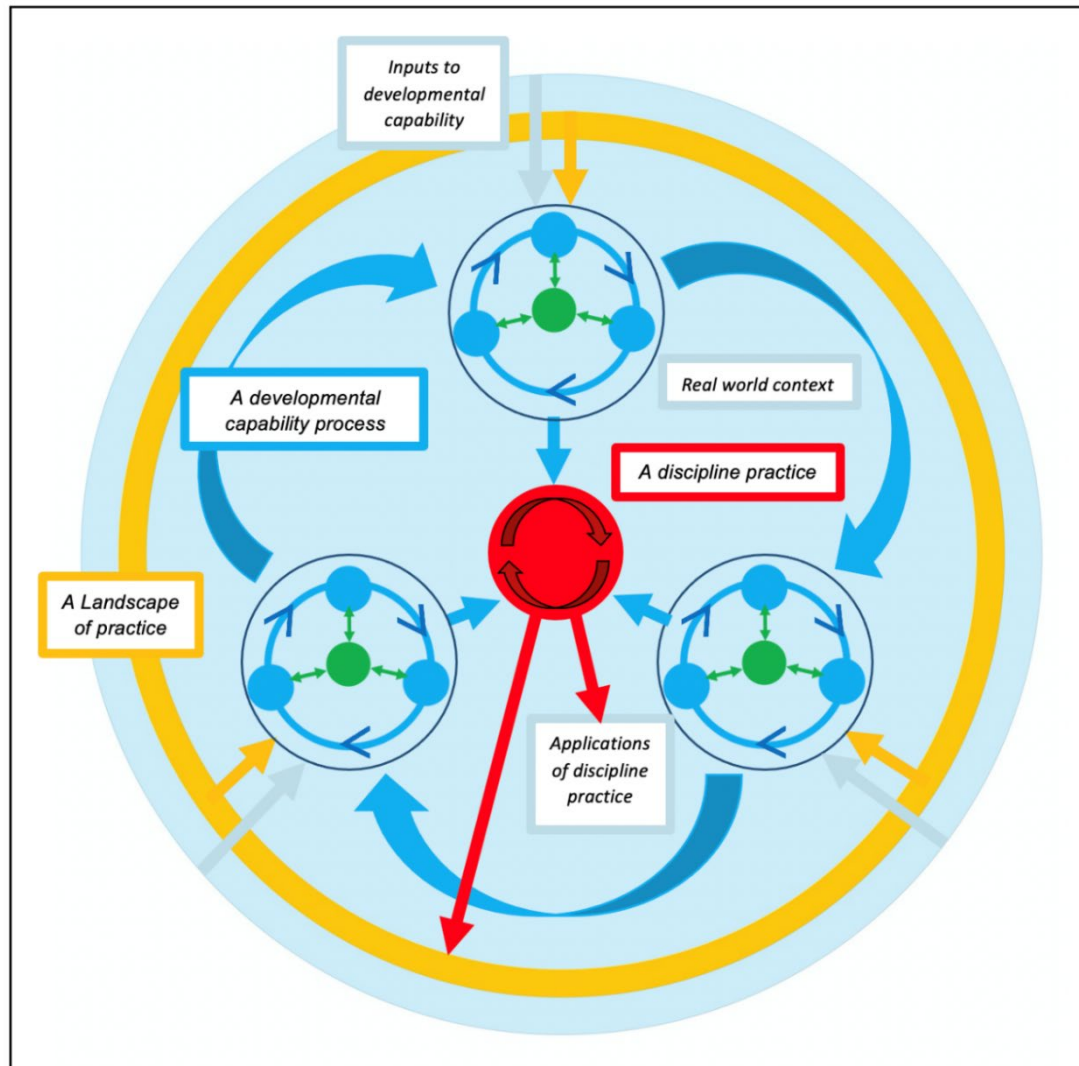


Figure 14. Developmental framework operating in context
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Their developmental capability and discipline practice grow from the acquisition of more strategies and processes during every iteration of the cyclical process, and its potential, in turn, is enhanced in subsequent iterations.

From a constructivist perspective, I see the framework here as continually evolving, yet its generic form should be able to encompass other's approaches under a common

umbrella. The details of practice can vary, however, the fundamentals of the way a person can build and iterate a myriad of techniques share a common framework. The validity of the developmental process descriptions expands and grows through the linkages with other's journeys and their forming of it as evidenced by increasing performance and comprehension of both personal and collective ways of succeeding. The value of this type of model is not its singularity, but the multiplicity that can arise from a simple generic framework.

Metacognitive and subconscious cognitive insights

Reflection

It is important to note the omnipresent role active and passive reflection play in the capability developmental process. It occurs throughout, both consciously and subconsciously. In terms of a mental picture, the issue under review is switching continuously from a global to local perspective in such a way that helps integrate parts to a whole, or gains inputs from others to consolidate a big picture and what else is significant in this picture. This combines active periods of intense focus on detail, followed by leaving ideas to mull and cook subconsciously. It enables being in tune with one's emotions where they can provide a filter to perceiving different aspects of our situations and how we can adjust them, resolve them, or move onto different things. Perspectives can change from experiencing them to being an impartial observer standing outside of oneself looking at the whole picture or different aspects of it.

The developmental framework of practice provided here enables personal involvement and ownership of what one does, why one does it and how one can change and adapt it at will.

'aha' moments and passive reflection

Several of the research participants and I have recognised the value of 'aha' moments. These play an important role in reflecting, evaluating, and consolidating our professional practice. For some of us it arises spontaneously, for others it is a deliberate process to harness the power of the subconscious mind.

In my own case it is purposeful, and it is about exploring dimensions of a problem or a learning need by relating it to prior experiences. Rather than simply calling it an 'aha' moment, it is a deliberate meta cognitive process to find links with other experiences or relatable comprehensions to a current puzzle. This can include direct reference to an issue, or through metaphoric or analogous linkages. The result can come within a time

period requested or can come spontaneously, and always does so when the mind is in a relaxed or freewheeling state. Unlike conscious reflection, it is divergent in nature as it does not seek something tangible or specific; instead, it uncovers something that is relevant to the matter under consideration. Because of my familiarity with this overall developmental framework of practice currently, all the distinct processes in the capability cycle can go on simultaneously together with active convergent and passive divergent reflections. This is helped by my conscious awareness of both the existence and contribution of all these processes to my ongoing development, as well its continuous practice. Moreover, as identified in the practice of others familiar with this concept, several related cycles of development can be ongoing at different stages of resolution, simultaneously in one or more disciplines of practice. The creativity engendered in one, often spills over to another.

Imagination and creativity

Imagination and creativity are recognised as related subconscious cognitive processes which aid growth and contribution to our lives. Our conscious minds are constantly alive with thoughts that relate to our present situation and circumstances. The nature of these thoughts is very much predicated on our historic backgrounds of emotional experience as well as our present emotional frame of mind. This can range across the spectrum of fear and failure to something which is pleasurable, creative and can provide us with beneficial outcomes.

The creative aspect of it tends to come from a more positive and growth orientated mindset (Dweck, 2008).

In terms of my own understanding, my imagination of positive possibilities underpins or creates the potential for creativity. In practice, the subconscious cognitive process of creativity appears closely aligned to the passive reflection process, described above, in which ideas emerge effortlessly from the subconscious mind. Once they are conscious, their development is guided by the conscious sub processes and techniques of the capability cycle shown in Figure 11.

An important aid to creativity and imagination is provided by the concepts of metaphor and analogy. These linguistic artefacts offer relevant perspectives towards both the framing and details of both processes and possibilities for ideas under consideration (Harrison, 2017b).

Another important dimension of imagination is provided by embodied representations of sense and feeling associated with prior physical experiences of our lives (Johnson, 2013).

Intrinsic personal characteristics of development

An important dimension of our potential to develop is provided by our emotional framework. It is like an ocean in which our boat of rationality journeys. If the ocean is rough, our focus tends to be on our current situation and personal safety, whereas when it is calm, we can be sailing towards destinations that have purpose, meaning and intrinsic values and rewards for us. Our confidence in our journeys is predicated on the sort of boat we are and how well our previous journeys have gone, how successful we have been, what value we have found at different destinations and the intrinsic motivation to continue on new journeys. As our life journey progresses, are we moving towards parts of the world where the climate is more predictable and calmer, or are we still battling inclement climates and conditions? An important aid to our journey is whether we have other people in our lives with the experience and stability to help us in this lifetime journey of development. An important contributor to a perspective on this within psychology and education disciplines are the teachings of humanistic psychological movement established by Rogers et al (2013) and others.

Practical insights

Practical implementation of model in academic programmes

Many tertiary level programmes see the advantages of providing an increasingly student-centred approach to their delivery, but the issue is one of how to do this.

The developmental framework of practice provides a structure to support this by providing a personal developmental framework that students can make use of throughout the whole of their career lives.

However, it does pre-suppose that an academic support model is encouraging the achievement of student self-determination in a defined period of time. There are two significant dimensions needed for this to be successful. One is preparing the student for the responsibility and process of being able to independently pursue their studies and providing them with the processes and confidence to prove that for themselves. The second is that the support provided by an academic team, is facilitative and student-centred from the outset. This is inherently so with the model of practice provided to experienced people in my polytechnic which has recently been successfully

adapted to an undergraduate programme called the Bachelor of Leadership for Change. More widely, such practice has underpinned the tutorial systems at prestigious universities like Oxford and Cambridge for centuries.

The significance of this developmental framework of practice is that it provides self-referential cycles of development which can be serially iterated throughout a programme of study of progressively increasing scope and complexity. At the outset, this may be combining areas of essential knowledge development with application to common problem areas. Later, it can progress into longer cycles of problem based and project-based areas both individually and in groups. These can be both self-selected and representative of contemporary practice and issues in a discipline. An increasing proportion of the achievement of these outcomes will arise from self-appraisal and evaluation of the processes by the students themselves, and their peers, as well as feedback from representative parties of the vocational discipline/s involved.

A summative appraisal can be derived from a capstone period of activity in which the student is given responsibility for the delivery of a vocational piece of work. The outcomes and processes of this are representative of the required entry competence of the discipline practice and the required evidence self-validated by the individual and confirmed with a representative practice group.

Assessment approaches

In a tertiary environment one of the key determinants of a successful piece of research is the justification and evidence of the validity of processes used by a researcher to convince a group of peers. Given that research is one of the developmental processes being used by students in their vocational development, it is anticipated that this should also involve appraisal processes of the same kind. In other words, the student is increasingly made responsible for delivery and justification of their required vocational competence through self-evaluation of the validity of the processes they have used to produce their results. In many professional appraisals, this combines portfolios of practice and evaluation which is summarised in a viva voce with a peer group of professionals. This is how all work-based learning from bachelor through to doctoral programmes is appraised at a school of Otago Polytechnic New Zealand. This is common practice in many vocational and professional practice disciplines, along with vocational demonstrations of practice where required. It is seen as an integral part of vocational competence that an individual seeking qualified acceptance can demonstrate, measure, and evaluate their own performance. This can include evidence

of reflection on practice in professional journals that shows enough iterative cycles of a developmental capability model have been undertaken of the kind described here.

Finally, as vocations and professions are embedded in communities of practice, an important dimension of academic rigour should be the encouragement of the students' interaction with qualified peers. Furthermore, evidence of active participation and contribution to the vocation or profession can form part of a summative appraisal

Facilitator and mentor competencies and practice

Effective student-centred development requires a major change of emphasis from the practices of the academic teams looking after contemporary programmes of this kind.

Firstly, as professionals in their own disciplines undertaking continuous lifelong development, they need to see their student's development in the same way as their own. This is by undertaking continuous development, learning and self-appraisal themselves. Secondly, by acting as ambassadors for their professional community of practice and modelling the principles, processes, and ethical dimensions of it with all their students. Finally, by developing facilitation and mentoring skills to create a positive psychological environment that enhances student's motivation and wellbeing in an unfamiliar context (Rogers et al, 2013).

Conclusions

There are rich areas of research to be undertaken in the way in which the developmental framework of practice described above can be applied in educational, vocational, and professional contexts. In education, a qualification programme can be made up of a progressive series of development cycles in which existing competencies and capabilities can be built on. These can be from education and life to date and used to progress towards the integrated needs of a vocational and professional discipline in which the individual may be specialising. This may tend to be more knowledge rich at the outset with the application of the knowledge in applied problem areas needed by the discipline, then progressively moves towards more complex individual and team projects or research that are associated with real contemporary issues towards graduation. Whilst academic staff may set the scope and complexity of a specific project, it is the self-evaluation of both process and output by the student that should determine the basis of assessment and awarding of the final qualification standard.

In particular, the acquisition and application of any new knowledge from middle to late stages of any programme should be the sole responsibility of the student. Their

familiarity with it will be reflected in the problems and the projects they will be using it in.

In a vocational context, the developmental capability process is very similar to what it has always been; in that a young person is mentored by an experienced vocational practitioner and is provided with tasks and problems of increasing complexity until their scope and performance is commensurate with entry status in that vocational field or profession.

Many good examples likely exist already in many programmes and departments of tertiary organisations but not necessarily within a single department. It is therefore worth looking at new programme developments from a cross disciplinary perspective as has been the case at University College London (Fung, 2017) and Ohlin's University (Goldberg & Somerville, 2014).

Chapter 9 Conclusions of study

Major findings and implications for vocational development and education

I contend the developmental framework of practice I have recognised and developed offers a new paradigm for education and development from this point forward at all stages of education, vocational and professional development:

Firstly, because it makes use of common processes that are present consciously and subconsciously from young children learning to walk and talk to the stability of long standing vocational and professional roles and their practice in society at large. These processes make use of cyclical and iterative characteristics that allow development to be conscious, purposeful, progressive, and adaptable.

Secondly, its process stability underpins progress and adaption across many disciplines and fields of knowledge because the process components possess intrinsic characteristics of transferability.

Thirdly, it no longer separates knowing from doing and experience biased practice no longer needs to be less significant than theoretically biased practice. A combination of both are needed as Lum (2009) stated.

Fourthly, it provides open and flexible pathways of development that allow people from a variety of backgrounds to participate in new fields, just as has been the case with the rise of computing and Information technology these past 50 years.

Fifthly, it provides the foundations for simplified development and qualification pathways as envisaged by Dewey's revolutionary comprehension of experience and adaptability. This was first raised over one hundred years ago and forms the foundational structure of quality systems of practice that support contemporary society. It is not the disciplines that are stable, but the macro processes that underpin them. These are what provide the how to support the what which is changing ever more rapidly in the 21st century. This personal understanding of a lifelong developmental and growth process now allows me, and many others who comprehend this, to enable the transformation of personal capability to match that of macro changes in society. It also gives the ability to adapt to new contexts and disciplines and to take advantage of technology-based and student-centred learning processes with more personalised teacher resources.

Finally, it is an enabler of individuals and groups, rather than an inhibitor, in being able to address the urgent problems currently facing humankind and the world we inhabit.

Much of this practice is already hiding in plain sight in education and training ranging from pre-school to postgraduate levels. However, it needs to become the basis rather than an undefined benefit of these systems. More precisely, students understand and make use of their processes of development, rather than simply being focussed on the outcomes they attain.

Examples at pre-school and primary level include play-based and problem-based learning and the work of Montessori, Steiner, and Emilio Regio. Also, work by education pioneers like Heathcote and Herbert, (1985) and their work on *Mantle of the Expert*. Secondary schools have been more inhibited due to the entry expectations of universities, but innovative work in the International Baccalaureate, capability expectations in the New Zealand curriculum, and others, as well as pre apprenticeship programmes have begun to make an impact.

Post school there are major worldwide vocational apprenticeship schemes in many countries. Some are hampered by lack of academic and vocational integration in their practice and qualification systems. At a tertiary level, there is increasing evidence of practice led education and qualifications as applied by Ohlin's University in Engineering (Goldberg & Somerville, 2014), research led developmental practice at University College London, Fung (2017) and work based practice qualifications by Middlesex University and Otago Polytechnic New Zealand (Lester & Costley, 2010). Also, the relatively new concept of graduate based apprenticeships in the UK university sector indicated by Powell (2017). Then there are the older more traditional professional programmes medicine, law, and engineering in universities worldwide as well as recent growth in professional practice doctorates worldwide. There are also significant post graduate business and other professional schools worldwide with notable standouts in the USA, UK, Europe, Russia and emerging in Asia and Australasia, although many of them tend to be academically or research biased as opposed to being practice led.

