PROFESSIONAL DEVELOPMENT, INSTRUCTIONAL INTELLIGENCE AND TEACHER EMOTIONS: A MIXED METHODS STUDY OF A FOUR-YEAR SYSTEMIC CHANGE INITIATIVE

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Declaration

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

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A note on formatting and style:

This PhD thesis comprises three research papers submitted to peer reviewed journals for publication. These documents are incorporated into the thesis along with chapters at the beginning, which have been provided to introduce and link the manuscripts, and a chapter at the end, which presents the discussion the major findings.
ABSTRACT

The purpose of this study is to examine the effects of a systemic change professional development program designed to refine and extend the instructional practices of tertiary teachers working in the Australian vocational education and training (VET) sector. The Instructional Intelligence Professional Development Program provided the vehicle for this study, and was distinct in several ways: (a) it was designed and implemented using research based principles; (b) it was systemic in nature (involving all publicly funded colleges in Western Australia); and, (c) it occurred over an extended period of time (4 years).

In examining the effects of the program this study explores the domains of both teacher behaviour and teacher affect and aims to better understand: (a) factors related to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers; (b) the emotional (affective) experiences of teachers involved in a systemic change professional development initiative; and, (c) the usefulness of the Concerns Based Adoption Model (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

In order to examine group and individual experiences of the instructional change process, the research design incorporated a mixed-methods approach. This comprised four complimentary, sequential phases of data collection and analysis, with each individual phase informing the subsequent phase.

Findings revealed that the teachers involved in this study had changed their instructional practices as a result of the Instructional Intelligence Professional Development Program and were implementing new instructional methods and processes in their classrooms. Factors which facilitated the uptake of teacher change in practice include: (a) having an extended timeframe to participate in professional development; (b) the cyclical nature of the program design, which included theory, demonstration, practice and reflection; (c) the sharing of contextualised strategies and resources; and, (d) peer coaching relationships. Factors which hindered teachers’ progress include: (a) lack of support from middle management; (b) lack of time to complete program requirements in their colleges; (c) peer coaching communication breakdowns; (d) competing system demands; and, (e) teachers’ own emotional responses.
Emotions emerged as a key factor in mediating teachers’ experiences and responses to change, with teacher participants experiencing a cyclical pattern of emotions, which were influenced by time, place and interpersonal relationships. It became evident that teachers’ experiences of educational change (reform) are multifaceted and influenced by their emotional responses to what is happening around them. Change therefore has both behavioural and affective dimensions, and equal consideration needs to be given to each when designing, implementing, assessing and researching teacher professional development initiatives.

CBAM was found to be a useful conceptual framework and methodology for assessing the behavioural and affective aspects of teacher professional development programs. Data obtained through the use of the Stages of Concern Questionnaire (SoCQ) and the Levels of Use (LoU) Focused Interview were valuable when used as part of a broader mixed methods research design.

These findings have important implications for teacher professional development. Educational change initiatives are complex and uniquely contextualised. As such, rather than applying a “one size fits all” to the design, implementation and assessment of teacher professional development programs the findings of this research underline the importance of understanding the intricacies of the context in which they occur. This means that research based design principles of professional development and research design frameworks used to assess programs, should be tailored to meet the specific needs of the environment and the teachers who work within it.

Further, individual teacher experiences of systemic educational change processes are multifarious. More research is needed to help better understand the composite relationship between teacher emotions and change. Equal attention, therefore, needs to be afforded to teacher behaviour and affect in the design, implementation and assessment of professional development programs.
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Finally, this thesis is dedicated to the teachers who participated in this study, and to the millions of others who walk into classrooms around the world each day, with a belief in their hearts that they make a positive difference in the lives of their students. They do. My work is in the service of theirs.
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The purpose of this study is to examine the effects of a four-year systemic change professional development program designed to refine and extend the instructional practices of tertiary teachers working in the Australian vocational education and training (VET) sector. A sequential mixed methods approach was used to better understand: (a) the factors related to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers; (b) the emotional experiences of teachers involved in a systemic change professional development initiative; and, (c) the usefulness of the Concerns Based Adoption Model (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

Background

Teacher Professional Development and Educational Change

Educational environments are characterised by change. In recent years education systems around the world have become contested sites, places of rapid reform and increased accountability as policy makers attempt to ‘fix’ and ‘improve’ perceived shortfalls. The role of teacher professional development in supporting the implementation of educational change is well documented, with professional development often viewed as instrumental in building teacher capacity, changing teacher behaviour and leveraging change more broadly (Fullan, 2001, Guskey, 2002b; Lieberman & Pointer Mace, 2008).

A considerable research literature exists reflecting the diverse and complex nature of educational change. This includes large, and small-scale studies, pre and in-service programs and different types of professional development such as seminars, workshops, communities of practice and on-line programs. Despite the diverse content of the research literature, conclusions can be drawn about the general characteristics of professional development that facilitate change in teacher practice. For example, the research literature tells us that effective models of professional development should: (1) have clear goals and objectives and be aligned with teacher and student needs (Desimone, 2009; Garet, Porter, Desimone, Birman & Yoon, 2001); (2) provide time for teachers to engage with the subject matter over an
extended period of time (Birman, Desimone, Porter & Garet, 2000; Garet et al., 2001; Ingvarson, Meiers, & Beavis, 2005); (3) provide teachers with active learning opportunities (Birman et al., 2000; Garet et al., 2001); (4) include opportunities for feedback and reflection (Darling-Hammond & McLaughlin, 1995; Joyce & Showers, 1995); and, (5) be collaborative in nature (Darling-Hammond & McLaughlin, 1995; Garet et al., 2001; Ingvarson, Meirs, & Beavis, 2005; Joyce & Showers, 1995; Lieberman & Pointer Mace, 2008).

Notwithstanding these generally agreed, research-informed principles, many questions remain about the teacher professional development. For example: (a) what effects do professional development programs have on teacher beliefs and practices; (b) how do different program designs support or hinder teachers on their journeys of professional change; (c) what are the affective (emotional) experiences of teachers as they take part in professional development; (d) what systemic features (surrounding context) support teachers to implement change in their practice and what features hinder the process?

Globally, governments, districts and individual educational institutions spend billions of dollars each year on teacher professional development, (Barr et al., 2015). Despite considerable expenditure, however, many researchers argue that there is a notable lack of empirical evidence about the effects of programs on teachers and call for more rigorous and sophisticated methods of evaluating professional development programs (Guskey, 2000, 2009; Hill, Beisiegel & Jacob, 2013; Ingvarson, et al., 2005; Piggot-Irvine, 2006).

In addition to the need to know more about the effects of teacher professional development very little is also known about teachers’ affective responses to educational change processes. The study of teacher emotions in the context of educational reform is considered by researchers to be largely overlooked and under represented (Chen, 2016; Hargreaves, 2000, 2001, 2005a; Lee & Yin, 2010; Sutton & Wheatley, 2003; Uitto, Jokikokko, & Estola, 2015; Zembylas, 2002). For example, what are the emotional experiences of teachers? Do emotions impact the uptake and subsequent implementation of change initiatives; how and why? Are there discernable patterns to teacher emotions during change and how can we best support teachers through the process of reform?
The complex, dynamic and demanding world of educational change; questions surrounding the nature, role and effectiveness\(^1\) of teacher professional development; and, a notable lack of research on teachers’ affective responses to change frame the broader context for this study. A more detailed description of the research context is provided below.