This is not to say that outcomes are not important, as I have discussed earlier concerning the growth of our narrative (Polkinghorne, 1991), psychological (Clark & Rossiter, 2008), and social identities (Wenger-Trayner, 2015). It is that we are capable of accessing and using a comprehensive toolkit by which we are able to find conscious and unconscious linkages between different types of knowledge and it's practice. This then enables us to be creative and flexible in the way we apply it in new and challenging situations.

Personal insights into experiential learning and related capability processes

From my detailed study of a set of contemporary professionals, I have identified what their development practices have been, both consciously and subconsciously, that have supported their growth, contribution, and successes through one or more careers. At the same time, this has confirmed and enhanced my own perspectives. As a result, I have been able to use this newfound understanding as an academic facilitator, to help many of my students recognise their practice and to allow them to use their capabilities to build new and more successful practices for themselves. This has also helped them gain a significant public qualification at a midpoint in their careers.

An important finding was that I have recognised that capability, as defined by Stephenson and Yorke (1998) based on the 1980's manifesto of the Royal Society of Arts in the UK, is best represented by a comprehensive developmental process framework rather than just providing separate collections of loosely connected conceptual knowledge and behavioural frameworks

Of even greater significance, is that this framework provides a basis for a more stable framework of development and related qualification frameworks that can be easily contextualised but are not affected by the changes in technology or knowledge evolution as current frameworks have been. This is because a capability based developmental system can be enhanced by individuals throughout career lifetimes, without compromising the generic processes that define them. They are capable of growth and adaptation of the underlying principles and processes of cycles of problem solving and their iteration.

Such personal comprehension and flexibility at all levels of human practice and performance allows for the current significant effects of employment changes to be significantly mitigated, as well as allowing change to new roles to be much more easily accomplished. I need to remind readers of significant employment changes brought about by the advent of computer and IT industries. In ways not seen before, people from many walks of life were able to successfully transition and support the growth of those new industries. At the same time, many of these positions were ably filled by arts and humanities graduates. How was this possible when their topics of study bore no relation to the knowledge base of their current roles? The simple answer, supported by Schneider (2004), is that they had developed, understood and made use of well-developed processes of problem solving underpinned by fluent interpersonal communication, creativity and analytical processes they had developed in their studies.

Future areas of research

Whilst it might appear that I am suggesting a major change to contemporary education and training systems, it is likely to take some time for the significance of the potential of the changes I have identified to manifest themselves. This is because of the cultural inertia in existing and comfortable paradigms of belief and how they serve the social groups responsible for them.

However, the rate and pace of change is continuing to accelerate exponentially and there are paradigms of belief concerning education and development that will need to change. What might accelerate this is the major issue of the size of the human population, the lack of resources the earth is currently able to provide to sustain this level of human life and its consumption expectations within our economic paradigm, along with sustainability threats.

For me, it is about emphasis in the education system. If you just provide people with knowledge-centred or outcome-based learning, you are crippling the potential of many to make use of that outside a limited framework of experience. In a situation such as the worldwide pandemic, we are currently facing, where people's livelihoods are destroyed and they are dependent upon an out-of-date system to help them find another situation, that will only last until a further crisis strikes.

This is the antithesis of successful growth and adaptation of human beings. What is needed are education systems in which people are provided with the means of being able to better understand what they have and can do and be able to see how their practice can allow them to move from one discipline to another with relative ease. This requires the capability to find alternative opportunities from open access sources such as the internet, where they can confidently acquire new information and be able to apply it using and developing the skills they have, and in ways that will provide them with new and sustainable opportunities.

I am keen to be involved in research at all vocational levels. Research which can manifest outcomes that replicate and enhance the success of a wider milieu of people than those of my participants and myself. This includes measuring the extent of developmental capability outcomes in work-based learning programmes within my polytechnic school, compared to more generic academic and vocational programmes. It would also include seeing how to optimise these findings in a wider range of national qualification programmes in which the efficacy of the broad principles identified here can be further proven. Furthermore, I am keen to find research linkages between

practice and developmental performance in programmes spanning earlier stages of education that make use of the principles identified in my developmental framework of practice.

I am also keen to identify systemic measures of growth of developmental capability from longitudinal studies of educational and vocational programmes that make use of varying parts of this developmental framework of practice. From the benefits identified, this will encourage and assist conventional programmes to adopt changes, as well as to inform politically sympathetic interests of such benefits in a holistic systematic way.

In a national work environment, there is useful research to be done to simplify the job classification system and therefore related tertiary and vocational qualification systems. This would allow a wider range of existing qualified people, with appropriate levels of developmental capability, to transfer their practice more easily to areas of shortage than is currently possible. This is no more than to ease the barriers in existing areas of opportunity in the same way as new areas of opportunity have recently made use of a diverse range of human capital. A good example would be how we might alert and prepare a range of existing craft, technician, and professional groups to take advantage of the new opportunities currently emerging from Industry 4.0 and application of The Internet of Things.

Final conclusions

The conclusions I have come to from this study are not an end but simply the end of a new beginning. What follows are a few of the big outcomes I am aware of at present.

Firstly, my development has been informed by two sources: my own experience and my reflections and improvements arising from these. Also, my confidence in this developmental framework of practice. Secondly, it is informed from the communities of practice of which I am a part, as well as the wider community, in the sense of the knowledge, evidence and practices available from a range of contemporary research.

Then there is capability itself. My definition of this at the present time is that it is any process generically involving processes such as problem solving, research and experiential learning which enable continuing improvement of this process and its application to contextual disciplines of practice. Their uniqueness lies in their cyclical form and iteration ability and their very process ensures the end arrives at another beginning. This is enabled by having a sequence of sub processes which essentially take us through cyclical and progressive examination of the issue or need, finding ways of achieving that with knowledge and models and interaction with others, then trying

these out in practice and evaluating the outcomes. Our practice, or more specifically, our performance of practice, competence, is simply the outcomes of our present state of personal and professional capability. If we understand the process which defines developmental capability, we are in a better position to enhance and allow it to evolve through time. This involves enabling processes such as analysis, synthesis, creativity, reflection, communication, and many others.

It is also important to mention the role that subconscious and metacognitive processes are playing in my practice and development. There is a need for these to be adopted and developed in many educational training programmes, rather than remaining as an intellectual curiosity for psychology researchers. This includes practical ways of enhancing imagination and creativity, passive reflection and 'aha' moments and the development of one's intuitive capability.

There is also Sen (1993) deficit sense of capability, which may be described in two ways. One is the extrinsic limitations placed on us as individuals by society or communities, which inhibits our capability from realising its full potential. And secondly, there are our intrinsic psychological and emotional limitations which limit our confidence and motivation to move ourselves forward. These behavioural barriers are reduced by our achievements of personal success and recognition by others, but also by the relationships that we engage with others for the purposes of self-improvement. This is well expressed by the work of Rogers et al (2013) not only for adults, but also for children's development in terms of openness, mutual respect and encouragement; to try and to fail but to see that in terms of useful learning to try again.

Finally, there is strong evidence that the identity we possess is the living evidence of what this developmental framework of practice can provide and continue to develop through our journey of life. It is in its integration, rather than its parts, that it can illuminate the best of our human achievements, spirit, and endeavour. It also guides us onto to new possibilities that are beneficial to our ourselves and all of life on spaceship earth.

The framework as currently configured may be temporary. Whilst it provides a useful locus of aggregation for the present, I believe it offers a useful stepping off point for future practice and theory, which is more integrated than currently.

My own comprehension of this doctoral achievement is linked to personal evidence I have gained throughout my life. Initially, this was understood in its own place and time, but has now been integrated by this study into a unified whole. This unified whole, however, is only a temporary state of understanding and will continue to be further

adapted by my continuing life journey using my own passions and the wisdom of others around me.

Perhaps the single most important message from this doctoral journey is this; I now have the processes or the recognition of a need for processes to be able to link interesting ideas to interesting outcomes with mixtures of problem solving, research and experiential learning. These generic processes provide me with the maximum freedom and utility of my human potential that remains to me.

Glossary

Capability

Capability has been defined in my developmental framework of practice as the coherent cyclical processes that can be iterated continuously to provide new answers to problems, new research findings, new learning that enable enhanced practice and performance in competence. At the same time, this includes enhancing the techniques and processes of capability itself. This supports the definition of capability provided by Stephenson and Yorke (1998).

Another form of capability as defined by Sen (1993) is the extrinsic barriers an individual finds in society that prevent them from realising their full potential; e.g. not being able to obtain an education that can help them contribute in society and support their family. This also can be extended to intrinsic barriers identified by this author concerning lack of confidence, fear of failure as well as emotional or behavioural barriers preventing normal development opportunities.

Competence

I define competence as a temporary state of practice and performance that ranges from both parts of and the whole of a specific role in life. In a qualification sense, it is often portrayed as threshold competence for entry to a field of practice. However, within my developmental framework of practice it is growing day by day through new applications of capability. For example, competence can be defined in terms of say communication or numerate practice both of which separately and jointly underpin a discipline practice like design or teaching.

Developmental framework of practice

A developmental framework of practice, as identified by this thesis, integrates two distinct groups of processes that form a contemporary description of individual vocational (including professional) practice.

The first group of processes such as problem solving, research and experiential learning provide development of existing practice by means of their cyclical, iterative and recursive structures that also include reflective, creative, and sub-conscious processes of imagination and intuition and feel. The second group of processes relate to important discipline practices which may operate with either linear or cyclical processes.

The resulting overall practice is closely linked with an individual's identity described more fully below

Function

Functions are the stable processes which underpin major areas of human activity. Many vocational roles are based on functions, and these are broadly stable including professional and vocational roles like engineering, medicine, hairdressing, butchery etc. Whilst the main functions remain stable, the sub functions or sub processes are changing continuously due to the advancement of technology and the creation of new techniques within disciplines and related fields of conceptual knowledge. Functions form the basis of discipline practice by humans together with the support of tools, machines, vehicles, and infrastructure. However, successful practice of these functions at a given level of performance is based on more than conceptual knowledge and involves tacit, intuitive, emotional and social contributions of practice too.

Identity

In my autoethnography I have discussed three forms of identity. The first is narrative identity described by Polkinghorne (1991), which is what an individual knows and can describe about themselves to others narratively and can summarise as their current state of practice. It is what they know they know and can do and is based on Mandler's (1984) concept of knowledge. This forms part of a larger psychological identity described by McAdams and McLean (2013) and Clark and Rossiter (2008) based on informal, tacit and unconscious knowledge and practice. And finally, these two identities form part of a larger social identity which is partially observable to others in a landscape of social practice described by Wenger et al (2015) and Wenger-Trayner (2015), but is unknown to an individual themselves.

Knowledge

Knowledge is a word with multiple meanings. The most common form of knowledge is that derived through research methodologies qualitatively or quantitatively, which provides a model of knowing about something that has a level of validity and repeatability about it. It is also describable in terms of language and symbols like mathematics. It is called conceptual knowledge and knowing that. Another form of knowledge is knowing how which describes the processes by which an outcome can be achieved both physically and cognitively but there are indescribable aspects to it to which belong to an individual and are called tacit knowledge. Finally, there is knowledge in practice that provides an artistic and unconscious level of performance

which I contend as feel, which is observable in an emotional and nonverbal sense and is embodied in an individual.

Learning as an outcome

Learning as an outcome is not simply acquisition of conceptual knowledge or theory but also the practice and ability to apply it in contexts for which it was undertaken. It enables a demonstration of new and extended practice and performance to an individual that was not present before the learning was undertaken.

Learning as a process

Learning as a process has been identified here as a cyclical and iterative process that can be described by forms of problem solving, research and experiential learning which enables acquisition, application, and reflection of new information to become integrated into and provide a change to an individual's practice and performance.

Reflection

I have made use of two distinct forms of reflection process in this work, each of which have significant contributions to make to the developmental framework of practice. The first is active, conscious, and convergent reflection which identifies the relative significance of factors contributing to a process or outcome and is often associated with logical or linear forms of analysis. It is well described by Gibbs (2013). The second is passive, subconscious and divergent reflection which tends to identify factors that bear no logical relation to the matter in hand but are catalytic to intuition, creativity and 'aha' moments that can transform the perspective on a situation, process or outcome and have been illuminated by Bowden and Jung-Beeman (2005; 2001).

Vocational practice

I define vocational practice as being a spectrum of practice that ranges in scope and complexity from simple to sophisticated roles in society. Due to the political and power-based nature of society, the most complicated roles are not necessarily valued as the most significant, but will tend to require the most education, development, and training. As has been discussed in his thesis, Lum (2009) has clearly shown the artificial divide between academic and vocational education to be the product of positivistic philosophy which has now been disavowed.

I also regard professional practice as being situated at the high end of the vocational practice spectrum and that there are no intrinsic barriers of development for an individual being able to move throughout the whole of this spectrum during their career lifetimes. Fluent vocational practice is also characterised by embodied feel and

performance that is not describable in language or process but is partially observable to others.

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Appendices

Appendix 1 Example of a competency defined by a generic behavioural scale

How well can the employee perform in writing skills?					
Competencies/Behaviours	Rating				
Competency: Writing Skill	0	1	2	3	4
	Not Applicable	Not Very Well	Not Well	Well	Outstanding
1. Effectively Organizes Written Material					
2. Uses Effective Grammar					
3. Spells Properly					
4. Gears the Language to the Appropriate Level of The Audience					

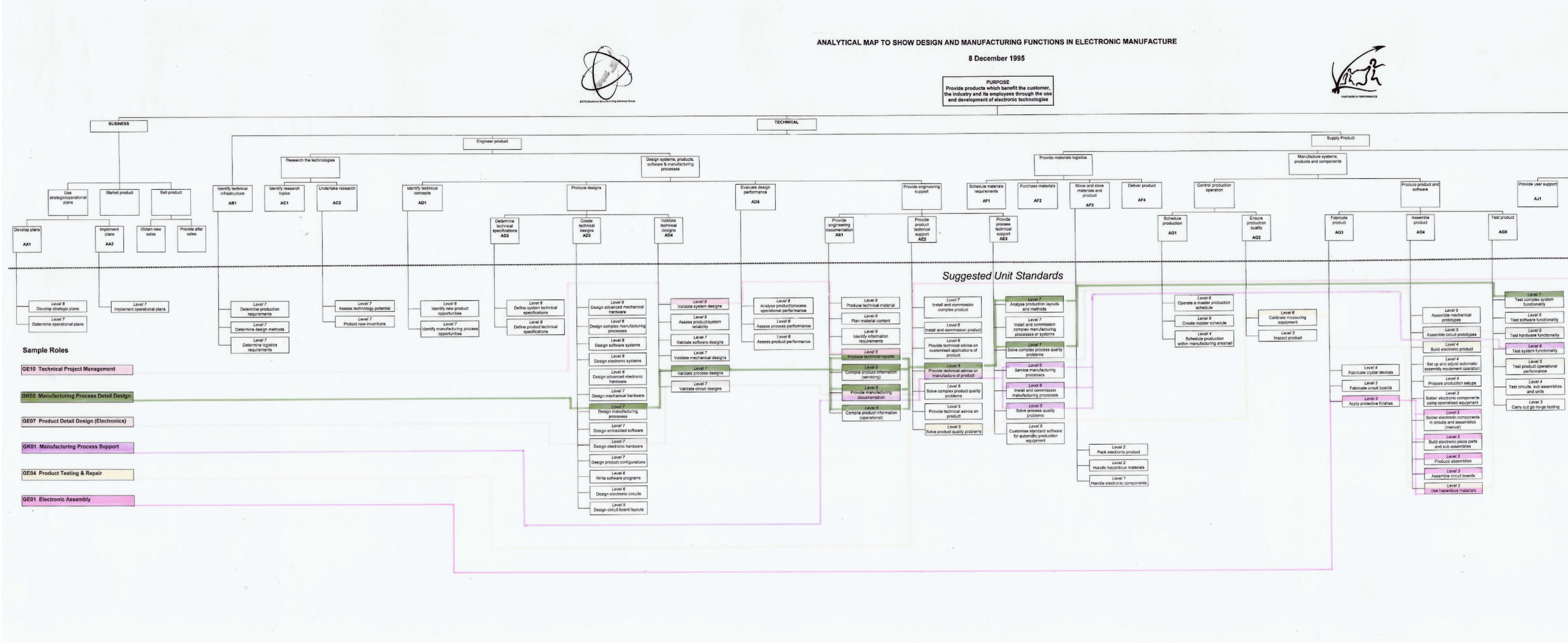
Adapted from *Competency based Training Basics* (p.16), by WJ Rothwell and J M Graber, 2010, Alexandria VA: ASTD. Copyright 2010 by ASTD. Reprinted with permission.