**Research Context**

**Australian Vocational Education and Training (VET) Environment**

The Australian education system comprises early childhood, primary, secondary and post-compulsory (tertiary) provision. Within post-secondary education a wide variety of public and private providers exist, delivering a range of courses within the Australian Qualifications Framework (AQF) (Australian Qualifications Framework Council, 2013). This study was conducted within this post-secondary context; specifically the vocational education and training (VET) publically funded Technical and Further Education (TAFE) system. In 2009 there were approximately 2 million course enrolments in publically-funded VET with qualification provision ranging from traditional trades such as electrical, plumbing, metals, mining and engineering to hospitality and community services (Productivity Commission, 2011).

VET provision has a long history in Australia, and until the early 1970s was largely unregulated; funded and governed by individual states and territories. In 1974 in response to growing pressure for increased Commonwealth Government financial support the Australian Committee on Technical and Further Education (ACOTAFE) published the Kangan Report. The report triggered major national reforms in VET. This resulted in substantial government funding being injected into the system and the establishment of several national bodies responsible for governance. These reforms are widely held to be the ‘birth’ of the national TAFE system (Guthrie, 2010; Productivity Commission, 2011).

Today, the Australian VET system has expanded considerably and operates within an open training market where VET providers or Registered Training Organisations (RTOs,

\(^1\) “Effectiveness” in the context of this study refers to changes in teacher practice and behaviour.

\(^2\) From this point forward in the document each paper will be referred to as Paper 1, Paper 2 and Paper 3 as shown
both public and private) compete for funds from a variety of sources. In 2011 a report published by the Australian Government’s independent research advisory body – The Productivity Commission – states there were approximately 5000 VET providers including the TAFE sector, private Registered Training Organisations (RTOs), community and enterprise based providers. In the public sector this comprises 59 TAFE institutions, 345 high schools, 11 universities, 424 Adult Community Education (ACE) providers and 112 government bodies. In comparison there are 3,147 private RTOs. Despite the increased diversity of VET providers, TAFE to date still continues to be granted the largest share of government funding, receiving $3,645,000,000 in 2008 compared to private RTOs, which obtained $445,000,000.

The Australian VET environment is similar to that of most OECD countries in that it is considered to play a vital role in preparing individuals for work and life in 21st century economies. Not surprisingly, VET is closely linked to national discourses, policies and agendas related to human capital and workforce development (European Centre for the Development of Vocational Training, 2009 & 2010; Loveder, 2005). Driven by the demands of policy makers and industry, the system is charged with helping maintain the competitiveness of industries and the national economy.

In Australia there are integral links between industry, the economy and politics. The introduction of nationally consistent competency standards (known as training packages) has become the cornerstone of VET reforms and signal a departure from the syllabus-based system that dominated the sector before the 1990s. Industry plays a central role in the national training system helping to define and design standards, informing pedagogical practice and assessment provision. The introduction of the Australian Qualifications Training Framework (AQTF) and most recently in 2011, the establishment of the national VET regulator the Australian Skills Quality Authority (ASQA) are two of the key results of increased regulation and scrutiny on VET providers and their training and assessment provision.
In the Australian VET sector, professional development activities for teachers are predominantly politically driven, designed to meet priority skill needs and often linked to implementing aspects of the national training system and responding to system compliance issues (Schofield & McDonald, 2004). Research carried out by Mitchell and Ward in 2010 revealed that there were significant gaps in VET teachers’ pedagogical capacities, in areas such as understanding learning styles, learning theories and flexible teaching skills. Mitchell and Ward reported “On average, Australian VET trainers and assessors claim that available professional development opportunities meet only 55 per cent … of their professional development requirements.” (Mitchell & Ward, 2010, p. 19). These findings concur with those of Wheelahan and Moodie (2010, p. 49) who found that the majority of programs in VET were “event focused”, rolled out as “just in time”. That is, they are designed to meet the latest VET policy revision (Guthrie & Clayton, 2010; Harris et al., 2001; Perkins, 1997).

Underpinning the design of these programs are assumptions that there are gaps in skills or knowledge, that new information is given, that learning occurs and that change in practice results. Funding models also largely reflect this short-term perspective, providing seed funding that typically fails to support long-term systemic embedding of new skills and knowledge (Harris et al., 2001; OECD, 2008, 2009). A significant body of research supports the view that short-term approaches focused on promoting the latest political initiative work against building emergent practices. This is a critical design flaw when attempting to initiate and embed long-term sustainable change (Cort, Harkonen & Volmari, 2004; Dickie et al., 2004; Forewood, Mclean & Butler, 2001; Guthrie, 2010; Guthrie & Clayton, 2010; Harris, et al., 2001; Villegas-Reimers, 2003; Wheelahan & Moodie, 2010; Wilson, 2003).

This view is consistent with other studies, already outlined, that draw attention to the lack of systematic research and assessment of the impact of change and professional development initiatives in Australian VET and that call for greater accountability by increasing the systematic assessment of publicly funded programs (Guthrie, 2010; McDonald, 1999; OECD, 2008, 2009). For example, the Productivity Commission (2011) found that data on professional development expenditure was “patchy” (p. 277) and that the sector
lacked an evidence base to inform decision-making about professional development. The report also supported calls from the Victorian TAFE Association and the TAFE Directors Association for the use of metrics to measure and capture “meaningful data” (Productivity Commission, 2011, p. 280) about the effects of professional development, which in turn can be used to inform future planning and implementation. This position is further supported by the findings from a study conducted by the OECD on VET systemic reform projects, which identified the Australian VET sector as having a “weak evaluation culture” (OECD, 2009, p. 52) with no frameworks or feedback loops to help establish evidence informed approaches for the future design and implementation of change initiatives. OECD’s report called for an increased focus on evaluation that is based on evidence and research and also for the establishment of guidelines for measuring efficacy and increasing accountability (OECD, 2009).

The Instructional Intelligence Professional Development Program

In 2005, against the backdrop of increased VET competition, accountability and reform, and amidst competing professional development agendas; the Western Australian Department of Education and Training (WADET) initiated a systemic professional development program for TAFE teachers in the area of instructional intelligence. Instructional intelligence was developed by Bennett (Bennett, 2002 & 2010; Fullan 2002). Working towards a theory of instruction, and drawing on thirty-six years of his own teaching, research and work with teachers, Bennett describes instructional intelligence as the juncture at which the “art” and “science” of instruction meet (2010, p. 68). Instructional intelligence is intended to merge curriculum, assessment, knowledge of how students learn, instructional skills, tactics and strategies and theories of change (Bennett & Rolheiser, 2001). In describing the “science” component of instructional intelligence, Bennett refers to it as the ways in which teachers pay attention to research on the effects of using different instructional methods on student learning by stacking and integrating different methods to create powerful learning environments for students. The “art” of instructional intelligence refers to the creative and individual ways in which each teacher uses different instructional methods to suit different groups of students. By increasing teachers’ instructional repertoire and understanding Bennett argues that “we are more likely to become artful or creative and more
scientific or intentional when differentiating our instruction to meet the diverse needs of students” (2010, p. 69).