Appendix 2 Example of a competency defined by a Behaviour Anchored Rating Scale

INCLUSIVENESS COMPETENCY FACTORS					
1. Demonstrates respect for people & their differences		2. Understands the benefits of a diverse workforce		3. Is trusted and respected by others	
4. Includes and welcomes others		5. Works to understand the perspectives of others		6. Promotes opportunities to experience diversity on campus	
	UNSATISFACTORY	IMPROVEMENT NEEDED	MEETS EXPECTATIONS	EXCEEDS EXPECTATIONS	EXCEPTIONAL
1	Does not demonstrate inclusiveness; fails to recognize the value of differences.	Is often not aware of or interested in diverse backgrounds or points of view.	Respects, includes, and recognizes differences.	Respects, includes, and recognizes differences; creatively incorporates dissimilar views.	Highly inclusive; encourages, recognizes and incorporates diverse points of view.
2	Does not understand or promote the benefits of a diverse workforce.	Has minimal understanding of the benefits of a diverse a diverse workforce	Understands the benefits of a diverse workforce.	Promotes the benefits of a diverse workforce.	Actively promotes the benefits of a diverse workforce
3	Lack of inclusiveness fosters a lack of trust among customers and coworkers.	Tends to work either independently or with designated coworkers; trust is low among those not included.	Is respected and trusted by customers and coworkers.	Is highly respected and trusted by customers, coworkers, and campus partners in all dealings.	Is looked up to and highly respected by customers, coworkers and the campus community.
4	Is not welcoming or respectful; coworkers and campus partners often 'work around' to avoid interaction.	Is reticent to include new people or ideas.	Inclusive and open to new people and ideas.	Includes and welcomes diverse individuals and groups.	Actively creates an inclusive and welcoming environment for diverse individuals and groups across campus.
5	Discourages different points of view; becomes defensive when asked to consider new/different ideas.	Is not always open to different points of view.	Seeks to understand and incorporate different points of view.	Is consistently open to and respectful of different points of view.	Promotes equity and inclusion by actively seeking ideas and insights from diverse sources.
6	Neither understands nor promotes opportunities to experience diversity on campus.	Needs to develop understanding and awareness of opportunities to learn about and experience diversity on campus.	Understands and promotes opportunities to experience diversity on campus for self and others.	Participates in range of opportunities to learn about and experience diversity on campus; encourages others to do the same.	Actively creates opportunities for others to learn about and experience diversity on campus.

Adapted from *UC Berkeley Staff Core Competencies and Behavioral Anchors* (p.1), P Carroll, 2010, Berkeley CA: UC Berkeley. Copyright 2010 by UC Berkeley. Reprinting permission obtained.

Appendix 3 Extract of functional analysis and role identification for NZ electronic manufacturing industry 1995



Source: James Harrison Owner Partners in Performance 2020 **View at 250% to see details of functional components**

Appendix 4 Professional electronic engineering standard from NZ electronic manufacturing sector 1998

Unit Standards - Element Details

ETITO

PARTNERS IN PERFORMANCE

Title : Design electronic products

Level 8	NQF Number 20006 (V1E)	240 credits	Entry Requirement: Unit 12604 Design electronic products
Purpose :	People credited with this unit standard are able to: create design specifications for electronic products; identify a product design concept; prove design functionality; and provide design solutions for electronic products.		
Special Notes :	<p>1 This unit standard describes the required performance of a person in a professional engineer role to design electronic products from derived specifications using novel or complex design elements.</p> <p>2 The person commencing this unit standard is expected to have the following:</p> <ul style="list-style-type: none">a knowledge of a specific hardware or software technology at an engineering masters degree level, or equivalent.b competence in the prototyping, functionality testing, and provision of engineering documentation for electronic products.c capability with quality management systems and procedures. <p>3 For the purpose of this unit standard; 'electronic product' is defined as full product, sub assembly, or printed circuit board, using hardware and/or software technologies; 'design element', a circuit or software routine with distinct and separate macro functions; 'design solution' the design specification, product hardware and/or software design configurations, prototype drawings and part lists, prototype performance data, engineer design notes including manufacturing and test recommendations.</p> <p>4 Range:</p> <ul style="list-style-type: none">a design scope - the development of electronic products from own derived design specifications.b design concept - makes use of novel or complex design elements.c electronic product - up to three different product designs depending on product complexity and design timescale; eg. one example for a complex product in which the design timescale exceeds eighteen months, three examples for a simple product in which the design timescale is less than six months. <p>5 Reference documents and standards relevant to this unit standard may include but are not limited to: NZ product standards; NZS9001,1994, Quality systems - Model for quality assurance in design/development, production, installation and servicing; both from Standards New Zealand; International Electrotechnical Commission (IEC) standards; technical standards from other recognised international or national standards setting bodies; and professional engineering standards to do with social, environmental and ethical considerations.</p> <p>6 The following apply to all elements of this unit standard:</p> <ul style="list-style-type: none">a all activities are to be completed and reported within agreed timeframes, costs, and contractual authority.b all work practices must meet contractual quality management requirements. These include but are not limited to documentation of activities, results, and decisions.c all communications must be made in accordance with contractual procedures for content, recipient, timing, and method.d all activities must comply with policies, procedures, and requirements of the contractual parties involved; any relevant legislative and/or regulatory requirements, which may include but are not limited to: the Health and Safety in Employment Act, 1992 and its subsequent amendments.		

Unit Standards - Element Details

ETITO

PARTNERS IN PERFORMANCE

Title : Design electronic products

Level 8

NQF Number 20006 (V1E)

240 credits

Entry Requirement:

Unit 12604 Design electronic products

Element Title	Performance Criteria and <i>Range</i>	Assessment Specification and <i>Evidence</i>
1 Create design specifications for electronic products.	<p>The creation process enables full definition of the product</p> <p><i>needs may include but are not limited to client needs, supplier needs, technical needs, relevant international technical and regulatory standards, professional engineering standards.</i></p> <p>The scope and content of the technical specifications ensure the integrity of the product design.</p> <p><i>content may include but is not limited to product architecture, technical functions and performance, technology selection.</i></p> <p>The relative significance of each technical specification is demonstrated in the resultant product design plan.</p> <p><i>significance may include but is not limited to technical complexity, choice and maturity of technology, supplier capability, design resources.</i></p> <p>The technical specifications provide scope for innovative technical solutions.</p> <p>The tolerance of the technical specifications allows for their refinement throughout the remainder of the design process.</p> <p>The meaning of the specifications is self evident to other designers.</p>	<p>At this level, it is expected that the primary responsibility for meeting the requirements of this standard will lie with the candidate. The main assessment decision should be based on formal and informal performance evidence. This can be provided by the candidate from their work assignments or projects. Most of this evidence may already be needed for contractual or enterprise requirements associated with the delivery and quality assurance of their work.</p> <p>Successful demonstration of this type of standard should be judged not only on whether the level specified in the performance criteria has been achieved but whether there is sufficient evidence to confirm consistent repeatability of the expected performance.</p> <p>In order that candidates may qualify for membership of professional bodies, the assessor should ideally possess both professional membership in an electronic engineering field and an assessor standard, 4099 or equivalent.</p> <p><i>Performance Evidence : Generally as for element 2 plus: Product design plans that incorporate all design requirements</i></p> <p><i>Compliance of design plans with all necessary technical standards and regulatory protocols</i></p> <p><i>Flexibility of plans to enable a variety of technical solutions</i></p> <p><i>Knowledge Evidence : Generally as for element 3 plus: Preparation of design plans and their contents. Knowledge of technical standards and regulatory protocol sources</i></p> <p><i>Design quality standards.</i></p> <p><i>Comprehension of design protocols and processes</i></p>

Unit Standards - Element Details

ETITO

PARTNERS IN PERFORMANCE

Title : Design electronic products

	Level 8	NQF Number 20006 (V1E)	240 credits	Entry Requirement:
2	Identify a product design concept.	<p>The characteristics of alternative design concepts exploit the scope of the technical specifications. <i>characteristics may include but are not limited to product architecture, function, circuit subdivision, alternative technologies.</i></p> <p>The scope, depth and process of analysis prove the technical validity of each design concept. <i>analysis includes theoretical analysis, simulation, and prototyping.</i></p> <p>The identification of a preferred design concept optimises technical and commercial tradeoffs. <i>tradeoffs may include but are not limited to design life, technology maturity, functionality, flexibility, make buy analysis, manufacturability, serviceability.</i></p> <p>The identification of the design concept is achieved within the requirements of the design plan.</p> <p><i>requirements may include but are not limited to time, cost, client and enterprise requirements.</i></p>		

Unit 12604 Design electronic products

As for element 1

Performance Evidence : The performance evidence is the evidence that confirms or does not confirm the achievement of this standard. Any knowledge evidence should only be used in support of performance evidence.

Some general evidence that should be sought at this level includes:

Critical reflection on all outcomes, what led to them, what could be improved next time.

Applying lessons learned and outcomes showing steady improvement from one project or work assignment to the next.

Becoming more aware of what is not known and demonstrating this through self improvement processes and/or seeking relevant professional support at the right time.

Taking full responsibility for completion of all outcomes within supplied resource limits and of making others aware of problems at an early stage.

Additional performance evidence includes:

Quality and integrity of system concepts

Technical rigour of design analyses

Effective and efficient use of design resources for given results

Technical and commercial judgement associated with each

Knowledge Evidence : Generally as for element 3 plus: Comprehension of potential and applications of selected technologies

Knowledge of value engineering and reliability concepts.

DFM and DFS concepts.

Awareness of external and client technical and regulatory standards

Knowledge of proven design configurations associated with system applications

Unit Standards - Element Details

ETITO

PARTNERS IN PERFORMANCE

Title : Design electronic products

Level 8

NQF Number 20006 (V1E)

240 credits

Entry Requirement: Unit 12604 Design electronic products

Element Title	Performance Criteria and <i>Range</i>	Assessment Specification and <i>Evidence</i>
3 Prove design functionality.	<p>The selection of development processes is relevant to the design exploration required. <i>development processes include theoretical analysis, simulation, and prototype development.</i></p> <p>Development evidence identifies design deficiencies and opportunities for design improvement. <i>hardware and/or software configurations, functionality and performance.</i></p> <p>The final design delivers the functionality and performance to meet the required specifications.</p> <p><i>operational, design for manufacture (DFM), and design for service (DFS) specifications.</i></p> <p>The final design offers benefits not specified in the technical requirements. <i>benefits may include but are not limited to mastery of new technology, design elegance, manufacturability, serviceability, costs, increased supplier capability.</i></p> <p>Engineer design notes confirm evidence of design approaches, tests, conclusions and self appraisal of designer knowledge and capability gaps.</p> <p>Each design demonstrates an increase in the technical performance of the designer.</p>	<p>As for element 1</p> <p><i>Performance Evidence : Generally as for element 2 plus:</i> <i>Quality and integrity of development processes</i> <i>Elegance, utility and rigour of final designs</i> <i>Client confidence in functionality and performance of final designs</i> <i>Scope, content and quality of design outputs and records</i></p> <p><i>Knowledge Evidence : The knowledge evidence is secondary to the performance evidence expected in this standard. However it should be assumed that it is the minimum required to enable adequate performance. If a candidate does not already possess this at the outset, they need to ensure that they have acquired it by the time of final assessment. Knowledge evidence should include:</i> <i>Perceptions of the strengths and weaknesses of the given technologies and associated design components and configurations</i> <i>Selection and use of different development techniques</i></p>

Unit Standards - Element Details

ETITO

PARTNERS IN PERFORMANCE

Title : Design electronic products

Level 8

NQF Number 20006 (V1E)

240 credits

Entry Requirement:

Unit 12604 Design electronic products

Element Title	Performance Criteria and <i>Range</i>	Assessment Specification and <i>Evidence</i>
4 Provide design solutions for electronic products.	<p>The content of electronic product design solutions enables the product supply.</p> <p><i>content may include but is not limited to design specification, hardware and/or software design configurations, prototype drawings and part lists, engineer design notes including manufacturing, test and service recommendations.</i></p> <p>The design solutions highlight the opportunities and issues arising from the final design.</p> <p><i>opportunities and issues may include but are not limited to design processes, technology opportunities, technical learning, sources of technical value.</i></p> <p>Design solutions meet design sign off requirements.</p> <p><i>sign off requirements may include but are not limited to design integrity, coherence of design solutions, manufacturing, test and service plans, and related engineering documentation requirements.</i></p>	<p>As for element 1</p> <p><i>Performance Evidence : Generally as for element 2 plus: Compliance of design solutions with client technical and design quality requirements</i></p> <p><i>Rigour and integrity of design solutions</i></p> <p><i>Confidence of client to proceed with design solutions without further designer involvement</i></p> <p><i>Knowledge Evidence : Generally as for element 3 plus: Required content of design solutions for client sign off.</i></p>

Source: James Harrison, Owner of Partners in Performance 2020

Appendix 5 Example of role-based competence in UK graduate apprenticeships 2017

Process Automation Engineer Degree Apprenticeship Standard ST0407/01

1. Context

The chemicals and process industry sector is wide ranging and diverse. It embraces many sub-sectors such as pharmaceuticals, bio-chemicals, speciality and fine chemicals, agrochemicals, heavy chemicals, minerals processing, cement, pulp and paper, power, oil and gas, nuclear processing, water, food and drink. The processes involved, which may be of a physical, chemical or biological nature, generally result in products in the form of a substance. Those processes are carried out using plant and equipment which are often of a large scale, extensive, highly integrated and invariably automated. The plant used is very different to the types of machinery found, for example, in the aerospace and manufacturing sectors where the products are typically components, parts and assemblies.

Automation of process plant is realised by Integrated Control and Safety Systems (ICSS) which are of a specialised nature, their design reflecting the complexity and risk of operations carried out. Process automation addresses not only the immediate objectives of maintaining control and safe operation of plant and equipment but also the wider issues of enterprise management such as process efficiency, plant utilisation, operations optimisation, product quality, inventory monitoring, utilities consumption and equipment diagnostics.

2. Occupation

Process automation lies very much at the interface between disciplines: chemical and electrical engineering, instrumentation and control, maths and computing, software and IT, business and management. To function effectively, process automation engineers require a breadth and depth of knowledge and knowhow across that spectrum. They are involved at all stages in the life cycle of an ICSS: feasibility, specification, design, development, acceptance, installation, commissioning, operation, maintenance and support. Typically, on a project basis, they may be involved in 'doing' the specifics of design, development, etc, or in the management thereof. Their work is subject to a variety of constraints: international and company standards, legal, contractual and commercial commitments, not to mention good practice. The standard will apply to all apprentices in its entirety although the emphasis will vary for individuals according to which phases of the life cycle they are involved in and depending upon whether they are employed by system suppliers (the vendors), contractors (or system integrators) or end users (the operating companies).

3. Level This is a Level 7 apprenticeship standard.

4. Entry Requirements

Typically, the minimum academic qualification required of an apprentice is a Bachelor's degree (BEng or BSc) at 2.2 Hons standard, or equivalent, in chemical or electrical engineering or other appropriate discipline such as physics. Companies will set their own entry requirements in terms of experience.

5. Duration The duration will normally be five years.

6. Qualifications

The apprenticeship requires completion of an MSc degree in process automation worth 180 UK credits (90 ECTS credits). The MSc degree must be accredited by at least two relevant Professional Engineering Institutions (PEI), such as IChemE, IET and InstMC, for further learning to Master's level under the UK Standard for Professional Engineering Competence (UK-SPEC) for graduates with an accredited Bachelor's degree.

The Government requires that all apprentices hold Level 2 English and Maths prior to the End-point Assessment (EPA).

7. Link to Progression and Professional Registration

The standard is aligned, as far as is practicable, with the requirements of UK-SPEC. Upon completion of the apprenticeship, an apprentice will i) be able to apply to become a Member

of a relevant PEI, and ii) depending upon the level of experience gained and responsibility held, either wholly or partially satisfy the requirements for Chartered Engineer (CEng) status.

8. Review Date The standard will be reviewed after three years.

9 Knowledge, Skills and Behaviours

A competent apprentice will be able to demonstrate at the EPA all of the following attributes:

Knowledge: technical

- a. knows the principles of design and operation of a variety of unit operations and the principal features of construction of related items of process plant.
- b. understands a range of relevant strategies and techniques for the control of both batch and continuous plant, and the knowhow for translating them into designs.
- c. knows about modern instrumentation for measurement of common process variables, actuation (valves & motors), signal transmission and protocols, intrinsic safety and segregation.
- d. knows about modern control technology including hardware and infrastructure (power & air supply, trays & trunking, cabling and marshalling), and interfacing to third party equipment.
- e. knows about with the topology (hardware, its organisation and layout), system software, communications and networks, and operator interface of at least one ICSS or equivalent.
- f. is familiar with the essential functionality of the real-time languages, structures and tools provided for the development of application software for at least one ICSS or equivalent.
- g. understands the organisation of alarm systems, the need for alarm management and the quantitative analysis and design of Safety Integrity Level (SIL) rated protection systems.
- h. knows about the use of control systems as a platform for higher level tasks, such as optimisation and statistical process control, and of the database techniques (eg, querying and reporting) used for the integration of control and enterprise management systems.
- i. is familiar with key international standards, codes of practice and industry guides, etc, and mandatory requirements, especially regarding protection systems, safety and human factors.

Knowledge: general

- j. understands the life cycle of control systems in terms of feasibility, specification, design, development, acceptance, installation, commissioning, operation, maintenance and support.
- k. appreciates the contractual nature of relationships between suppliers, contractors & end users.
- l. knows about general management practice and, in particular, project management and software engineering methods.
- m. appreciates the contribution of automation to improved safety, sustainability and reduced environmental impact of operations.

Skills: analytical and problem solving

- n. able to analyse complex automation problems of a process nature, reducing them to their underlying issues, and can synthesise solutions subject to constraints.
- o. able to develop, from first principles, qualitative and/or quantitative models and simulations of systems in terms of the functionality of their components and signals and can interpret their input-output relationships.
- p. able to develop dynamic models based upon commercially available simulation packages.
- q. able to adapt and apply control theory, related techniques, technology and knowhow to the solution of process automation problems, open ended or otherwise.

Skills: technical and commercial leadership

- r. able to interpret requirements for automation and can articulate them in terms of user and functional design requirements, testing and acceptance specifications, and operating procedures.

- s. able to translate those requirements into designs, especially of application software, and can realise them using the standard functionality of a proprietary ICSS or otherwise.
- t. can manage automation projects in terms of the planning and deployment of human and physical resources for activities such as design, development, testing, documentation, etc.
- u. able to handle the commercial and/or financial aspects of an automation project in terms of costs, resources, overheads, cash flow, margins, profit, etc.
- v. can make judgements about and take responsibility for technical issues, such as operability, productivity, quality, reliability, safety, security, sustainability and viability, in an industrial context.

Behaviours: transferable skills

- w. works independently, demonstrating self-discipline, self-motivation, self-sufficiency and self-development, requiring little supervision, if any.
- x. works effectively and with enthusiasm as a member of one or more teams, interacting with and supporting other team members, whilst being committed to delivering on agreed targets for deliverables.
- y. communicates effectively, especially in the written form, with other persons, technical or otherwise, using terminology correctly according to context.
- z. accepts corporate beliefs and objectives and complies with company rules and guidelines, subject to the broader ethical responsibilities of a professional working in the industry.

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Appendix 6 An example of a coded transcript of a research participant

Coding report for participants

Name	Jeremy Green Transcription 2
Name	Accommodation
Coded Text	Right. Its all in the assimilation. So, the way that I approach or process information or try to learn things is the, the fastest way for me to assimilate and understand information. For, of course, and also to, to be able to apply it or bring it back out, whether it be some theory around some learning that I can apply or it give it to my learners or whether it be a musical concept that I want to integrate into my own personal playing. So its, its about the assimilation and having that, that knowledge or information really, really solid and totally understood so that I can bring it out in whatever format is required.
Name	Jeremy Green Transcription 2
Name	Confidence
Coded Text	<p>in that successful learning are you seeing the same, are you seeing the same processes in them a you've described with me of your own.</p> <p>Yes, totally, absolutely. I mean as soon as I had the confidence to think that I can learn this and grab this and how good it made me feel, I see that in them. So, in essence you just portraying, whether and subconsciously portraying the excitement you get from your own learning and it seems to spill out on them and they get it as well. It must be I saw a bit of feedback the other day that said exactly that and I was like really OK.</p>
Name	Jeremy Green Transcription 2
Name	Confidence
Coded Text	<p>what are, and apart from getting them over the barrier which says they've told themselves they are not successful learners, what do you think makes them, or what have you judged on them or find to, to work with them on that makes them successful learners?</p> <p>Oh yeah, as you said its firstly getting that confidence but also, there, a lot of them that I, and I've seen some of this on the feedback to and I don't know if I necessarily do it intentionally but, I, I like learning things, new things and I love understanding things and sometimes that enthusiasm can, I think can enhance their enthusiasm, so they become like enthusiastic learners and I see that come back sometimes when they have liked picked something up and then they think wow and then they can grab this next thing and they can get it and suddenly it's a self-fulfilling prophecy almost, they, they learn something and then they get it and then its like wow and then they learn the next thing and they get it and before long they, they're a motivated learner and the world seems to be oyster.</p>
Name	Jeremy Green Transcription 2
Name	Conscious reflection
Coded Text	If I read something, say I read a, I was reading a theory or a model that I found interesting, the contextual part for me is when I put that aside and then I start the thinking, which is how does that apply to that, would that apply to that, that's in effect if I was building that's the, how I'm working this thing now, how I'm applying this, would it fit here, would it not, would it fit, then I go back and have a look at the model and. So that's the cooking time for me.

Name	Jeremy Green Transcription 2
Name	Consciousness
Coded Text	<p>So in terms of this pair of interviews I've done with you, how has it altered your view on learning and practice for you?</p> <p>Well its been a really interesting process because I've never really sat down and had to articulate any of this, or try to explain it to another person, you know God bless you James because its, its always been one of these things that's mulled around in the, the myriad of my, of my own conscious or subconscious and rolled around there and this is what I perceive as this shambolic way and to actually have to articulate it, has made me put a little bit of perspective around that there is a method in there, its just that its never been a method that I've had to articulate, so I've always thought is the Jeremy Green shambles method [laughter] which somehow get me from A to B you know. So, its been really, really good to just to have to dig a little bit deeper and try and articulate some of the best I can, some of the thoughts and processes, its been very beneficial for me. And its good because it makes me reflect on things, reflect on that and that will help when I go to facilitate again, it will make that better, just having to articulate this will make my facilitation better because I'm clearer.</p>
Name	Jeremy Green Transcription 2
Name	Consciousness
Coded Text	<p>So, so, have these interviews brought anything up for you, you know that's significant or, or gosh I've never thought of that before in that way?</p> <p>Yes, well its made me think of those, you know the categories you've talked about the conscious and the subconscious, you know I've just, I've never really thought about that, they are part of the routine, but its brought those to the forefront a bit more that I can think about those maybe more in context of the learners that I facilitate, because that was very much about the way I learn and to a certain degree it might have impacted on them. Its just brought those to the forefront of my mind a little bit more and maybe I can think about those a little bit more and they may assist my learners in the future. So its just made me clearer about my own learning and brought some of those components to the forefront of my thinking,</p>
Name	Jeremy Green Transcription 2
Name	Cyclical process
Coded Text	<p>I suppose this is very, a very cyclic process, there's a bit of methodology there but it's very cyclic, it's always going, the going back and the re-visiting, intuitively how does this feel, where do you need to work on again, what about this, this constant analysis and then the focus, there's got to be focus because there is so much to look at that you have to be focused on particular elements for a long period of time, so you have to be able to deal with the frustration of not necessarily achieving everything you need to achieve at once.</p>
Name	Jeremy Green Transcription 2
Name	Education recommendations
Coded Text	<p>the only other thing that I want to talk about really in this interview is how what you've described to me could be useful or helpful in contemporary education in the formal education sense. Now would you like to allow that to sort of roll around for a few days or are you happy to talk about that now.</p> <p>No, I'm happy to talk about that now, I don't think I'm going to be any more enlightened, or be able to enlighten you to in a few days, I'm happy to talk about it now. You know, I think, I know I keep going back to the music thing, I see it as a lot of the music education I observe I think is a lot, especially the areas that I, that I've been involved in, it's a lot more open to what I'm talking about than maybe it was when I was at school. I mean, and maybe that's just individualistic to music, but I go to the</p>

	<p>schools and I teach a bit of music there and I see that some of these things that I'm talking to you about and I might be relaying to the students, they seem to accept that and understand that ah well. And I don't know if that's just peculiar to music students or not but, or whether they are forced because they do music to go through this journey of analyzing the way they learn. But think that we, that we do, that we can't have this template business for, for learners, it might be easier to manage but I see that sometimes that if we don't acknowledge that these different ways or approaches that are needed for individuals then a lot of people can categorize themselves very early on in their learning journeys and send them down particular paths and I say that from just what I've observed with, when I was at the Police College and running courses and all the people that used to come through, so often it was, "oh I couldn't get this when I was at school so I decided I was going to do this", its like and I'm thinking wow. And I hear it with the learners going through their degrees, <i>its</i> like "oh I couldn't get this so this is the path I was going down". And actually to be honest a lot of it was just a perceptual error, it wasn't fact but a fail here suddenly becomes a fact so it heads people down this particular path.</p>
Name	Jeremy Green Transcription 2
Name	Education recommendations
Coded Text	<p>Well, based on what your able to do today and, and how you've gained it I mean what would you, you know find, and equally as being a facilitator in our sort of program, what would you find might be more helpful to people in terms of how you, how you go about it?</p> <p>Well I think I need to, I think the most helpful thing that I do is firstly understand, try and understand the learner, and also try and ally some of these perceptual errors that these, these learners might have, which is generally a lot, dear I say it, maybe <i>its</i> just the people that I've worked with, you know they organisations, but there's a lot and they're valid, some of them are just not valid at all. And, so by understanding the learner try to ally some of these perceptions they might have of themselves and get their confidence up in particular areas. That's actually what I see as almost the most beneficial or the most benefit that I can provide to the learner. Its just you know facilitating that enabling to learn, giving them some options, allying some of these bloody perceptions that they have you know. And a lot of these are just dragged on honestly from, what I and time and time again I see this dragged on from the one experience at school. They could be 50 but one experience has sent them down this path you know, and I see that as wow, you know that happens a lot.</p>
Name	Jeremy Green Transcription 2
Name	Emotion and learning
Coded Text	<p>Is there anything else that has come up to you in this unconscious way in the gap between us speaking a week or so back and today that you made a mental note of that you wanted to, to mention to me?</p> <p>No I think, I sort of, I suppose you know really, there's nothing knew, I know I'm raving on about the letting things cook and that but its actually really, really important. Its equally as important as the on-the-game stuff, and that's really the only think that I could think of that in, since I spoke to you last, that really I probably need to reinforce, and the, also the ability to and this might only be for me, to remove the compulsiveness and the impatience, the, you know, there has to be, that has to be sort of removed for that good learning, not removed but mitigated before that learning can really, really take place. It's the relaxed head and look it could just be because of I've got an unrelaxed head, but its having a relaxed patient, not focused too much on the long game, but being in the moment is where the ultimate, the learn occurs.</p>

Appendix 7 Changes in the participant interview questionnaires

Ideas for interview approach

October 2016

Changes

The changes being introduced to this version of the questionnaire are as result of undertaking four interviews and discussing the results with my supervisor.

The researcher has noticed that none of the interviewees so far have been able to provide adequate insight into their learning processes that really illuminates how they operate. This may change with analysis of their interview data but too little is being obtained about what is going on for them in the act of learning or what processes they make most use of to illuminate their professional activities. As a result, the researcher is planning to use a more reflexive approach to encourage conversation in specific areas of metacognitive interest such as thinking, reflection and intuition. The questions that are being changed are to be used mainly in the middle part of the interview series.

Introduction

The interviews themselves will form part of an exploratory experiential process with the participants.

This will begin with a written briefing to participants who are interested to take part in the process, followed by agreement with a formal acceptance process specified in the ethics application.

The interviews are intended to allow the participant to express their view of learning outcomes and processes that have been important to them and why

However, the separation between interviews will lead to further reflections which the researcher is keen to capture. This can be both verbal or written to suit the participant.

Further theorising and reflection can arise when the participants see transcripts and narratives concerning their inputs.

Outcomes

The researcher is seeking to gain the following inputs from the participants:

- Learning outcomes they perceive as significant to modern life

- Learning processes, including metacognitive ones, that have helped them achieve their learning outcomes and what is significant about them

Interview process

The interview process is intended to draw out the participant's understanding of their learning history and its significance in their current lives and professional work. The researcher is keen for the participant to feel comfortable and interested by the telling of their stories and thus some questions will be different over the course of the interview sessions.

The questions are intended as prompts to allow the participant to build on and flesh out in any way that suits them.

It is intended that the process will have experiential qualities as they re-live their history, which will lead to reflection both in the moment and subsequently.

At the same time, there will probably be other techniques to be identified from best qualitative interviewing practice to consider and to use.

Questions themselves

The questions to be used are designed as prompts for an active monologue by the participant. The researcher is keen to allow the participant space and time to explore their understandings as they emerge. He believes this will initiate further reflection that will be worth capturing in a sequence of interviews.

At present the questions are indicative and are grouped in a structure that will be spread over two to three interviews.

Seidman (2013) suggests the multi-interview approach allows for better engagement of the participant with the research topic as well as providing more valuable data.

Session 1

- Please tell me a bit about your life and work history.
 - What are some of the highlights?
 - What has influenced the changes you have made?
 - How has your education helped you?
 - What other learning has been important to you?
- What do you do currently?

- What makes you good at what you do?
- Can you describe the main things you do and what helps you to undertake them successfully?
- How did you develop or come by specified ones of these? (Use the word they use)
- What would you collectively call these attributes you possess? Would you be happy if I described them going forward as capabilities?
- How have you improved these capabilities over time?
- What have you done to improve them?
- Picking on a named capability of significance to them identified above, I am going to explore the process of its operation in more detail with you
 - What mental processes are they aware of in the application of that capability?
 - What goes on for them in that (named) mental process?
 - What for them is consciously different between the named mental processes they describe?
 - Which of these processes, if any, would they identify with thinking, reflection, decision making, judgement and intuition?
- How do they learn today?
 - What sort of processes do they use in their learning?
 - Does it involve any of the mental processes described earlier in association with their capabilities?
- Get them to think about these mental and learning processes some more for the second interview. Also, what unconscious learning have they become aware of

Session 2

- Further to our last interview session, is there anything that has come up for you that you would like to talk about more? How did they think about it or become aware of it?

- I want to return to some of the mental processes you started to describe in the last interview session
 - What does reflection mean to you? What happens when you reflect?
 - What does intuition mean to you? How does intuition arise for you? What do you feel your intuition is based on?
 - How do you make decisions? What is your judgement based on?
 - What sort of consciousness is associated with each of these for you? What differences have you noted?
 - Have you experienced 'aha' moments? How would you describe what happens in those moments for you? How helpful is it to you in your day-to-day activities? How do you encourage it to happen?
- Turning again to learning what have been seminal learning experiences for you?
 - What have you taken from them? (There is a need to separate outcomes from processes)
- How has learning changed for you over your life?
 - How independent a learner are you?
 - What characterises independent learning for you?
- Describe your current learning process in as much detail as you can
 - What makes it effective?
 - How have you developed or improved it?
 - What mental processes are involved in your learning that we have talked about earlier?
- What unconscious learning have you become aware of?
 - How did you become aware of it?
 - What is the significance of that to them and learning in general?
- Get them to think some more about how their capabilities, learning and mental processes might be included in modern education

Session 3

- Further to our earlier interview sessions is there anything else that you have found significant that you would like to talk about some more? How did they think about it or become aware of it?
- What role has your education played in the acquisition and performance of all of your capabilities?
 - What else has?
 - When have you undertaken formal education? (optional)
 - What was different about each separate occasion of formal education for you?
- Knowing what you can do today, what changes would you like to see in modern education to make it easier for you to get to your current level of capability and performance?
- What learning processes would you like to see included?
- What else have these interviews brought up for you?
- How has that altered your view on your learning and practice?