Instructional intelligence involves more than teachers simply collecting an extensive assortment of instructional methods in the sense that developing expert practice in the use of any new skill takes time and practice. A central tenet of the instructional intelligence concept is helping teachers better understand and work effectively with educational change and this was reflected in the design and implementation of the Instructional Intelligence Professional Development Program. The program was based on research and theory into educational change (Fullan 2001; Hall & Hord, 2006; Huberman, 1983) and effective staff development (Bennett, 1987, Huberman & Miles, 1984; Joyce & Showers, 1995; Joyce & Weil, 1996) which recognises that change occurs over time and occurs when individuals work in teams, have opportunities to practice and reflect on their progress and receive constructive feedback and coaching.

For Western Australia (WA), the Instructional Intelligence Professional Development Program operated for a period of 4 years, (2005-2008) and was designed to extend the instructional understanding, repertoire and expertise of tertiary vocational teachers. The program signaled a departure from traditional professional development provision in several ways. Firstly, the program ran for an extended period of time – four years. This was in sharp contrast to the more short term, just in time and seed funded initiatives, which researchers suggest have come to characterise Australian VET. The Western Australian Department of Education and Training (WADET) made a commitment to four years of continuous professional development for the same group of TAFE teachers. Secondly, rather than individual teachers attending the professional development program and having to implement changed practice in isolation, participants attended workshops in college-based teams comprising two to four individuals. Workshops were held two or three times a year with each session spanning three consecutive days. At each session, participants engaged with theory and research on a range of instructional innovations. The steps involved in implementing the innovations were modelled and participants practised them and received feedback and coaching on their progress. Participants then considered the process and impact of integrating
innovations across different content domains with different cohorts of students. When they returned to their colleges, teachers were required to trial the instructional methods in their classrooms, reflect on the process and meet in teams to discuss progress and provide support using peer coaching.

This system-wide professional development program was initiated in response to a change in state legislation in 2005 that raised the school leaving age from fifteen to seventeen years of age. In an attempt to widen provision and options for students the VET system was required to provide school students with access to existing courses and develop new ones specifically designed to meet students’ needs. This policy resulted in an increasing number of young students entering an adult learning environment. Anecdotal feedback from teachers and the State School Teacher Union of WA (SSTUWA) was that teachers required new or upgraded instructional and behaviour management skills to successfully engage and manage this new cohort of learners.

Research Aims and Questions

As outlined above the purpose of this study is to examine the effects of the Instructional Intelligence Professional Development Program to better understand the change experiences (both affective and behavioural) of the teachers involved in the program. The research aims and questions are outlined below.

**Research Aim 1 – (The Instructional Intelligence Professional Development Program)**

To better understand the factors that relate to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers.

**Research question 1.** In what ways have teachers changed their instructional practices as a result of the Instructional Intelligence Professional Development Program?

**Research question 2.** What factors facilitate or hinder teachers’ implementation of instructional innovations?
Research Aim 2 – (The emotional experiences of teachers)
To better understand the emotional experiences of teachers involved in a systemic change professional development initiative.

Research question 3. In what ways do teachers’ emotional responses mediate their behaviours when implementing new instructional practices?

Research Aim 3 – (The assessment of teacher professional development programs)
To better understand the usefulness of the Concerns Based Adoption Model (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

Research question 4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector?

Three papers were published as a result of this study, each addressing specific research aims: (a) factors that relate to the uptake of the Instructional Intelligence Professional Development Program; (b) the emotional experiences of teachers involved in the program; and, (c) the usefulness of CBAM as a conceptual lens and methodology. Table 1 outlines the relationship between the study’s research aims, research questions and the individual papers.

Significance of This Research Study
Much has been written about teacher professional development and change. This study, however, is unique and educationally significant for a number of reasons. First, the context for this study differs from that of the majority in teacher professional development and change. The preponderance of the previous research literature is situated within the schools whereas this research is situated within the post-compulsory tertiary education sector. Few empirical studies exist which explore the impact of teacher professional development in the vocational education and training sector and fewer examine the effectiveness of such programs.
| Paper 1 | Saunders, R. (2012). Assessment of professional development for teachers in the vocational education and training sector: An examination of the Concerns Based Adoption Model. *Australian Journal of Education, 56* (2), 182–204. | 1. In what ways have teachers changed their instructional practices as a result of the Instructional Intelligence Professional Development Program?  
4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector? | Research Aims 1 & 3 |
| --- | --- | --- | --- |
3. In what ways do teachers’ emotional responses mediate their behaviours when implementing new instructional practices?  
4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector? | Research Aims 1, 2 & 3 |
2. What factors facilitate or hinder teachers’ implementation of instructional innovations?  
3. In what ways do teachers’ emotional responses mediate their behaviours when implementing new instructional practices?  
4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector? | Research Aims 1, 2 & 3 |

*Note*. The research questions listed in this table align with the research study as a whole. Specific questions in each individual paper are elaborations of the overarching research questions in this study.

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2 From this point forward in the document each paper will be referred to as Paper 1, Paper 2 and Paper 3 as shown in Table 1.
Second, the professional development program that is the vehicle for this study is distinct in several ways: (a) it was designed and implemented using researched based principles; (b) it was systemic in nature; and, (c) it occurred over an extended period of time (4 years). A better understanding of the impact of such programs is needed at a much broader level of system change and professional development. This study seeks to identify systemic issues which influence the uptake of change initiatives and contribute to our understanding of the effects of professional development in systemic reform.

Finally, little is known about the affective dimensions of change, specifically teacher emotions in the context of educational reform. This study provides insight into this largely unexplored area of research. Findings from this study have the potential to: (a) contribute to a better understanding of the systemic factors which support or hinder teachers to enact instructional change; (b) contribute to research on teacher emotions and change in the context of professional development; (c) contribute to the future design and implementation and assessment of professional development informed by research principles.
Chapter 2. Review of the Research Literature

Before exploring each research literature relevant to this study it is necessary to clarify the nature and scope of this chapter. The purpose of this review is to provide a brief overview of the research literatures that have informed this study. This chapter is therefore not designed to provide a comprehensive treatment of each of the relevant literatures. Detailed reviews of the relevant literatures are provided in each individual paper. In order to avoid being overly repetitive or redundant, what is provided here is a broader appraisal of each of the core literatures. The key themes, issues and questions emerging from each of the literature corpuses are discussed and an explanation is provided of how these have informed the theoretical, conceptual and methodological underpinnings of the study as a whole.

This review begins with an examination of the research literature on teacher professional development. What do we know about what works in the design and implementation of teacher professional development programs and what questions still need to be answered? The research literature related to systemic educational change is then examined with a focus on what is known about how complex systems change; this part of the review also considers the ways in which this corpus of knowledge can be used to support the design and implementation of effective teacher professional development. The third part provides a review of the research literature related to teacher emotions and change focusing on the relationships between teachers’ emotions, beliefs, behaviours and professional identities in the context of professional development. Lastly, the review addresses the research literature related to instructional intelligence. This pulls the threads of the three preceding sections together to examine how the research literature on professional development, systemic educational change and teacher emotions together inform the design and implementation of the Instructional Intelligence Professional Development Program.

Each of these literatures is important for understanding the individual teacher’s experiences and the effects of professional development. As depicted in Figure 1, each literature has informed the three core research questions posed in this study, as well as the empirical and conceptual bases for each paper published in this study.
Teacher Professional Development

What do we know about the role of professional development programs in initiating, implementing and sustaining change in teacher practices and beliefs? What conditions are necessary for supporting teachers through the professional change process and how can a better understanding of these issues be used to inform the design and implementation of professional development programs?

Fortunately we have a large and rich research literature from which to draw (small and large scale studies, short and long term, formal and informal, pre and in-service programs, seminars, workshops and on-line programs) to help us answer these questions. But with so many different contexts and models for teacher professional development, assessing program efficacy or success, and drawing valid and reliable causal conclusions about what works and what doesn’t presents challenges (Borko, 2004; Desimone, 2009; Joyce & Calhoun, 2010). Professional development models have different objectives and focus on different aspects of teaching, run for different periods of time and use different pedagogical approaches. Guskey (2009) argues that the “multifaceted nature of educational improvement” (p. 226) presents

Figure 1. Relationships among the research literatures and the research questions in this study.
significant issues for researchers as sustained and methodologically rigorous studies on teacher professional development consume considerable time and money.

Despite the diverse content of the research literature on teacher professional development, however, it is nevertheless widely accepted that it is possible to draw conclusions about the general characteristics of professional development that typically facilitate positive change in teachers’ practices (Borko, 2004; Darling-Hammond & McLaughlin, 2011; Desimone, 2009), and in some instances their beliefs (Avalos, 2011; Guskey, 2009; Joyce & Calhoun, 2010).

Notwithstanding his claim that the research literature on teacher professional development is complex and multifaceted Guskey asserts that it is possible to identify a set of “specific core elements of professional development which contribute to effectiveness” (2009, p. 229). For example, broad agreement exists that effective models of professional development should (i) have clear goals and objectives; (ii) be aligned with teacher and student needs (Desimone, 2009; Garet et al., 2001); (iii) provide opportunities for teachers to engage with the subject matter over an extended period of time (Birman, Desimone, Porter & Garet, 2000; Garet et al., 2001; Ingvarson, Meiers, & Beavis, 2005; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007); (iv) provide teachers with active learning opportunities (Desimone, 2011; Birman et al., 2000; Garet et al., 2001); (v) include opportunities for feedback and reflection; and, (vi) be collaborative in nature (Darling-Hammond & McLaughlin, 2011; Desimone, 2009; Hargreaves, 2012; Ingvarson et al., 2005; Joyce & Showers, 1995; Lieberman & Pointer Mace, 2008).

Furthermore, Guskey (2009) argues that focusing on identifying a set of core elements which can then be used in different settings is useful to teachers, researchers, schools and policy makers as it recognises that “context clearly trumps both content and process” (p. 229). This view is well supported in the literature (Borko, Jacobs & Koellner, 2010; Darling-Hammond & McLaughlin, 2011; Hunzicker, 2011; Garet, et al., 2001; Guskey, 2009; Joyce & Calhoun, 2010). Wayne, Yoon, Zhu, Cronen, & Garet (2008) note that this consensus about the key characteristics of effective teacher professional development “has endured for more than a decade” (p. 470) and the problem rests not in identifying a core set of features which characterise or underpin effective professional development but that there is a lack of specific
and adequate guidance on how to implement these feature across multiple and often disparate contexts. Whereas contextual factors tend to dilute generalisations about effectiveness, acknowledging that professional development is situated within manifold contexts allows researchers to provide guidance on how to adapt core elements within specific contexts. When core elements are applied appropriately to the context, this increases the chances of successful implementation.

Although, therefore, it is possible to identify the conditions which appear necessary for supporting teachers through professional change Borko (2004) argues that much work and many questions remain for researchers concerned about what is needed to provide quality professional development for teachers. Although large lists of the characteristics of effective professional development exist, and are indeed useful, one of the most frequent criticisms of teacher professional development research is that there is little direct empirical evidence on the extent to which these characteristics relate to positive outcomes for teachers and students (Desimone, 2009; Garet et al., 2001 & 2008; Guskey, 2014; King, 2015; Yoon, Duncan, Lee & Shapley, 2008). Earley and Porritt (2014) support this view and state that much of the research and evaluation on teacher professional development is, “impressionistic, anecdotal and focused on simple measures” (p. 112). In the view of many researchers there remains a need, therefore, to design robust and methodologically rigorous studies, which gather valid and reliable evidence about the effects and effectiveness of teacher professional development.

The research literature on teacher professional development then, has informed the current study in several ways. First, it acknowledges that the contexts surrounding and models employed in facilitating teacher change are diverse. This study examines a specific program (Instructional Intelligence Professional Development Program) within the highly changeable context of Australian vocational education and training. Second, the design and implementation of the Instructional Intelligence Professional Development Program was built upon findings from the research literature about key features of effective professional development as reflected in this review. Third, this study seeks to identify the impact of the professional development program in situ, by scrutinising features of program design and
implementation, and the contextual features of the surrounding educational system, which facilitated or hindered teachers’ implementation of change.

**Systemic Educational Change**

It is clear that professional development for teachers does not happen in a vacuum. Teacher professional development programs are frequently the products or levers of reform agendas and in this sense are component mechanisms of broader educational change initiatives. The link between professional development and intended change in the context of educational reform is well established (Avalos, 2011; Datnow & Stringfield, 2000; Darling-Hammond & McLaughlin, 2011; Elmore, 2007; Fullan, 2001; Fullan & Hargreaves, 1992; Hall & Hord, 2006; Hord, Rutherford, Huling & Hall, 2004; Little, 1993; Schmidt & Datnow, 2005). Lieberman and Miller (2001) go so far as to describe professional development as “the linchpin of school reform” (p. vii). Examining the research literature on educational change-specifically change in the context of reform—provides a framework for better understanding the context in which the Instructional Intelligence Professional Development Program was implemented in this study.

Given the size and diverse nature of the educational change research literature Hargreaves and Shirley (2008, 2009, 2012) propose that one way to access this corpus is to map the development of educational change across the 20th and 21st centuries. These authors argue that is it is possible to chart four different ways representing eras of change over the decades, each characterised by the economic, social and cultural conditions of the time. The *First Way* lasted from the end of World War II until the mid-1970s and was characterised by state support for education, a high degree of professional autonomy for teachers and innovation. The *Second Way*, from 1970s onwards occurred during a time of growing economic austerity, a time in which teachers experienced growing restrictions and increased public scrutiny and accountability for their performance. Hargreaves and Shirley have described this era as a time of “intense top-down pressure and little support” (2012, p. 6). The *Third Way* (1990s to the present) was a time where education carried much of the ‘baggage’ of the *Second Way* in the form of increased accountability and standardisation but also saw the development of professional learning communities and networks. In many ways, Hargreaves and Shirley argue
that the *Third Way* has been a time in which there have been attempts to “balance” educational systems, for example between market and state supported systems of education, or between teachers’ professional autonomy and public accountability.

Of course, eras of reform or change do not simply or neatly come to an end and then move into the beginning of the next era. Typically, there has been merging and melding of ideas, policies, attitudes and agendas (i.e., “ways”) over time. Each new generation inevitably inherits and carries with it the legacy (if not the lessons) of the *way* that went before. The *ways* of the past, however, do not necessarily serve us well as we move into a more complex, technologically advanced and connected (globalized) world in which new approaches and ways of conceiving, designing and facilitating educational change (reform) are needed. In response to this Hargreaves and Shirley proposed *The Fourth Way* – their view of one productive way forward (Hargreaves & Shirley, 2012). This *way* is portrayed as a democratic, economically dynamic and socially cohesive space, in which there is shared leadership among teachers, schools and the state. *The Fourth Way* represents a place in which curriculum is designed at the local level by teachers and the community, and data derived from students, parents and the wider community about their needs and achievements are used to inform practice. This vision for the future has many implications for educational and school reform, as countries re-work their traditional *ways* of educational change.