Ideas for revised interview approach

Sept 2017

Changes

The changes being introduced to this version of the questionnaire are as result of understanding and defining a model of professional practice arising from autoethnographic experience and learning during the course of the past 6 months.

The researcher continues to note that most participants are unconscious of their professional practice in terms of process and why they can do what they do well. In particular one recent participant indicated that because of his natural learning curiosity, learning was automatic for him, and he did not reflect on its components so much as use it results in the context he needed it. This is worth exploring further with others.

The reflexive approach of discussion about various meta cognitive aspects has proved more rewarding.

The questions being changed in this version of the interview process are to be used mainly at the beginning of the interview series.

Introduction

The interviews themselves will form part of an exploratory experiential process with the participants.

This will begin with a written briefing to participants who are interested to take part in the process, followed by agreement with a formal acceptance process specified in the ethics application.

The interviews are intended to allow the participant to express their view of professional development that have been important to them and why

However, the separation between interviews will lead to further reflections which the researcher is keen to capture. This can be both verbal or written to suit the participant.

Further theorising and reflection can arise when the participants see transcripts and narratives concerning their inputs.

Outcomes

The researcher is seeking to gain the following inputs from the participants:

The context of learning in their professional practice

- Professional Development they perceive as significant to modern life
- Development processes, including metacognitive ones, that have helped them achieve their development goals and what is significant about them

Interview process

The interview process is intended to draw out the participant's understanding of their development history and its significance in their current lives and professional work. The researcher is keen for the participant to feel comfortable and interested by the telling of their stories and thus some questions will be different over the course of the interview sessions.

The questions are intended as prompts to allow the participant to build on and flesh out in any way that suits them.

It is intended that the process will have experiential qualities as they re-live their history, which will lead to reflection both in the moment and subsequently.

At the same time, there will probably be other techniques to be identified from best qualitative interviewing practice to consider and to use.

Questions themselves

The questions to be used are designed as prompts for an active monologue by the participant. The researcher is keen to allow the participant space and time to explore their understandings as they emerge. He believes this will initiate further reflection that will be worth capturing through the sequence of interviews.

At present the questions are indicative and are grouped in a structure that will be spread over two to three interviews.

Seidman 2013) suggests the multi-interview approach allows for better engagement of the participant with the research topic as well as providing more valuable data.

Session 1

- Please tell me a bit about your life and work history.
 - What are some of the highlights?
 - What has influenced the changes you have made?
- How would you define or characterise your professional practice?
 - How do you improve yourself as a professional?

- Which practices provide them with the most learning and development?
- What characterises that development?
- How different is that from earlier formal learning?
- Picking on a named aspect of practice identified above, I am going to explore the process of its operation in more detail with you
 - What mental processes are they aware of in the application of that practice?
 - What goes on for them in that (named) mental process?
 - What for them is consciously different between the named mental processes they describe?
 - Which of these processes, if any, would they identify with thinking, reflection, decision making, judgement and intuition?
- How do they develop themselves today?
 - What sort of processes do they use in their development?
 - Does it involve any of the mental processes described earlier?
- Get them to think about these mental and development processes some more for the second interview. Also, what unconscious learning have they become aware of?

Session 2

- Further to our last interview session, is there anything that has come up for you that you would like to talk about more? How did they think about it or become aware of it?
- I want to return to some of the mental processes you started to describe in the last interview session
 - What does reflection mean to you? What happens when you reflect?
 - What does intuition mean to you? How does intuition arise for you?
What do you feel your intuition is based on?
 - How do you make decisions? What is your judgement based on?

- What sort of consciousness is associated with each of these for you?
What differences have you noted?
- Have you experienced 'aha' moments? How would you describe what happens in those moments for you? How helpful is it to you in your day-to-day activities? How do you encourage it to happen?
- Turning again to development what have been seminal experiences in that for you?
 - What have you taken from them? (There is a need to separate outcomes from processes)
- How has learning changed for you over your life?
 - How independent a learner are you?
 - What characterises independent learning for you?
- Describe your current learning process in as much detail as you can
 - What makes it effective?
 - How have you developed or improved it?
 - What mental processes are involved in your learning that we have talked about earlier?
- What unconscious learning have you become aware of?
 - How did you become aware of it?
 - What is the significance of that to them and development in general?
- Get them to think some more about how their capabilities, learning and mental processes might be included in modern education

Session 3

- Further to our earlier interview sessions is there anything else that you have found significant that you would like to talk about some more? How did they think about it or become aware of it?
- What role has your education played in the acquisition and performance of all your current capabilities?
 - What else has?

- When have you undertaken formal education? (optional)
- What was different about each separate occasion of formal education for you?
- Knowing what you can do today, what changes would you like to see in modern education to make it easier for you to get to your current level of capability and performance?
- What learning and development processes would you like to see included?
- What else have these interviews brought up for you?
- How has that altered your view on your learning and development?

Appendix 8 Examples of participant responses to their narratives and developmental framework of vocational practice

Rob Mackintosh

Congratulations James. I am definitely going to hang on to your developmental capability model.

In our interview, I deliberately put up a strong argument for the right-brain process, perhaps overstating it. But you have taken the kernel and contextualized it in multiple disciplinary practices.

Jean Clarke

Just read the first chapter of your PhD and it has hit the exact 'right spot'! I am currently tutoring a nine-year-old with Maths and reading challenges and we are focussing on Maths. He has learning challenges but is very bright. And your model exactly shows what we now have to work on to get him confident and capable of learning and understanding and KNOWING his times tables! I have plans so that he overcomes the barriers where he is stuck, and your model will help.

It is clear and simple and very elegant! The absolute vital requirements of long serving models! Well done you!

Then the analysis of Jean Clarke!

I think that it is a great reflection of what I think!

Geoff Smith

I have had a quiet afternoon, so I have read the narrative and reads OK to me.

I hope you succeed in obtaining your PhD.

Charles Hulme

I have read your documents; you definitely seem to have captured the essence of my thinking and learning.

I found your model of discipline practice development most interesting. Good luck with getting it established in an environment which is resistant to new ideas and thinking. You will need it.

Dan Douglas

It seems to be a good representation of our discussion.

Tom Naylor

Looks really good. Was a nice reminder of the great conversations we have...we should catch up when you have time?

Appendix 9 Ethics approvals, application, and associated documentation

Ethics approvals

Original VU ethics approval June 2015

From: quest.noreply@vu.edu.au <quest.noreply@vu.edu.au>

Sent: Tuesday, June 9, 2015 11:16 AM

To: MartinAndrew <MartinAndrew >

Cc: James Harrison <jamesharrison >; pamgreen <pamgreen >

Subject: Quest Ethics Notification - Application Process Finalised - Application Approved

Dear DR MARTIN ANDREW,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE14-222

» Chief Investigator: DR MARTIN ANDREW

» Other Investigators: PROF Pam Green, MR James Harrison

» Application Title: The significance of experiential learning to 21st century education

» Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 09/06/2015.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee

Phone: 9919 4781 or 9919 4461

Email: researchethics@vu.edu.au

Modified VU ethics approval to include additional investigator Dr Oksana Razoumova

From: quest.noreply@vu.edu.au <quest.noreply@vu.edu.au>

Sent: Tuesday, September 22, 2015 4:18 PM

To: Martin.Andrew <Martin.Andrew >

Cc: OksanaRazoumova <OksanaRazoumova >; pamgreen <pamgreen >; James Harrison <james.harrison >

Subject: Quest Ethics Notification - Amendment Request Process Finalised - Application Approved

Dear DR MARTIN ANDREW,

Your amendment request for the following ethics application has been formally reviewed and finalised.

» Application ID: HRE14-222

» Chief Investigator: DR MARTIN ANDREW

» Other Investigators: PROF Pam Green, DR OKSANA RAZOUMOVA, MR James Harrison

» Application Title: The significance of experiential learning to 21st century education

» Form Version: 13-07

The amendment request for this ethics application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the original approval date; 09/06/2015.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee

Phone: 9919 4781 or 9919 4461

Email: researchethics@vu.edu.au

Modified VU Approval for time extension to December 2018 to undertake further interviews

From: quest.noreply@vu.edu.au <quest.noreply@vu.edu.au>

Sent: Thursday, June 22, 2017 11:30 AM

To: MartinAndrew <Martin.Andrew >

Cc: OksanaRazoumova <OksanaRazoumova@ >; pamgreen <pamgreen >; James Gransner Harrison <james.harrison>

Subject: Quest Ethics Notification - Amendment Request Process Finalised - Application Approved

Dear DR MARTIN ANDREW,

Your amendment request for the following ethics application has been formally reviewed and finalised.

- » Application ID: HRE14-222
- » Chief Investigator: DR MARTIN ANDREW
- » Other Investigators: PROF Pam Green, DR OKSANA RAZOUMOVA, MR James Harrison
- » Application Title: The significance of experiential learning to 21st century education
- » Form Version: 13-07

The amendment request for this ethics application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the original approval date; 09/06/2015.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: <http://research.vu.edu.au/hrec.php>.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee

Phone: 9919 4781 or 9919 4461

Email: researchethics@vu.edu.au



Application for Ethical Review of Research Involving Human Participants

Application ID :	HRE14-222
Application Title :	The significance of experiential learning to 21st century education
Date of Submission :	15/08/2014
Current Version	11/04/2015
Primary Investigator :	DR MARTIN ANDREW
Other Investigators :	PROF Pam Green MR James Harrison

Introduction

Important Information

Form Version: V.13-07. Last Updated: 08/09/2014.

IMPORTANT INFORMATION FOR ALL APPLICANTS:

Applicants are advised to follow the guidelines provided on the [Human Research Ethics website](#) prior to submitting this application.

Ensure all questions are appropriately answered in plain language with correct spelling and grammar.

All applications must be sighted and approved by all members of the research team and any relevant parties. Applications will not be reviewed without appropriate authorisation.

To avoid unnecessary delays, please ensure application is submitted in full by the submission deadline for the relevant HREC.

You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.

Contact:

Ethics Secretary

For help and further information regarding ethical conduct, refer to the Human Research Ethics website:

<http://research.vu.edu.au/hrec.php> or contact the Secretary for the Human Research Ethics Committee, Office for Research. Phone: 9919 4781 or 9919 4461

Email: researchethics@vu.edu.au

Quest Service Desk

For technical help, refer to the Quest website:

<http://research.vu.edu.au/quest.php> or contact a member of the Quest team.

Phone: 9919 4278

Email: quest.servicedesk@vu.edu.au

External Resources

[NHMRC: National Statement on Ethical Conduct in Human Research](#)

[NHMRC: Human Research Ethics Handbook](#)

[NHMRC: Australian Code for the Responsible Conduct of Research](#)

Quest Guide

Quick Tips for Using Quest

Need Help? For help and instructions, we strongly recommend that you download the full [Quest Online Ethics Guide \(.pdf\)](#). Your questions may also be answered in the [FAQ page on the Quest Website](#).

Answer All Questions:

Most questions are mandatory and must be completed before the application can be submitted. These questions are marked with a red asterisk.

Access Help and Tips:

The help icon, found next to questions and at the top of each page, will provide you with detailed advice on ethical content.

Remember to Save:

Use the floppy disk icon (and the green tick in some sections) regularly to avoid losing any answers. Each page will save automatically when you click *Next* or *Back*. **Print or**

Save Copy of Your Application:

You can use the report icon at any stage to generate a printer friendly version of the form. Select HTML to print to screen. To save as a .pdf file to your computer select PDF then save a copy from the pop up screen. *(Don't forget to save a copy before you submit!)*

Submit Application:

When you have completed your application, click on the *Action* tab in the left-hand column and click *Submit Application*. The system will then convert the form to read-only and send it to the Ethics Secretary for review.

You will receive an email confirmation at submission. Double check that your application has been submitted by viewing the application status in the *My Applications* page.

Responding to comments (if your application is returned)

There may be stages throughout the application process in which the Ethics Secretary will instruct you to amend your application form. These amendments will be communicated to you via 'Comments' within the eForm.

1. Generate a List of All Comments:

Click the report icon, select *Comments Report* from the Document drop-down field and click *OK*. This list will show all comments created in your application and which page they are applicable to. Click *Cancel* to return to the application form.

2. Revise your Answers:

Open the page which shows a red flag; these denote an Action Comment which you are required to respond to. Revise the relevant question(s) in your application form as required. Remember to click save!

3. Respond to Action Comments:

AFTER you have revised your answers, you must provide a response to each Action Comment explaining to the Committee how you have addressed their communication. Open the Page Comments window and click *New Comment* to enter your response into the textbox. Click the green tick to save your text.

4. Mark Comments as Responded:

Once you have revised your answers AND finished responding to all comments, reopen Page Comments window, use the checkbox to select the *Action Comments* and click *Mark Selected Comments as Responded*. The colour of the flag will change to yellow and the page will become Read Only.

Important: DO NOT mark the comments as 'Responded' until you are completely satisfied with your revised answers - you will lose access to edit the page and the comments.

5. Submit Revised Application:

Once you have addressed all of the Red Flags, open the *Action* tab and click *Submit Revised Application*. The system will then send the form to the Ethics Secretary for review. Remember to save a copy of your application by clicking the Report icon and generating a PDF or printer-friendly version.

[Office Use Only - Administration]

Application ID - Assign HRE # using "Manage Applications"

HRE14-222

Clearance Purpose

Research

For Review:

Assigned Ethics Committee

Low Risk Human Research Ethics Committee

Risk Level (Enter 'High' or 'Low' or 'Neg')

Low

Students involved in conduct of project? (Enter 'Yes' or 'No')

Yes

Date Accepted by Ethics Secretary

16/08/2014

For Finalisation:

Date Approved

This question is not answered.

Approved Start Date for Project

This question is not answered.

Approved End Date for Project

This question is not answered.

Date Rejected

This question is not answered.

Date Withdrawn

This question is not answered

Comments

This question is not answered.

[Office Use Only - Risk Assessment]

NEGLIGIBLE RISK INDICATORS

Applicant has responded YES to:

HIGH RISK INDICATORS

Applicant has responded YES to:

POSSIBLE HIGH RISK INDICATORS Applicant has responded YES to:

3.2.e. Does the research involve participants in other countries?

6.7. Will any dual relationship or conflict of interest exist between any researcher and potential or actual participants? (e.g., a member of the research team is also a colleague or friend of potential participants)

LOW RISK INDICATOR

If no statements appear under the headings above, the applicant has not responded yes to any negligible or high risk indicators.

Section 1 - Project Overview

General Details

1.1. Ethics Category

Human

1.2. Project Title*

The significance of experiential learning to 21st century education

1.3. Project Summary (Include brief details of aims, methods and significance of the project in plain language. Maximum of 2000 characters)

This project is a qualitative study to compare the learning outcomes and processes of the author with a cohort of fellow professionals with at least 30 years of career experience. The purpose is to identify common and contrasting perspectives that will inform a dialectic with contemporary views

on experiential learning, its outcomes and processes. It is hoped that this will provide

insight into relevant outcomes and processes for formal and informal education in the early 21st century.

The approach taken will be based on a constructivism paradigm in which the author's findings from an auto-ethnographic methodology will be compared and contrasted with narrative inquiries of an experienced professional cohort of volunteers, who form part of the author's network. The author's perspectives will be derived from study of several related fields including learning, psychology, neuroscience and research methodology. The data from the volunteer cohort will be obtained from a group of either face to face or online interviews followed by reflective responses to aggregated narratives drawn from the interviews.

1.4. Primary College or Institute for Application

COLLEGE OF EDUCATION

Timeline and Funding

1.5. **Period for which ethical approval is sought.** *Note: ethical approval is automatically granted for a period of 2 years from the project commencement date.* Project commencement date:

- ☒ Immediately upon receiving ethical approval
- ☐ Other date

1.6. **Date the data collection is expected to be completed:**

30/11/2017

1.7. **How will the research be funded?***

- ☐ External grant
 - ☐ VU grant or funding
 - ☐ Sponsor
 - ☒ Other
- Unfunded

If the research is unfunded, indicate how the project can proceed.

The research is unfunded but the researcher has access to all relevant research databases and supervisors as part of his PhD student status at Victoria University. In addition the research with the professional cohort is to be undertaken on a voluntary basis in both the student's and volunteers' own time.

1.8. **Is the research a collaborative effort with another organisation?**

- ☐ Yes
- ☒ No

Section 2 - Project Investigators

Investigators

2.1. Please list all investigators associated with this project.

The research team is the group of investigators accountable for the conduct of the project. Include details of the Primary Chief Investigator (primary contact for application), as well as all other Chief Investigators and Associate Investigators. *Student details will be requested separately.* Other staff (e.g. technicians) may perform tasks within the project although they are not necessarily investigators. They should be listed as "Other Staff" if appropriate.