Hargreaves and Shirley’s (2012) work provides a useful framework as it demonstrates that educational change is contextually bound and reform initiatives emerge from political, economic and social milieus. It also reminds us that teachers are asked to implement change within complex and sometimes contradictory systems, which require them to negotiate and renegotiate their personal and professional roles and identities in the face of change. We know little of these individual lived experiences of change and it is these teacher experiences that this study aims to better understand. In this circumstance using systems thinking to conceptualise educational change provides a more authentic and complete picture of the reality of educational reform and provides needed insight into the complexity and interrelated nature of important components within educational systems.
In his comprehensive survey of educational change models, Ellsworth (2000) argues that understanding change as a complex system and understanding the operation of a model’s components “is essential to a complete understanding of how change works” (p. 189). Reigeluth and Garfinkle’s (1994) famous metaphor for systemic change exemplifies this statement. These authors liken systemic change to an architect designing and building a house. Systems design theory provides the essential blueprint for the house yet the architect also needs to show how each component within the system (house) interrelates with and is interdependent on others. Similarly, in recognising that educational change behaves as a complex system, Hoban (2002) suggests that we need to be aware of a number of interconnected layers: (1) system environment; (2) functions, structure and goals of the system; and, (3) processes of the system (what occurs over a period of time). Even the most well considered and planned change processes encounter significant challenges and sometime failure as they meet contextual resistance factors that can disrupt or distort implementation (Ellsworth, 2000).

Further, although acknowledging there is a need to examine and understand change as a system with interrelated parts it is also necessary to recognise that a “system” doesn't change – the people within it do. The individual is the unit of change (Hall & Hord, 2006), and individuals implement change within inherently complex, nonlinear, unpredictable systems (Fullan, 1996). Unique and contextually bound systems therefore demand theories and approaches that help us better understand both the system and the personal, individual lived experiences of change within it. For this research, the work of Fullan (2001) and Hall and Hord (2006) is relevant, as it specifically addresses both the context and process of educational change, and examines both the system as a whole and the individuals within it. Both views recognise that change occurs over time and to increase the likelihood of sustaining change long-term the process needs to be both inclusive and systemic.

**Teacher Emotions and Change**

As noted above, an important aim of this research is to better understand the emotional experiences of teachers as they navigate a systemic change professional development initiative. Much has been written about the process of educational change but there remains a substantial gap in understanding the personal, affective dimension of the experience (Hargreaves, 2000,
Despite a growing acceptance of an integral link between teacher emotions and sustained educational reform, many scholars argue that affective factors are often overlooked in the educational change and professional development literature (Chen, 2016; Nias, 1996; Harris, 2004; Jiang, Sporte & Luppescu, 2015; Lee & Yin, 2010; Sutton & Wheatley, 2003; Zembylas, 2002). Consequently, for examining teacher emotions in the context of educational reform there have been growing calls around the need to develop a coherent framework to improve our understanding of relationships and processes involving teachers’ affect (Sutton & Wheatley 2003; van Veen & Sleegers 2009; van Veen & Lasky 2005; Zembylas, 2005).

As outlined earlier, CBAM provides a conceptual framework and set of measures to assess the behavioural (Levels of Use) and affective (Stages of Concern) dimensions of the change process at the individual level. Although the Stages of Concern Questionnaire is designed to examine feelings and perceptions about educational innovation and change, it is not specifically designed to measure emotions and is therefore limited in terms of providing information about the circumstances, incidents and relationships that contribute to an individual’s emotional experiences over time. What is required is a broader, more comprehensive conceptualisation of teachers’ change-related emotions and how these interplay with the immediate environment (the change context).

Zembylas (2005) believes that teacher emotion is a product of “cultural, social and political relations” (p. 4) and that in order to fully understand emotions an analysis of these relations needs to occur in context. In this study, emotions are viewed as socially constructed, products of consciousness which are lived, felt and articulated, and intrinsically linked to an individual’s interactions with their environment (Averill, 1980; Denzin, 1984; Harre, 1986; Schmidt & Datnow, 2005). This view of teachers’ change-related emotions provides an appropriate lens through which to gain insight into the systems in which teachers implement change and how they emote towards them. In this sense, social constructionism can provide a suitable theoretical framework by which to consider teacher emotions in the context of change. When viewed as social constructions, emotions are individual lived experiences that are understood, mediated and co-constructed by interaction with others and directly linked to the
organisations, cultural and social contexts in which they occur (Denzin 1984; Fineman, 1993; Hargreaves, 2001; Lord & Harvey, 2002).

Professional development brings with it unique emotive experiences for teachers in the sense that it often requires teachers to not only change their practices but also to frequently change or adopt new underlying beliefs (Day & Qing, 2009; Schmidt & Datnow, 2005; Zembylas, 2005). Cross and Hong (2009) argue that teacher beliefs are intimately tied to notions of professional identity and when teachers are asked to change their beliefs about their instructional practice and how they relate to students and colleagues, this process is inevitably accompanied by a range of emotional responses. Schultz, Aultman and Williams-Johnson (2009) note that emotional responses are dependent upon teacher appraisals of change based on whether it is perceived to be in congruence with their own goals, values and beliefs. These appraisals are constructed over time and are embedded in a teacher’s beliefs about education and his/her role as a teacher within the education system and the wider community (Kelchtermans, 2005; Price, 2012; Price & Collet, 2012). Over time this comes to form part of an individual’s internal values and belief system and in turn serves to help construct notions of professional identity. Appraisal theories of emotion (Ellsworth & Scherer, 2003; Lazarus, 1999) suggest that if change is perceived positively, aligning with an individual’s beliefs and values, it is more likely to evoke positive emotions. Conversely, if it is perceived to be in opposition, resistance and negative emotions are likely indicated (Christesen & Turner, 2014). Cross and Hong (2009) argue that the interactions of teachers’ emotions with change efforts has the potential to influence the outcome of the reform effort.

**Instructional Intelligence**

In addition to examining the literature on teacher professional development and educational change at the system and individual levels, consideration also needs to be given to the literature that informs the design and implementation of the Instructional Intelligence Professional Development Program. Although an overview of the program is provided by each published component paper for this thesis, an examination of the research literature that constitutes the foundation for the design and implementation of Instructional Intelligence Professional Development programs helps to make explicit the research informed components
of the program. Although instructional intelligence provides the vehicle for this study, the fundamental principles on which all Instructional Intelligence Professional Development Programs are designed and implemented are integrally linked to what we currently know about theories of instruction, the design and implementation of teacher professional development and educational change. A discussion of how each of the research literatures has informed instructional intelligence and the design and implementation of accompanying professional development programs is provided below.

**Instruction.** Drawing on over thirty-seven years of work as an educator and researcher the concept of Instructional intelligence was developed by Barrie Bennett (Bennett, 2002 & 2010; Fullan, 2002). Instructional intelligence is a conceptual framework for analysing the components of instructional practice. Bennett describes instructional intelligence as the “art” and the “science” of instruction (2010, p. 68). By increasing teachers’ instructional repertoire Bennett argues, “we are more likely to become artful or creative and more scientific or intentional when differentiating our instruction to meet the diverse needs of students” (2010, p. 69).