1	<i>ID Number</i>	ID removed
	<i>Surname</i>	ANDREW
	<i>Given Name</i>	MARTIN
	<i>Full Name</i>	DR MARTIN ANDREW
	<i>College/Institute</i>	O5102
	<i>Email Address</i>	Email removed
	Role in project	Chief Investigator
	Other Staff - Please specify role:	
	Primary contact for application? <i>Note: Although an application may have multiple Chief Investigators, only one CI may be nominated as the Primary Contact. For student projects, the Chief Investigator/Primary Contact <u>must</u> be the supervisor, not the student.</i>	Yes
	Direct contact number	Removed
	Mobile number (for emergency use only)	Removed
	Qualifications, experience and/or skills relevant to the project.	Dr. Andrew has published more than 25 refereed journal articles and proceedings utilising methodologies of the sort used in this doctoral project. He has worked widely in New Zealand, the site of the

		data collection. He has more than ten doctoral and thesis students, with more than five having recently completed.
2	<i>ID Number</i>	ID number removed
	<i>Surname</i>	Green
	<i>Given Name</i>	Pamela
	<i>Full Name</i>	PROF Pam Green
	<i>College/Institute</i>	
	<i>Email Address</i>	Email removed
	Role in project	Associate Investigator
	Other Staff - Please specify role:	
	Primary contact for application? Note: <i>Although an application may have multiple Chief Investigators, only one CI may be nominated as the Primary Contact.</i> <i>For student projects, the Chief Investigator/Primary Contact <u>must</u> be the supervisor, not the student.</i>	
	Direct contact number	
	Mobile number (for emergency use only)	
	Qualifications, experience and/or skills relevant to the project.	Prof Green is Director of Graduate Studies at Swinburne University and has a wide range of publications on supervision, literacy and educational methodologies to her name. She has completed more than 20 PhDs to completion. Her profile can be seen at: http://www.research.swinburne .

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.

Once an Investigator record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the [Request to Add Personnel to Research Database form](#) found on the Quest website.

Student Investigators

2.2. Will any students be involved in the conduct of this project?

- ☒ Yes
☐ No

2.2.a. If YES, is the project:

- ☒ A STUDENT PROJECT for the degree in which the student is enrolled?
☐ A STAFF PROJECT that involves a student(s)
☐ undertaking some part of the project? Other

2.2.a.i. If the research is a STUDENT PROJECT, at what level?

PhD

Has this project been approved by the Postgraduate Research Committee? (ie. during confirmation of candidature process)

- ☒ Yes
☐ No

2.2.b. Please list all student investigators involved in this project.

Ensure the primary supervisor (not the student), has been marked as the Chief Investigator and primary contact for the application in

Q.2.1

1	Student ID	ID removed
	Surname	Harrison
	Given Name	James
	Full Name	MR James Harrison
	College/Institute	O5102
	Email Address	Email removed
	Role in project	Student
	Direct contact number	
	Mobile number (for emergency use only)	

Student's experience/qualifications relevant to the procedures and techniques to be used in the research and/or to working with the specific target population.	Currently part time PhD student Victoria University Education consultant in tertiary vocational education sector in New Zealand with extensive qualification design and delivery experience in technical and business fields.
--	---

Note: Please click the Question Help icon above for instructions on how to search for personnel and use this table.

Once a student's record has been added, click on the name in the table above to open the record and edit the information required.

If you are unable to find a personnel record in this system which must be added to your application, please use the [Request to Add Personnel to Research Database form](#) found on the Quest website.

2.2.c. What arrangements are in place for the supervision of student(s) when undertaking project activities?

The student investigator has 50 years work experience in technical business and educational professions. He has two PHD supervisors, one at Victoria university with whom he is in regular touch. He is well aware of the confidentiality and ethics associated with academic research and will take advice from his supervisors as required.

Dr. Martin Andrew supervises James via Skype and face to face meetings in New Zealand and Australia. Prof. Green joins the key Skype meetings. James is able to access Dr. Andrew at any time via email and text message. This model of transnational supervision is a successful one, and the subject of a journal article by Dr. Andrew.

Involvement of Other Individuals/Organisations

2.3. Will any individuals who are not members of the research team be involved in the conduct of this project? (e.g., medical personnel involved in procedures, research contractors, teachers)

- ☐ Yes
☒ No

Section 3 - Nature of the Project

Type of Project

3.1.a. Is the project a pilot study?

- ☐ Yes
☒ No

3.1.b. Is the project a part of a larger study?

- ☐ Yes
☒ No

- 3.1.c. **Is the project a quality assurance or evaluation project (e.g., related to teaching, health-care provision)?**
- ☐ Yes
☒ No
- 3.1.d. **Does the research involve a clinical trial (of a substance, device, psychological or physical intervention)?**
- ☐ Yes
☒ No
- 3.1.e. **Does the research involve the use of therapeutic/intervention techniques or procedures (non-clinical trial)?**
- ☐ Yes
☒ No

Target Population

- 3.2.a. **Does the research focus on Australian Indigenous (Aboriginal and/or Torres Strait Islander) populations?**
- ☐ Yes
☒ No
- 3.2.b. **Does the research involve participants under the age of 18 years?**
- ☐ Yes
☒ No
- 3.2.c. **Does the research involve participants who are highly dependent on medical care?**
- ☐ Yes
☒ No
- 3.2.d. **Does the research involve participants who have a cognitive impairment, intellectual disability or mental illness?**
- ☐ Yes
☒ No
- 3.2.e. **Does the research involve participants in other countries?**
- ☒ Yes
☐ No
- "Supplement F - Research participants in overseas countries" must be completed in Section 11 below.*
- 3.2.f. **Does the research involve pregnant women (with a research focus on the pregnancy) and/or the foetus (in utero or ex utero) or foetal tissue?**
- ☐ Yes
☒ No

3.2.g. **Does the research involve participants who are likely to be highly vulnerable due to any other reasons?**

- ☐ Yes
☒ No

Intrusiveness of Project

3.3.a. **Does the research use physically intrusive techniques?**

- ☐ Yes
☒ No

3.3.b. **Does the research cause discomfort in participants beyond normal levels of inconvenience?**

- ☐ Yes
☒ No

3.3.c. **Does the research collect potentially sensitive data? (e.g., related to a sensitive topic or vulnerable group; personal health/medical information; sensitive organisational strategies)**

- ☐ Yes
☒ No

3.3.d. **Does the research involve deception of participants?**

- ☐ Yes
☒ No

3.3.e. **Does the research involve limited disclosure of information to participants?**

- ☐ Yes
☒ No

3.3.f. **Does the research involve covert observation of participants?**

- ☐ Yes
☒ No

3.3.g. **Does the research produce information that, if inadvertently made public, would be harmful to participants?**

- ☐ Yes
☒ No

3.3.h. **Does the research involve accessing student academic records?**

- ☐ Yes
☒ No

3.3.i. **Does the research involve human genetic or stem cell research?**

- ☐ Yes
☒ No

3.3.j. **Does the research involve the use of ionising radiation?**

- ☐ Yes
☒ No

3.3.k. **Does the research involve the collection of human tissue or fluids?**

- ☐ Yes
☒ No

3.3.l. **Does the research involve any uploading, downloading or publishing on the internet?**

- ☒ Yes
☐ No

3.3.m. **Does the research seek disclosure of information relating to illegal activities or is the research likely to lead to disclosure of information relating to illegal activities?**

- ☐ Yes
☒ No

3.3.n. **Does the research involve procedures that may expose participants to civil, criminal or other legal proceedings?**

- ☐ Yes
☒ No

3.3.o. **Does the research involve gaining access to medical/health related personal information from records of a Commonwealth or State department/agency or private health service provider?**

- ☐ Yes
☒ No

3.3.p. **Does the research involve gaining access to personal information (not medical/health) from the records of a Commonwealth or State department/agency or private organisation?**

- ☐ Yes
☒ No

Section 4 - Project Description

General Information

Note: All fields have a maximum of 4000 characters (unless otherwise specified) in plain text only.

If supporting documentation needs to be provided for the following questions (images, graphs etc), please upload as referenced appendices in Section 11 - "Required Attachments" below.

4.1. **Aims of the project.** Provide a concise statement of the aims of the project (maximum 2000 characters in plain language).

Broadly, the aims of the study are:

- (i) to position the researchers' life's work as an educator within a framework of current understandings of experiential learning
- (ii) to relate the stories of up to 12 lifelong practitioners of experiential learning in a creative and empathetic way
- (iii) to locate and analyse patterns in these accounts of experiential learning, leading to the creation of theoretical suggestions about the significance of experiential aspects of learning for educationalists at all levels
- (iv) to contribute new theories to the ongoing debate about the importance of experiential learning in work and community placement, authentic assessment and community-based and real-world learning.

More specifically, the aims of the project are to explore the significant learning outcomes and processes of a group of people with at least 20 years of professional experience. The author's own experiences are to be written as an introductory chapter, utilising autoethnography and an individualised and self-reflective form of narrative enquiry.

The researcher is interested to explore the extent to which the participants' stories of a life of experiential learning match current concepts of experiential learning. These concepts include both the outcomes and processes of experiential learning. The outcomes are concerned with professional capabilities (Wheelahan 2011) and higher levels of human consciousness (Kegan 1998) that are obtained from cognitive and meta cognitive processes including tacit knowledge (Myers 2004), and intuition (Hogarth 2001).

The processes include use of intuitive decision making and advanced reflection techniques developed within advanced communities of practice (Lave and Wenger 1991).

Narrative analysis, used methodologically and as a medium, is intended to produce evidence that will enhance the integration and coherence of experiential learning in education and human development practice.

4.2. Briefly describe the relevant background and rationale for the project in plain language.

Following the student investigator's experience of significant careers both inside and outside education and the transferability of his capabilities between them, he has become increasingly aware of areas not focussed upon in formal education. As a result, he is interested to examine the capabilities and development processes of fellow professionals with significant experience in single or multiple careers.

In particular, he is interested to explore how the experiential learning model (Kolb, 1984) might be updated by more recent work on capability (Wheelahan, 2011), communities of practice (Lave and Wenger 1991) and underpinning meta-cognitive processes including tacit experience (Myers, 2004), reflection (Schön, 1992) and intuition (Hogarth 2002). From his own experience, he believes that there are elements of the meta cognitive

processes undertaken by professionals to be clarified that can expand upon the important work of the researchers mentioned. Bibliographic references are provided in Section 11.

4.3. **Methodology and procedures**

Include specific details relating to any measures, interventions, techniques, and/or equipment used in the research.

Provide step-by-step details of the procedures with particular reference to what participants will be asked to do.

Provide details separately for different phases or conditions of the research or, where appropriate, different participant groups.

The project utilises a creative methodology based on narrative enquiry and informed by autoethnography, since the story of the researchers is epistemologically bound into those of the participants. The broad label is Qualitative Descriptive Analysis (Sandelowski, 2000). Narrative enquiry enables narratives, based on conventional interview techniques, to be rewritten as 'stories' so that each story within the text appears narratively similar and comparable. In the process of retelling, the researcher selects and arranges the material to create a narrative. These narratives are made available to participants for checking so they have the opportunity for further insertion or rewording. In the exegetical component of the output, the mode of data collection also enables the researcher to use a range of grounded techniques to identify key emergent themes, so that the thesis will employ both narrative analysis (the focal methodology of the artefact's stories) and analysis of narrative, the latter being a crucial part of the exegesis as here the stories can be unpacked along with the researcher's own techniques of interviewing and rewriting, themselves objects of exegetical knowing. A broad form of qualitative descriptive analysis, then, is used to control the data analysis and presentation. The interviews aim to examine participants' lifelong experiences of their professional learning and development. This will be based on a series of up to 3 interviews (Seidman, 2013) which together with their review of their transcripts will enable more subtle learning incidents and processes to be identified. The narratives of the participants will be compared and contrasted with the autoethnographic narrative of the student investigator in order to identify new and more integrated patterns of knowledge associated with contemporary experiential learning of professionals.

The methodological steps comprise:

1. Participants will be asked to participate in a face to face or online interview with the student investigator which will be recorded and transcribed. The interview schedule and outline content of the interviews is given in Section 11. Participants will be asked to check the transcription and invited to change how they are represented if they feel the transcription does not do justice to their meaning. Participants may be contacted by phone or email for follow-up for the purposes of clarification or amplification. This will of course be at the

participants' convenience and only with their voluntary consent. Interviews will be held in a safe physical or online

(eg Skype) space negotiated by the researcher and the participant.

2. When the ethics application is approved, potential participants will receive an "Information to Participants Form" and then a "Consent Form" which needs to be signed.

Once the consent has been granted, participants will be provided with their place on an interview schedule that is planned several months in advance.

3. Just prior to the interview, the participant will be provided with a summary of the areas which will be covered in the interview. Based on the recommendations of (Seidman, 2013), the interview will be divided into 2 or 3 sessions, each session taking approximately 60 minutes spread out over a couple of weeks. This allows some useful reflection to take place between sessions and for more significant data to be collected. Participants will be invited to contribute artifacts, such as written texts or samples of their practice, to elucidate their contribution to interviews. Their purpose is to add verisimilitude and exemplars to the interview. They are not considered additional data. Care will be taken to ensure these documents are cited ethically in the researchers' accounts and returned to the participant. They will not be copied. They are narrative aids. The approval for this is included in the consent document provided in Section 11.
- 4 The researcher will rewrite the raw data as narratives, a process involving creative and narratorial choices (which are discussed as part of the practice-led approach in the exegesis), and then re-present the re-created narratives to participants for comment and approval It is crucial that participants are happy with the way they are represented.
5. The stories will be compiled and arranged into subsections within the thesis. The subsections will be related to the themes that emerge and provide natural ways of classifying the participants' experiences of experiential learning.

Data Collection

4.4. Indicate all types of data to be collected.

- ☐ Questionnaire / survey responses*
- ☒ Individual interview responses*
- ☐ Other data
- ☐ Group interview or focus group responses*
- ☐ Participant observations
- ☐ Blood or tissue samples
- ☐ Physiological measures
- ☐ Biomechanical measures
- ☐ Accessed health / medical records or data
- ☐ Accessed student academic records or data
- ☐ Archival data

4.5. Does the research only include the collection of anonymous and non-sensitive data (e.g. online survey, observational data) that poses no foreseeable risks or discomfort to participants? Any foreseeable risk must be no more than inconvenience.

- ☐ Yes
- ☒ No

4.6. Does the research only include the use of non-identifiable and non-sensitive data from an existing database? (e.g., data mining).

Such data should pose no foreseeable risks or discomfort to individuals whose information is contained in the database, or to individuals/organisations responsible for the database.

- ☐ Yes
- ☒ No

4.7. Does the research involve photographing or video recording of participants?*

- ☐ Yes
- ☒ No

4.8. Who will be collecting the data? (give details for all types of data collected and all persons involved)

The data will be directly collected by the student investigator, James Harrison, the PhD student, under the guidance of Dr. Martin Andrew, the Chief Investigator and Primary Supervisor. Data will be gathered from interviews and reflection on interview narratives as well as any relevant written material volunteered and produced by the participants. The data collected will be stored in a password protected computer. The interview details and schedule are provided in Section 11.

4.9. Where will the data be collected? (give details for all types of data collected and all locations)

4.10. How will the data be analysed? (give details for all types of data collected)*

The approach to data analysis will be multi-faceted in line with Sandelowski's (2000) tenets for qualitative descriptive analysis. The aim is

to provide a contemporary illumination of professional experiential learning with particular reference to tacit, intuitive and reflective learning practices.

Primarily, the interview data will be transcribed and this raw data transformed into created narratives that do justice to the participant, while creating a narrative form of interest to readers. This will also contain key themes that will be the subject of further discussion and analysis in the exegesis. This process of data representation borrows from narrative enquiry and the theory of stories as embodying identities (Polkinghorne, 1995). Rather than using formal Glaserian grounded analysis with formal coding techniques, the researcher will subject the data from the participant interviews to paradigmatic analysis of the kind suggested by Polkinghorne (1995), constant comparison processes from Patton (1990) and metaphor analysis from Schmitt (2005). These will be written up as a series of narratives or embodied case studies combining distinctive themes that link groupings of participants as described by Barkhuisen (2011). The term 'case studies' is not used here in a methodological way, but rather as a convenient way of describing the academic content of the narratives themselves.