Instructional intelligence merges six key areas: (1) **curriculum** – what students learn; (2) **knowledge of how students learn** which guides teacher’s instructional decisions; (3) **instruction** - how teachers will teach the content; (4) **assessment** - how teachers and students know if they have learnt the content; (5) **theories of change** – which guide how teachers learn in educational systems; and, (6) **systemic change** - which ensures the instructional change process happens by involving all the key players in the system. Understanding how each of these dimensions works and interrelates is an integral step in developing instructional intelligence.

A key premise of instructional intelligence is that there is “no one right or best way to teach” (Bennett, 2010, p. 66). Instead what exists is an array or combination of endless possibilities throughout a single teaching career in which multiple instructional methods can be stacked and integrated across thousands of teaching moments with thousands of learners. Instructional intelligence encourages teacher agency, choice, wisdom and the development of
expert behaviour (Bennett, 2010) in selecting, stacking and organising methods based on what best meets the needs of individual learners in a given context, in order to create the most powerful learning environments for students.

Crucial to developing this expert behaviour is developing a shared understanding and language about instruction. Citing Jerome Bruner’s argument in *Toward a Theory of Instruction* published in 1966, Bennett argues that almost 50 years on, the teaching profession still lacks a clearly articulated theory of instruction and a deep understanding of how this relates to the classroom. Terms such as, *methods, strategies, techniques* and *tools* are used loosely in education and when asked about the selection and application of different instructional methods teachers more often than not lack a shared language with which to articulate a shared understanding of instruction (Bennett, 2010). Building on Joyce and Weil’s work on *Models of Teaching* (2000) Bennett suggests the first step to becoming instructionally intelligent is the ability to classify the instructional methods we use. Bennett classifies instruction into five categories, (1) *skills* – simple instructional actions to enhance student learning, e.g. framing questions and checking for understanding; (2) *tactics* – simple instructional methods without many steps or phases, for example, Lyman’s Think Pair Share and Kagan’s Inside Outside Circles; (3) *strategies* – instructional methods which have a number of interrelated concepts and often involve a series of steps or stages for example, Buzan’s Mind Mapping and Aronson’s Jigsaw; (4) *concepts* – qualities of effective teaching and learning which are brought to life by teachers through the use of a selection of skills, tactics and organisers, for example, individual accountability and enthusiasm; and, (5) *organisers* – frameworks or bodies of research which act as lenses to inform understanding of how students learn and assist teachers to organise instructional skills, tactics and strategies into a interrelated pedagogical set, these include, Gardner’s Multiple Intelligence Theory and Bloom’s Taxonomy.

Classifying instruction assists teachers to develop a shared language to talk about instruction and it also “allows us [teachers] to become more specific when we communicate, when we plan, when we teach, and when we assess”. (Bennett, 2010, p. 70). As teachers become more specific and deliberate about their instructional practice they are more likely to
demonstrate intelligent or expert behaviour. As teachers refine their ability to select, stack and integrate skills, tactics and strategies they are better placed to recognise their potential impact on student learning. Thus, they become increasingly effective at making wise instructional decisions and creating powerful learning environments for their students.

**Teacher professional development.** There are a number of professional development projects focused on developing instructional intelligence around the world. These projects were initially created to respond to the work of Joyce and Showers (1995) who studied the conditions under which teachers effectively transfer their learning from professional development into their classrooms. Joyce and Showers’ work developed an understanding of the effects of peer coaching and resulted in the Skill Training Model. The model articulates the key components teachers should experience during professional development workshops if effective transfer is to occur. The components include: (1) theory or information; (2) modelling or demonstration; (3) practice and feedback; and, (4) peer coaching and support in the school (Joyce and Showers, 1995). A meta-analysis that estimated the effect sizes associated with different types of training on the transfer of learning (Bennett, 2007) confirmed a key finding of Joyce and Showers’ work: teachers who attended professional development in teams and returned to their schools and supported one another through peer coaching resulted in effective transfer of teacher learning into changed (improved) practice.

These key components are built into the design of each instructional intelligence program. Teachers attend workshops in teams and experience theory and modelling of selected instructional skills, tactics and strategies. To increase fidelity to each instructional method the critical attributes of each method are explicitly taught and modeled by the program consultants; these are then used as checklists of behaviours that need to be present to demonstrate quality or expert practice. Program participants are given the opportunity to practice these during the workshops and plan for their application back in their schools and colleges. The teams then support and coach one another on returning to their schools as they implement the new instructional processes.
The strength of the Skill Training Model is that it clearly outlines the core conditions under which effective transfer of learning is most likely to occur and ensures consistency of learning. It is, however, important to acknowledge that there have been criticisms of training models for teacher professional development which suggest that they are inadequate for the current complex nature of educational reform (Little, 1993; Rhine, 1998), and that the emergence of more transformative models more adequately allow teachers to develop a sense of personal agency in the process (Collinson et al., 2009). The Skill Training Model is also limited to exploring single innovations and does not allow exploration of the integration of multiple instructional processes and does not adequately capture how teacher’s expertise develops over time in complex systems.

**Educational change.** In order to address some of these weaknesses, Bennett applied the additional lens of educational change to explore the development of personal expertise over time, acknowledging that teachers implement instructional change within complex systems. The Concerns Based Adoption Model (CBAM) theory and the Levels of Use (LoU) (Hall & Hord, 2006) dimension are used to explore implementation of instructional innovations. A detailed description and analysis of CBAM can be found in the Methods chapter of this thesis. Here, it is important to acknowledge the role that CBAM has played in informing the design and implementation of instructional intelligence programs more broadly.

CBAM educational change theory reflects the view that change is primarily a process and is implemented by individuals who work within complex systems. In order to ensure individuals are supported as they enact change within complex systems, participants attend instructional intelligence professional development in teams over an extended period of time (in the case of this study, the program duration was four years). CBAM’s LoU also recognises that teachers need time to develop their skills and that as they work towards becoming experts they progress through a series of stages or steps, ranging from Mechanical (novice) to Routine and Refined (expert). These dimensions are then used to guide practice and the LoU accompanying measures (LoU interview protocol) used to assess progress.
The concept of instructional intelligence and corresponding professional development programs are constructed, therefore, on research literatures related to what we know facilitates effective professional development while practically acknowledging how educational systems and teachers change.
Chapter 3. Methodology

The purpose of this chapter is to explain the research design and methods used in this study. Whilst particular methods are discussed in each individual paper this chapter provides an overview of the methods used for the entire study. Detail is provided on the following: research design and rationale, research participants, instrumentation and data collection and analysis. Information related to data collection and analysis is presented in a sequential manner representative of the four phases in which they occurred.

Research Design

The research was designed as a sequential mixed-methods study. The value of mixed method designs in addressing multilayered research questions and contexts has been recognised for some time. Rather than limiting methods according to epistemology, research and evaluation pragmatists are committed to using whatever type of data or method best answer intended research questions (McConney, Rudd, & Ayers, 2002). Pragmatists also believe that the combined use of qualitative and quantitative data strengthen research and evaluation studies by offsetting the limitations and biases of any one method (Greene & Caracelli, 1997; Greene, Caracelli, & Graham, 1989; Mark & Shotland, 1987; Rossman & Wilson, 1985; Tashakkori & Teddlie, 1998; Waysman & Savaya, 1997).