As already mentioned, these case studies will be compared in turn using an 'analysis of narrative approach' (Polkinghorne, 1995) and further triangulated by an autoethnographic narrative of the researcher that will form an introduction to the final artefact. The researcher is conscious of the ethical principles and processes required from these narratives and his autoethnography and will be observing the guidelines provided by researchers such as Josselson (2007) and Tolich (2010). Bibliographic sources are provided in Section 11.

4.11. Who will have access to the data collected? (give details of all persons who will have access to the data)

The data will be collected and maintained by the student researcher, James Harrison under the supervision of Dr. Andrew and Swinburne's Director of Research, Prof. Green, an ethics expert.

The supervisors will have access to the data as co-constructors of the thetic knowledge and as possible collaborators of research outputs.

4.12. Will individuals or organisations external to the research team have access to any data collected?*

- ☐ Yes
☒ No

Section 5 - Participants

Participant Group Details

5.1. Provide details of all distinct participant groups below.

Please be as precise as possible, if specific details have not been determined you must indicate that they are approximate.

Group 1

Details of specific participant population:

The specific participant population will be drawn from a professional cohort with at least a bachelor level of education and 20 plus years of career experience in one or more disciplines.

Criteria for selection include:

1. Continuing personal development throughout their lives
 2. A clear perspective on themselves, their goals and values
 3. Recognition of the value of their learning to their success and directions in life
 4. Perception of their willingness to engage in this area of research with the student investigator
- Examples from the cohort of participants include:

A retired management consultant and engineer who contributed to major reforms in vocational education

A business owner and innovator, who continues to learn and participate in new fields of technology.

A former owner of a creative advertising agency and tertiary teacher

An education consultant with science and educational PhDs

A tertiary level principal and academic director responsible for tertiary qualification design following primary teaching and education union careers

A civil engineering project director with own project management business

A TESOL teacher with a former military background

Business consultant and tertiary level teacher

Change management consultant and PhD student

Number of participants:

Up to 12

Age range of participants:

40 to 80 years of age

Source of participants:

Primarily from the student investigator's professional network built up during a 50 year career.

They include people from technical, business, managerial, education and consultancy disciplines. They are likely to have operated in more than one career field.

Record details for additional group? (Group 2)

- ☐ Yes
☒ No

Participant Selection

5.2. Provide a rationale for the sample size.

The sample size has been selected on the basis of there being a sufficient number of people to balance identification of a range of perspectives and to minimize bias arising from interviewing too few participants.

The sample size accords with recommendations of number of interviewees described in literature and this number is recommended for reasons of scope and validity.

5.3. Does the project include any specific participant selection and/or exclusion criteria beyond those described above in

Question 5.1?

- ☐ Yes
☒ No

5.4. Will there be a formal screening process for participants in the project? (e.g. medical/mental/health screening)

- ☐ Yes
☒ No

5.5. Does the research involve participants who have specific cultural needs or sensitivities? (e.g., in relation to the provision of informed consent, language, procedural details)

- ☐ Yes
☒ No

5.6.a. Does the research involve a participant population whose principal language is not English?

- ☐ Yes
☒ No

5.6.b. Will documentation about the research (e.g., Information to Participants form and Consent form, questionnaires) be translated into a language other than English?

- ☐ Yes
☒ No

Section 6 - Recruitment of Participants

Recruitment and Informed Consent

6.1. Will individuals other than members of the research team be involved in the recruitment of participants?

- ☐ Yes
☒ No

6.2. How will potential participants be approached and informed about the research and how will they notify the investigators of their interest in participating?

Attach copies of the "Information to Participants Involved in Research" form and any flyers or other advertising material to be used in the research in Section 11 - "Required Attachments" below.

All participants are already known to the student investigator and form part of his professional network. They will be approached as follows:

1. Potential participants will be identified from the student investigator's professional network who meet the selection criteria provided in Section 5.2

2. They will be initially contacted by the student investigator with an introductory email to outline the research work planned and to seek their interest in participating in the research.

3. Subject to a positive email response to this enquiry, they will subsequently be sent a Victoria University "Information to

Participants involved in Research" letter together with an Victoria University "Informed Consent Form" (Appendix 11), again via email, to invite their participation.

4. Participants will have the opportunity to fully discuss any matters relating to the research, research process and their participation with the student investigator, chief investigator and others of their choosing before making their decision.

5. Subject to receiving an informed consent form as part of their written reply, this will be formally acknowledged and they will be provided with an estimated schedule of research interviews and followup.

6.3. Will potential participants be given time to consider and discuss their involvement in the project with others (e.g. family) before being requested to provide consent?

- ☒ Yes
☐ No

6.4. How will informed consent be obtained from participants?

- ☒ Participants be required to sign an informed consent form
☐ Consent will be implied e.g. by return of completed questionnaire
☐ Verbal consent will be obtained and recorded (audio, visual or electronic)
☐ Other

Attach copies of Consent Forms to be used in the research in Section 11 - "Required Attachments" below.

6.5. Provide procedural details for obtaining informed consent:

As indicated in 6.2 above, all participants will be involved in a four step process leading to their informed consent.

1. Planned participants are already known to the student investigator from a 50-year career. Their pre-selection will be based on knowledge about their likelihood of being interested to participate.
2. This will be confirmed through their interest and positive response to an introductory email from the student investigator.
3. This will be followed up by a formal invitation to participate using the Victoria University "Information to Participants involved in Research" letter together with "An informed consent" form. All potential participants will be able to discuss this with the student investigator, chief investigator and others they choose before making their decision.
- 4 Confirmation of a positive decision will be confirmed by the return of a signed Victoria University "Informed consent" form.

6.6. Will you be seeking consent in order to contact participants in the future for related research participation and/or use participants' data for related research purposes?

- ☐ Yes
☒ No

Competing Interests

6.7. Will any dual relationship or conflict of interest exist between any researcher and potential or actual participants? (e.g., a member of the research team is also a colleague or friend of potential participants)

- ☒ Yes
☐ No

What is the nature of the dual relationship or conflict of interest?

Most of the participants are part of the student investigator's professional network including past work colleagues.

There is no perceived conflict of interest arising between the work relationship of the proposed work colleagues and the student researcher due to the independent nature of their work responsibilities. There are no power differentials between potential participants and the student researcher. Should that change at any future time, then the approach that would be taken is given below.

In regard to colleagues, they of long standing and all are aware of the researcher's PhD study and the reasons for it. At the same time, experiential learning has been a frequent and ongoing topic of conversation between them and is not currently perceived to raise any ethical issue. This history of discussion will, in fact, inform the narratives and adds richness to the data in

a project utilising qualitative descriptive analysis, narrative enquiry and autoethnography.

Should it do so in future, then again the approach (below) would be the way in which any such issue would be addressed.

How will ethical issues arising from the dual relationship or conflict of interest be addressed?

At the outset, their recruitment as participants is subject to careful preselection identified in Section 5 followed by the rigorous informed consent process detailed in Section 6.2, 6.5 and Appendix 11.

Should a participant consider that the focus of this research provides any ethical issues arising from the dual relationship, they are under no obligation to provide a positive response by way of the Victoria University "Informed Consent" form.

If any ethical issues were to arise during the course of the research as a result of the dual relationship or a potential conflict of interest, the matter would be discussed with the participant and the chief investigator.

The participant would always have the right to withdraw from the research process and their data destroyed.

All participants will approve copies of the data related to their individual interviews and the option to provide reflective comment on the resulting narratives. Should there be material which they perceive is detrimental to the dual relationship or raises a conflict of interest, they may raise this with the chief investigator, (who will not have a dual relationship) and who will arbitrate on an outcome that will fully accommodate the participant's wishes.

- 6.8. **Does the research involve participants who are in dependent or unequal relationships with any member(s) of the research team or recruiting organisation/agency (e.g. counsellor/client, teacher/student, employer/employee)?**
- ☐ Yes
- ☒ No
- 6.9. **Will you be offering reimbursement or any form of incentive to participants (e.g., payment, voucher, free treatment) which are not part of the research procedures?**
- ☐ Yes
- ☒ No
- 6.10. **Is approval required from an external organisation? (e.g., for recruitment of participants, data collection, use of premises)**
- ☐ Yes
- ☒ No

Section 7 - Risks associated with the Research

Physical Risks

7.1.a. **Are there any PHYSICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***

- ☐ Yes
☒ No

Psychological Risks

7.1.b. **Are there any PSYCHOLOGICAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research?***

- ☐ Yes
☒ No

Social Risks

7.1.c. **Are there any SOCIAL RISKS beyond the normal experience of everyday life, in either the short or long term, from participation in the research.**
(e.g., possible inadvertent public disclosure of personal details or sensitive information)

- ☐ Yes
☒ No

Other Risks

7.2. **Does the research involve any risks to the researchers?**

- ☐ Yes
☒ No

7.3. **Does the research involve any risks to individuals who are not part of the research, such as a participant's family member(s) or social community (e.g., effects of biographical or autobiographical research)?**

- ☐ Yes
☒ No

7.4. **Are there any legal issues or legal risks associated with any aspect of the research that require specific consideration (i.e., are significant or out of the ordinary), including those related to:**

participation in the research, the aims and nature of the research, research methodology and procedures, and/or the outcomes of the research?

- ☐ Yes
☒ No

7.5. **Risk-Benefit Statement:**

Please give your assessment of how the potential benefits to the participants or contributions to the general body of knowledge would

outweigh the risks. *Even if the risk is negligible, the research must bring some benefit to be ethical*

The focus of the research is seeking the views of experienced participants, who are fully cognisant of the purpose and aims of the project. Their contribution is considered to bring valuable insight into the body of knowledge associated with the development of professional competence at the present time. It is also intended to offer more effective approaches to the development, capability, independence and integrity of future generations in a highly dynamic society.

Section 8 - Data Protection and Access

Data Protection

- 8.1. **Indicate how the data, materials and records will be kept to protect the confidentiality/privacy of the identities of participants and their data, including all hardcopies, electronic files and forms. See help for definitions.**

- ☐ Data and records will be entirely anonymous
- ☐ Data and records will be coded and non-identifiable
- ☐ Data and records will be coded and re-identifiable
- ☒ Some or all of the retained data and records will include personally identifying information
- ☐ Other

- 8.2. **Who will be responsible for the security of and access to confidential data and records, including consent forms, collected in the course of the research?**

Surveyed by the Principal Supervisor, the student investigator will be responsible for the security of all research data. All data and documentation including consent forms will be treated in a confidential manner and stored on a personal home based secure computer system with external back up off line. This is at the student's homebase in New Zealand

This is true for (i) digital recording data, (ii) transcribed data, (iii) email responses to narratives, (iv) all reference material

- 8.3. **Where will data, materials and records be stored during and after completion of the project?** Provide full details of the location for all types of data.

Note: The VU Research Storage provides secure digital storage and long term retention for research project data including graduate research projects.

During the project:

As indicated above, all data and documentation for this research project will be stored in a home based secure computer system with off line external backup.

This is true for (i) digital recording data, (ii) transcribed data, (iii) email responses to narratives, (iv) all reference material

Upon completion:

On completion of the project, the student investigator will consider moving all digital data and project records to VU Research storage in consultation with the Primary Supervisor.

- 8.4. **Indicate the minimum period for which data will be retained.** See help for definitions.

- ☐ Indefinitely
- ☐ 5 years post publication
- ☒ 7 years post publication
- ☐ 15 years post publication
- ☐ 25 years after date of birth of participants
- ☐ Other

- 8.5. **Who will be responsible for re-evaluating the data/materials after the retention period and considering a further retention period for some or all of the data/materials?**

The student investigator in consultation with the Primary Supervisor.

- 8.6. **Will you transfer your data or materials to a managed archive or repository during the project, after the project, or after the retention period? Which discipline specific or institutional archives will be considered?**

Note: Some funding agencies and publishers may require lodgement with an archive or repository. Retain a copy at VU where possible.

The student investigator will consider transferring all digital research data to VU research at the end of the project.

- 8.7. **When further retention of data and materials is no longer required, responsible disposal methods should be adopted. Disposal software should also be adopted if digital software, computer hardware, disks or storage media are reused or retired. What methods of appropriate disposal or destruction will be employed?**

Note: Personal, sensitive or confidential information, both digital and hardcopy, will require secure destruction or disposal. For other materials you may need to refer to the Hazardous Materials Policy, Animal Ethics Standard Operating Procedures, or the Ethics and Biosafety site found on the VU Office for Research website.

Overseen by the Primary Supervisor, the student investigator will undertake to dispose of all hardcopy materials using secure file disposal methods that meet with VU disposal requirements.

The digital data will be deleted using appropriate software that meets VU disposal requirements

Section 9 - Dissemination/Publication of Research Results

Publication Details

9.1. Indicate how the results of this research will be reported or published.*

- ☒ Thesis
- ☒ Journal article(s)
- ☒ Book
- ☐ Research report to collaborating organisations
- ☒ Conference presentation(s)
- ☐ Recorded performance
- ☒ Other

9.2. Will any contractual agreement exist between the researchers and a third party that will restrict publication of the research findings?

- ☒ Yes
- ☒ No

9.3. Are there any other restrictions on publications or reports resulting from this project?

- ☒ Yes
- ☒ No

Section 10 - Other details

Comments

10.1. In your opinion, are there any other ethical issues involved in the research?*

- ☒ Yes
- ☒ No

10.2. Additional information and comments to support this application:

This question is not answered.

Section 11 - Documents, Attachments & Supplementary Forms

Supplement F - Research participants in overseas countries

You have indicated in Question 3.2.e. that the research involves participants in other countries.

Applicants are requested to refer to the NHMRC National Statement Chapter 4.8 when completing this section.

1. List all countries in which the research will be conducted:

Interviews and data collection will be conducted via Skype and face to face in Australia and New Zealand.

Additional participants in the UK may be interviewed via long distance media such as Skype, email and phone.

2. **Provide a brief summary of all research activities (e.g., recruitment, data collection) to be undertaken in the overseas country(s).**

The research activities in the overseas countries mentioned above will comprise:

Contacting potential participants already known and part of the student investigator's professional network

Seeking their interest and agreement using the formal consent process and documentation outlined and attached Undertaking up to 3 Skype, e-mail or face to face interviews with them based on the interview schedule
Providing verbatim transcripts for reflection and further comment.

3. **Provide details of investigators' knowledge/experience in conducting research in the country(s) listed above.** (In particular, knowledge of culture, values, language, standards for conducting research, ethical and legal aspects)

3.1. Chief Investigator:

Dr. Martin Andrew is a reputable scholar in Writing, TESOL and Education. As a Kiwi, he often travels to New Zealand and is able to perform the acts of surveillance described in this application. He has researched extensively in New Zealand and published widely using methodologies similar to those described in this application. He is experienced at conducting research projects via technological media in such countries as New Zealand and Vietnam.

3.2. Co-investigators:

Professor Pamela Green is the Research Dean of Swinburne University and is one of Australia's foremost authorities on doctoral supervision and literacy pedagogy. Her knowledge of standards for conducting research, ethical and legal aspects surpasses that of most scholars in Australia, and we are fortunate to have her on the co-supervisory team of this project. Prof. Green is experienced in the ethical handling of data, including data collected via Skype and technological media.

3.3. Student researchers: (if none, indicate what training will be provided to the student(s) and when)

The student investigator is undertaking this research from his home base in New Zealand. He has lived and worked in New Zealand and the United Kingdom for more than 25 years each. He holds both UK and New Zealand citizenship and was born of British parents in New Zealand. He has undertaken secondary and tertiary education in the UK up to the level of a masters degree. He has worked in the New Zealand tertiary education system for more than 15 years.

He has Australian relatives and has frequently visited Australia.

He has experience of undertaking academic research in New Zealand and the United Kingdom.

4. Will the student researcher(s) be located in the overseas country(s) during the course of the research?

- ☒ Yes
☐ No

If YES, provide details and describe how supervision will be undertaken to ensure that due respect and protection will be accorded to participants?

James is a New Zealand national with a HECS place transferred from Swinburne University, where Dr. Andrew and he started this project with Prof. Green. Dr. Andrew is in frequent contact with James via email and Skype and other media and is also an expert of distance supervision. The data will be collected by James in New Zealand and Australia under the instruction and guidance of both Dr. Andrew and Prof. Green. Additional data from participants in the UK may be negotiated via technological media. All participants will view Information for Participants protocols and sign letters of consent. All participants will be told they may withdraw at any time and that they may contact the Chief Investigator at any time.