Denzin (1978) and Patton (1990) both identified the combination of quantitative and qualitative methods as fundamental in the process of testing consistency and corroborating findings through the use of different data gathering methods. This view was extended by Johnson and Onwuegbuzie (2004) and Tashakkori and Teddlie (1998) who also explain that using mixed methods approaches can work to address any potential weaknesses that may be inherent in a single method and provide opportunities to test the consistency of research findings. Greene et al., (1989) also argue that mixed methods enable expansion and elaboration, and provide added depth, richness and detail to a study and potentially uncover new insights into participant experiences.
In order, therefore, to explore and better understand the dynamics involved in these complex, multi-dimensional teacher development (change) processes a mixed methods approach informed the design and choice of data collection and methods of analysis. The design incorporated the sequential use of quantitative methods for the identification of meaningful patterns, followed by qualitative methods for gaining insight into more complex experiential phenomena (Greene & Caracelli, 1997). The design comprised four complimentary, sequential phases of data collection and analysis, with each individual phase informing the subsequent phase. Data collection methods comprised the administration of a 35-item questionnaire, in-depth semi-structured interviews, classroom observations and short reflective interviews. Analysis involved the application of descriptive statistics for quantitative data, and narrative and interpretive analysis for qualitative data. Figure 2 outlines these phases.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Data collection</th>
<th>Participant n</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stages of Concern Questionnaire (SoCQ)</td>
<td>27</td>
<td>Descriptive statistics, Interpretive analysis</td>
</tr>
<tr>
<td></td>
<td>Levels of Use Interview (LoU)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>In-depth, Semi-structured, open-ended interviews</td>
<td>8</td>
<td>Narrative analysis</td>
</tr>
<tr>
<td>3</td>
<td>Classroom observations</td>
<td>8</td>
<td>Interpretive analysis</td>
</tr>
<tr>
<td>4</td>
<td>Short semi-structured interviews</td>
<td>8</td>
<td>Interpretive analysis</td>
</tr>
</tbody>
</table>

*Figure 2. Phases of data collection and analysis.*

This research investigated the change processes associated with VET teachers’ experience of a professional development program built around instructional intelligence principles and theory related to educational change. In this sense both Fullan and Hall and Hord’s theories of change provide suitable lenses to examine the educational change process and have informed the design and methodology of this study in several ways. First, the research design allows us to examine change at the individual level through the Levels of Use
Second, in-depth interviews analysed using narrative methods allow us to explore the systemic nature of change and identify key system variables that support or hinder the enactment of change. Third, in-depth individual interviews also provide us with an opportunity to assess the applicability and usefulness of the instructional intelligence program content and the features of the professional development program design, to better understand aspects that supported or hindered the change process. Lastly, classroom observations afford opportunities to corroborate teachers’ reported use of innovations in the classroom, and provide confirmation of change within specific contexts.

**Research Participants**

In Western Australia, ten publicly funded VET colleges—situated in metropolitan, regional and remote locations—offer over 400 full-time courses, leading to nationally and internationally recognised vocational qualifications issued under the Australian Qualifications Framework (AQF). The research participants for this study were recruited from a group of forty VET teachers who worked in the publicly funded system and participated in the Instructional Intelligence Professional Development Program. Twenty-seven teachers of this group of 40 volunteered to take part in the research. The 27 volunteer participants are broadly representative of teachers in the vocational training and education sector in Western Australia, working across diverse content areas including: adult literacy, business studies, graphic art and design, metal, mining, electrical and engineering trades, building and construction and community services.

Participants varied in teaching experience and in the number of years they participated in the Instructional Intelligence Professional Development Program. Research participants comprised 8 males and 19 females and were distributed across the 10 main colleges in metropolitan, regional and remote locations. As detailed in Table 2, participant’s years of teaching experience varied across the group with 2 individuals (7%) having between 1 and 4 years teaching experience, 8 (30%) between 5 and 10 years, 9 (33%) between 11 and 15 years, 2 (7%) between 16 and 20 years and 6 (23%) with over 20 years experience. The majority of teachers within the group were experienced with
70% of the group having 11 years or more teaching experience. Seventeen teachers (63%) were involved in the instructional intelligence professional development for the full 4-year duration of the program. Four teachers had participated for 3 years and 6 had been engaged with the program for 2 years (see Table 2).

Table 2

Participants by Years of Teaching Experience and Years of Instructional Intelligence Professional Development Program Participation

<table>
<thead>
<tr>
<th>Number of years teaching experience</th>
<th>Years of program participation</th>
<th>Male</th>
<th>Female</th>
<th>Metro</th>
<th>Regional</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4 (n = 2; 7.5%)</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5–10 (n = 8; 30%)</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>11–15 (n = 9; 33%)</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16–20 (n = 2; 7.5%)</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
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<tr>
<td>20 or more (n = 6; 22%)</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
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<td>2</td>
<td>1</td>
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</tbody>
</table>

Instrumentation

The Concerns Based Adoption Model (CBAM) is a conceptual framework and set of instruments specifically designed to plan, monitor and assess educational change processes. The model was developed by researchers at the Research and Development Center for Teacher Education (R&DCTE) at the University of Texas at Austin, from 1970 through the mid-1980s. During this time the research and development team focused on trying to better understand change processes in schools and universities from both individual and wider system perspectives. This work identified themes and patterns of behaviour involved in the change process, and led to a set of twelve principles which are thought to characterise effective educational change (Hall & Hord, 2006). The researchers also designed and tested a set of measures intended to assist researchers and agents of change to implement and evaluate change processes more effectively (Hall & Hord, 2006).
Since its initial development, CBAM has been widely used by those researching and implementing educational change initiatives. Based on this extensive development and use, CBAM is recognised throughout North America, Europe and Australia as an empirically grounded and reliable approach to assessing educational change (Anderson, 1997; George, Hall & Stiegelbauer, 2006; Hall, Dirksen & George, 2006; Hall & Hord, 2006).

In addition to outlining a conceptual framework for change, proposing principles for effective change implementation and providing profiles of change agent styles, CBAM is composed of three dimensions. These act as a set of lenses through which to view and understand the change process at the individual level. These dimensions are, 1) Stages of Concern (SoC) which focuses on the affective domain of change or how individuals feel about the process; 2) Levels of Use (LoU) which concentrates on the behavioural aspects of change or the ways in which individuals put new ideas, concepts, understandings, methods, or strategies into practice; and finally, 3) Innovation Configurations (IC) which identify and describe the various forms of an innovation that educators adopt during a change process. Each separate dimension comprises a framework and a corresponding set of instruments specifically designed to measure the implementation of innovations. The Stages of Concern and Levels of Use dimensions were selected for use in this study as they provide specific insight into change at the individual level, in terms of how it is experienced and felt and the extent to which new practices and processes are implemented, and if so, how they are implemented. These lenses allows us better understanding of the change process experienced by those involved in the Instructional Intelligence Professional Development Program, from both affective and behavioural perspectives.