5. Describe the role(s) of each investigator in the overseas component of the research project.

5.1. Chief Investigator:

Dr Martin Andrew will ensure that James's data is collected in an ethical fashion, returned to participants for verification, and written up in accordance with ethical and professional methodologies in Education, including auto-ethnography (Martin Tolich's 2009 ten principles will be followed) and narrative enquiry (Gary Barkhuizen's 2011 principles are followed).

5.2. Co-investigators:

In consort with Dr Martin Andrew, Prof. Green will support the ensuring of James's data being collected in an ethical fashion. She advises it will be returned to participants for verification, and written up in accordance with ethical and professional methodologies in Education. The three of us concur that this includes auto-ethnography (Martin Tolich's 2009 ten principles will be followed) and narrative enquiry (Gary Barkhuizen's 2011 principles are followed).

5.3. Student researchers:

The research activities in the overseas countries mentioned above will comprise:

Contacting people already known and part of the student investigator's professional network

Seeking their interest and agreement using the formal consent process and documentation outlined and attached

Undertaking up to 3 Skype or face to face interviews with them based on the interview schedule

Providing verbatim transcripts for reflection and further comment.

All these participants are already personally known to the student investigator and form part of his professional network

6. Will any of the investigators (not including student researchers) be located in the overseas country(s) during the course of the research?

- ☐ Yes
☒ No

If NO, provide contact details of a local person in the country who will be available to respond to participant queries related to the research.

Name:

James Harrison

Location:

Snell's Beach, Auckland

Telephone number:

Mobile number:

Email:

Will individuals in overseas countries who are not members of the research team be involved in any aspect of the conduct of the research (e.g., recruitment of participants, data collection)?

- ☐ Yes
☒ No

7. Is there an ethical review process (mandatory or voluntary) for research undertaken in the country(s) where the proposed research will take place?

- ☒ Yes
☐ No

If YES, describe the ethical review process and how ethical approval will be obtained through that process for the proposed research.

VU's Ethics review process applies as per the content of this application.

7.a. Does the ethical review process in the overseas country require reporting of ethical review and approval undertaken in Australia (e.g., by VUHREC).

- ☐ Yes
☒ No

8. **Are there any risks to participants, beyond the normal experience of everyday life, in either the short or long term, that relate specifically to participating in the research in the overseas country?**
- ☐ Yes
 - ☐ No
9. **How will the well-being of overseas participants be monitored throughout the duration of the research?**
- The fact that the participants are in New Zealand does not impose any more strictures on them or the conduct of interviews than would be the case if they were conducted in Australia. The spirit of ANZAC will prevail in this research. The participants will receive information to participants form reminding them that they can re-contact the student researcher at any time, withdraw from the research at any time, and contact the principal supervisor for further support at any time.
- Participants in the UK will be interviewed via technological media. Every care and due diligence will be taken to ensure their data is kept safe.
10. **Other comments relevant to this section of the application:**
- The research focus is not seen as controversial or likely to cause any emotional disturbance. It is to be done with people already known professionally by the student investigator and relates particularly to their professional lives and growth. The potential participants have ample time to consider whether they wish to be involved with the research and to withdraw at any time if they so wish.

Required Attachments

The following documentation must be attached to your application:

- Scanned copy of the [Declaration Form for External Investigators](#) (if applicable)
- Copy of the 'Information to Participants Involved in Research' form (*Please use the templates provided on the [Human Research Ethics website](#)*)
- Copy of Consent Forms to be used in the research (*Please use the templates provided on the [Human Research Ethics website](#)*)
- Any flyers or other advertising material to be used in the research

11. **Please attach each of the items specifically listed above as well as any other supporting documentation.**

All documentation must be accurately titled and referenced to within the body of your application where appropriate (i.e. "Appendix A Declaration Form", "Appendix F - Risk Factor Assessment Questionnaire", etc.). Please limit file types to .doc, .docx, .xls, .xlsx, .pdf, or small-medium images (ie, .gif, .jpg).

Description	Reference	Soft copy	Hard copy
Consent Form	Victoria University Melbourne consent form for research by James Harrison 4186761.docx		
Information to Participants Involved in Research	Victoria University Information for research participants James Harrison 4186761.docx		

Note: Please click the Question Help icon above for instructions on how to upload documents and use this table.

If you are certain that you do not need to supply a Consent Form or Information to Participants Involved in Research (both of which are mandatory), please tick Hard Copy and type 'N/A' in the Reference field.

Section 12 - Submission Details

Declaration

I/we, the undersigned, declare the following:

I/we accept responsibility for the conduct of the research project detailed above in accordance with:

- the principles outlined in the National Statement on Ethical Conduct in Human Research (2007);
- the protocols and procedures as approved by the HREC;
- relevant legislation and regulations.

I/we will ensure that HREC approval is sought using the Changes to the Research Project process outlined on the Human Research Ethics website if:

- proposing to implement change to the research project;
- changes to the research team are required.

I/we have read the National Statement on Ethical Conduct in Human Research prior to completing this form.

I/we certify that all members of the research team involved the research project hold the appropriate qualifications, experience, skills and training necessary to undertake their roles.

I/we will provide Annual / Final reports to the approving HREC within 12 months of approval or upon completion of the project if earlier than 12 months.

I/we understand and agree that research documents and/or records and data may be subject to inspection by the VUHREC, Ethics Secretary, or an independent body for audit and monitoring purposes.

I/we understand that information relating to this research, and about the investigators, will be held by the VU Office for Research. This information will be used for reporting purposes only and managed according to the principles established in the Privacy Act 1988 (Cth) and relevant laws in the States and Territories of Australia.

<i>Staff/Student ID</i>	Removed
<i>Full Name</i>	DR MARTIN ANDREW
<i>Role in project</i>	Chief Investigator
<i>Personnel Type</i>	Internal
Sign Declaration? <i>By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.</i>	Yes
Date Signed	14/08/2014
Declaration supplied on behalf of External Investigator? <i>By clicking the checkbox below, you are agreeing that you have supplied the External Investigator with a copy of this full application form as well as the 'External Staff Declaration Form' and that you have attached this completed document in 'Section 11 - Required Attachments'.</i>	
Date Supplied	
<i>Sighted by</i>	

<i>Staff/Student ID</i>	Removed
<i>Full Name</i>	PROF Pam Green
<i>Role in project</i>	Associate Investigator
<i>Personnel Type</i>	External
Sign Declaration? <i>By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.</i>	
Date Signed	
Declaration supplied on behalf of External Investigator? <i>By clicking the checkbox below, you are agreeing that you have supplied the External Investigator with a copy of this full application form as well as the 'External Staff Declaration Form' and that you have attached this completed document in 'Section 11 - Required Attachments'.</i>	Yes
Date Supplied	14/08/2014
<i>Sighted by</i>	
<i>Staff/Student ID</i>	Removed
<i>Full Name</i>	Mr James Harrison
<i>Role in project</i>	Student
<i>Personnel Type</i>	Student
Sign Declaration? <i>By clicking the checkbox below, you are agreeing to conduct the research project in accordance with the above declaration.</i>	Yes

Date Signed	07/08/2014
Declaration supplied on behalf of External Investigator? <i>By clicking the checkbox below, you are agreeing that you have supplied the External Investigator with a copy of this full application form as well as the 'External Staff Declaration Form' and that you have attached this completed document in 'Section 11 - Required Attachments'.</i>	
Date Supplied	
<i>Sighted by</i>	

Note: Please click on your name in the table above to complete your declaration; or click on the name of an External Investigator to acknowledge that their declaration has been supplied.

Declaration Instructions and Information

A digital signature must be supplied by each and every member of the research team using the declaration table above.

The 'Needs Signature' icon shows which records you are responsible for signing.

Physical signatures are not required for VU staff and students in applications using form version v.13-07.

External Investigators do not have access to Quest. The Chief Investigator must supply a completed physical declaration on their behalf by following the steps below:

1. Send the person a copy of the full application form (including any attachments), as well as the [Declaration Form for External Investigators](#) document.
2. Once returned, attach the signed *External Investigator Declaration Form* document in 'Section 11 - Required Attachments'.
3. Enter into the External Investigator's record in the above declaration table and mark the checkbox to indicate these steps have been completed, include the date you have done so.

The 'sighted by' field will automatically populate with your name. *(Only the Chief Investigator will have permission to complete this step.)*

The application cannot be submitted until all members of the research team have logged in and completed this declaration.

Finalise Application Reminders

- All applications must be sighted and approved by all members of the research team and any relevant parties. Please ensure each member of the research team has completed their declaration in '*Section 12 - Declaration*' above, including any declaration forms supplied on behalf of External Investigators. *Applications will not be reviewed without appropriate authorisation.*

It is strongly recommended that you save a PDF version of your application before submitting as you will lose access to the electronic record while it undergoes formal review.

You are reminded that your project may not commence without formal written approval from the appropriate Human Research Ethics Committee.

Ready to Submit?

Once the form is complete and all documents are attached, **click on the 'Action' tab** above the left-hand form navigation, then **click 'Submit Application'** to forward the application to the Ethics Secretary to be reviewed and assigned to a Committee meeting.

You will receive an automatic email notification from Quest when your application has been successfully submitted.

Note: Only a Chief Investigator is able to submit an application for ethical approval The Chief Investigator who is marked as the primary contact for this application is:

DR MARTIN ANDREW

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled “The role of experiential learning in 21st century education”.

This project is being conducted by a student researcher, James Harrison as part of a PhD study at Victoria University under the supervision of Dr Martin Andrew from the College of Education and Professor Pamela Green, Dean of Research, Swinburne University of Technology, Melbourne.

Project explanation

This project is a qualitative study to compare the learning outcomes and processes of the student researcher with a cohort of professionals with at least 30 years of career experience. The purpose is to identify common and contrasting perspectives that will inform a collection of contemporary views on experiential learning, its outcomes and processes. This is expected to provide insight into formal and informal education in the early 21st century.

What will I be asked to do?

Participants are invited to undertake the following:

- Participation in a group of up to 3 interviews concerning history of their learning and current learning approaches
- Review of their interview transcript to clarify any points
- Provision of any supporting written or published material
- Voluntary reflective feedback on a case study representing their narrative data

Each of the interviews is expected to take between 60 -75 minutes for a total of up to 3.5 hours This is likely to be undertaken over a 2 week period. Further support is entirely up to the participant.

What will I gain from participating?

There is currently a lack of generic evidence concerning what and how professionals learn to optimise their learning and practice. This study seeks to illuminate this area in a holistic manner and to identify how this might be used to improve formal education practices. Your participation will provide you with an opportunity to share your story of learning for the benefit of others, enable some personal insight and awareness of your learning strengths, as well as make an important contribution to this work.

How will the information I give be used?

The narrative data provided by participants will be analysed by the student researcher for anonymous application in the following:

- A PhD thesis known as an artefact which may be published as a book
- Published papers
- Conference papers

All original data will be securely held first by the student researcher and then later by Victoria University for a period of 7 years following the completion of the PhD award study before being destroyed. It will only be used by the student researcher for the purposes explained above and participant anonymity will be assured throughout the whole data retention period.

What are the potential risks of participating in this project?

There is low risk from participating in this project in terms of identification which will be kept anonymous and of any political or other risks of the work outcomes

How will this project be conducted?

The approach taken will be based on a qualitative research methodology in which the student researcher's investigation of his own learning experiences will be compared and contrasted with narratives of an experienced professional cohort of volunteers, who form part of the researcher's network. The project data will be collated from a series of Skype or face to face interviews with the professional volunteers. This will be followed later by their reflective responses to aggregated narratives derived from the interviews.

Who is conducting the study?

The study is being undertaken for a PhD award by the student researcher James Harrison.

His email contact details are Removed and Skype ID Removed

The Chief Investigator and student supervisor of the work is Dr Martin Andrew of the School of Education

His email contact details are

Email removed

Any queries about your participation in this project may be directed to the Chief Investigator listed above.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

We would like to invite you to be a part of a study into the role of experiential learning in 21st century education.

This project is a qualitative study to compare the learning outcomes and processes of the student researcher with a cohort of professionals with at least 30 years of career experience. The purpose is to identify common and contrasting perspectives that will inform a collection of contemporary views on experiential learning, its outcomes and processes. This is expected to provide insight into formal and informal education in the early 21st century.

CERTIFICATION BY SUBJECT

I, "[Click here & type participant's name]"

of "[Click here & type participant's suburb]"

certify that I am at least 18 years old* and that I am voluntarily giving my consent to participate in the study:

The role of experiential learning in 21st century education being conducted at Victoria University by: Dr Martin Andrew Dept of Education

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by:

James Harrison, PhD student researcher

and that I freely consent to participation involving the below mentioned procedures:

- Participation in a group of up to 3 interviews concerning my history of learning and current learning approaches
- Review of my interview transcripts to clarify any points
- Voluntary reflective feedback on a case study representing my narrative data
- Provision of additional private written information if volunteered for use as reference material only

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential

Signed:

Date:

Any queries about your participation in this project may be directed to the chief investigator:

Dr Martin Andrew

Email removed

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Illustrative emails accompanying participation and consultation invitations

Participation

Dear x,

Further to our recent telephone conversation, concerning my PhD research, I was delighted to learn that my research was of interest to you and that you were interested and willing to participate in up to three one-hour interview sessions. This is concerned with your experience of self-development and the factors that have supported you through your professional journey.

In order to formalise this process, please could you review the attached Information document together with an Individual Consent Form for you to sign and return subject to you being happy to proceed.

If you have any further questions before we arrange to start, please do not hesitate to get in touch.

I look forward to your reply shortly.

Best wishes

James

Transcription consultation

Dear Y,

Further to the interviews I undertook with you recently, please find attached the raw transcription data of your interviews. If there is anything in them you would like to discuss or have removed, please telephone in the first instance as that will save you time. Due to my analysis and narrative approach, considerable refinement of your scripts will be undertaken before presentation in a thematic format, where again you will have an opportunity to comment. I look forward to your reply but if I do not hear from you in the next month, I will assume nothing is amiss and I will contact you again when your narrative and my initial analysis is ready for review.

Thanks again for your interest and contribution here.

Best wishes

James

Narrative and initial findings consultation

Dear Z,

Further to my previous communications with you, I have now prepared your structured narrative under 4 themes:

- Firstly, the introduction provides snapshots of where you have come from, what have been significant milestones and what you are doing today.
- The second section looks more closely at your development journey and what you have identified as helping you to progress to where they are today.
- A third section looks at aspects of your development which have broader significance to the processes and outcomes sought from the study.
- The final section records how you think formative education and development might be improved.

There are three voices present in the narrative:

- The researcher's narrative descriptions in this font
- *The participant's responses in this font*
- The researcher's autoethnographic observations and realisations that link specific participant evidence to the findings discussed in the narrative of analysis and later the developmental framework of practice itself.

Firstly, I am seeking any comments you may have on the content of the narrative and wish to make on it.

Secondly, I am also attaching paper on my initial model I have identified from this research to gain any views on it you may have.

Feel free to contact me about this and we can either meet to talk or otherwise let me have your written comments.

I look forward to your response.

Best wishes

James

Appendix 10 Conference papers delivered at international education conferences in the period 2017-2019 by James Harrison

During the period 2017 to 2019, I delivered 3 individual papers and 1 joint paper on the Framework of Developmental Practice to international conferences in Australia and the UK to relevant academic audiences, who were able to provide useful support and peer feedback on its structure and content. These papers are all available on Academia.edu and links to each of them are provided below:

2017 AARE Conference, Canberra, Australia

https://www.academia.edu/35773882/The_emerging_links_between_Learning_Capability_Experiential_Learning_and_Research_Political_implications_for_Higher_Education

2018 NCVER Conference, Sydney, Australia

https://www.academia.edu/37228590/Development_of_a_contemporary_model_of_personal_vocational_practice_Its_potential_for_students_in_vocational_education_and_training

2019 UVAC Conference, Manchester, UK

https://www.academia.edu/43783695/Developmental_capability_and_its_significance_to_human_performance_improvement_A_model_of_developmental_discipline_practice

2019 AARE Conference, Brisbane, Australia

https://www.academia.edu/41167069/The_potential_for_refined_capability_models_of_practice_that_enhance_participation_in_a_socially_just_world