**Stages of Concern (SoC).** The Stages of Concern dimension addresses the affective side of change; it captures an individual’s feelings, preoccupations, and perceptions towards implementing innovations in their education context. SoC is based on the work of Frances Fuller (1969) who theorised that when individuals are faced with implementing a new innovation they experienced a series of concerns which could be
grouped into a number of stages as they progresses. The Stages of Concern model has several assumptions at its core; 1) that change is a developmental process which occurs over time; 2) as individuals progress through this process they experience a range of feelings; 3) although there are seven defined stages of concern grouped into awareness, self, task and impact not all individuals will follow this theoretical progression in that not all individuals move at the same rate or in a linear fashion; and, 4) it is typical for individuals to display a combination of concerns simultaneously (Hall & Hord, 2006; George, Hall & Stiegelbauer, 2006). The seven stages of concern range from the lowest to highest levels, and include; (0) Unconcerned, the teacher indicates little concern about or interest in the innovation; (1) Informational, the teacher indicates a general awareness of the innovation and is interested in learning more; (2) Personal, the teacher is concerned about his/her ability to implement the innovation and uncertain about the personal investment involved; (3) Management concerns arise when the teacher has started to implement the innovation and is focussed on the processes and logistics involved in putting it into practice; (4) Consequence, the teacher is concerned about the impact the change is having on his/her students; (5) Collaboration concerns are highlighted when the teacher is interested in working with others to jointly improve the benefits of use for students; (6) Refocusing, the teacher is making or considering making major modifications to the innovation or replacing it completely. Stages of Concern are detailed in Table 3.

**Reliability and validity of the stages of concern questionnaire (SoCQ).** Hall, Wallace and Dossett (1973) developed the *Stages of Concern Questionnaire (SoCQ)* to be able to quantitatively classify change participants into the 7 different stages of concern. The *SoCQ* comprises 35 Likert scale questions in which respondents are asked how they feel about each statement at the current time. The following scale is used with all items: (0) irrelevant, (1-2) not true of me now, (2-4) somewhat true of me now, and (5-7) very true of me now.

In a two-year longitudinal study on a stratified sample of 830 teachers, Hall et al., (1998) determined that the *Stages of Concern Questionnaire (SoCQ)* accurately measured
Table 3

The Stages of Concern

<table>
<thead>
<tr>
<th>Type of concern</th>
<th>Stages of Concern</th>
<th>Explanation of concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>(6) Refocusing</td>
<td>Making or considering making major modifications to the innovation or replacing it completely</td>
</tr>
<tr>
<td></td>
<td>(5) Collaboration</td>
<td>Interested in working with others to jointly improve the benefits of use for students</td>
</tr>
<tr>
<td></td>
<td>(4) Consequence</td>
<td>Concerned about the impact use is having on students</td>
</tr>
<tr>
<td>Task</td>
<td>(3) Management</td>
<td>Concerned about managing tasks and the logistics related to use</td>
</tr>
<tr>
<td>Self</td>
<td>(2) Personal</td>
<td>Concerned about his/her ability to use the innovation and uncertain about personal investment involved</td>
</tr>
<tr>
<td></td>
<td>(1) Informational</td>
<td>General awareness of the innovation and interested in learning more</td>
</tr>
<tr>
<td>Unrelated</td>
<td>(0) Unconcerned</td>
<td>Little concern or interest in the innovation</td>
</tr>
</tbody>
</table>

Note: Adapted from George, Hall & Stiegelbauer, 2006.

the Stages of Concern. Cronbach-α (internal consistency) coefficients ranged from .64 to .83. Two weeks after the initial survey, 171 individuals from the original group were surveyed again. One hundred and thirty-two teachers responded and the test-retest coefficient ranged from .65 to .86, indicating acceptable to good stability.

Hall, George, and Rutherford (1998) used a number of strategies to determine the validity of SoCQ scores; these included inter-correlation matrices, judgments of concerns based on interview data, confirmation of anticipated group differences and changes over time. Results from these studies indicate that the reliability and validity of the SoCQ fall within the acceptable to good range from making it a useful tool for assessing individual concerns in a change effort.

Levels of Use (LoU). Levels of Use (LoU) addresses the behavioural side of change in that it assesses how individuals act in response to the change effort. Specifically, LoU asks participants whether they are implementing new practices and to
what extent. The Levels of Use dimension is founded on similar assumptions about change as those related to Stages of Concern, in that change is a developmental process which occurs over time.

Eight distinct levels of use have been identified and are grouped into two more general categories, Nonusers and Users (Hall & Hord, 2006). Nonuser categories include: (0) Nonuse – the user has little knowledge or involvement with the innovation; (I) Orientation, the user is acquiring or recently acquired information about use or is exploring the innovation; (II) Preparation, the user is preparing for the his/her first use of the innovation. Users are classified by the following levels: (III) Mechanical Use, the user focuses on short-term use, often on a daily basis, with little or no reflection and is preoccupied with following a step by step approach to mastering the innovation--Hall and Hord (2006) state that use at this level is often disjointed and superficial; (IVA) Routine, the user has stabilised his/her use and makes few if any changes to ongoing implementation--use requires little preparation and little thought given to changing the innovation; (IVB) Refinement, the user varies the use of the innovation to increase the impact on his/her students; (V) Integration, at this point the user is combining his/her efforts to use the innovation with colleagues to increase the collective impact on their students; and, (VI) Renewal, the user re-evaluates his/her use of the innovation and is considering making major modifications or exploring alternatives to the innovation to achieve increased impact on students. Levels of Use are detailed in Table 4.

**Levels of use interview protocols.** Individual levels of use are determined using either the Levels of Use Branching Interview or the Levels of Use Focused Interview. In both protocols an individual’s placement at a LoU is determined by decision points, which distinguish actions or behaviours related to the use of the innovation (Hall & Hord, 2006).

The Levels of Use Branching Interview is a one-legged interview where the interviewer conducts a short and informal interview with the user to gain a broad view of his/her Levels of Use. The interviewer asks a series of questions which prompt ‘yes’ or
‘no’ answers, and these are known as decision points. Each subsequent question asked is contingent on the response to the former and as such follow a branching format. The

Table 4
Levels of Use

<table>
<thead>
<tr>
<th>Category</th>
<th>Levels</th>
<th>Type of Use</th>
<th>Explanation of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Renewal</td>
<td>Re-evaluates use and considers making or makes modifications to use or explores new fields or development to increase impact on students</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>Integration</td>
<td>Combines efforts with colleagues to increase impact of the innovation on their students</td>
<td></td>
</tr>
<tr>
<td>IVB</td>
<td>Refinement</td>
<td>Varies use of innovation to meet specific student or organisational needs and to increase the impact on students</td>
<td></td>
</tr>
<tr>
<td>IVA</td>
<td>Routine</td>
<td>Use has stabilised. Little preparation is required for use and no consideration is given to changing the innovation</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Mechanical</td>
<td>Focuses on short term use with little or no reflection and is preoccupied with following a stepped approach to mastery</td>
<td></td>
</tr>
<tr>
<td><strong>Non Users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Preparation</td>
<td>Preparing for use</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Non User</td>
<td>Little or no knowledge or involvement with the innovation</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Loukes, Newlove & Hall, 1975.

The Levels of Use Focused Interview is a longer and more formal process than the Branching Interview. The interview typically takes between 30-40 minutes and involves the interviewer asking questions based on a set of seven categories that constitute each LoU: knowledge, acquiring information, sharing, assessing, planning, status reporting and performing. The interviewer then constructs a matrix which depicts the behaviours of the interviewee, indicating levels of use. A final assessment on an individual’s overall LoU is
made by considering responses at each of the decision points and by examining the
behaviour matrix holistically.

**Reliability and validity of the levels of use (LOU).** The Levels of Use (LoU) is a
single item survey (Loucks, Newlove, & Hall, 1975). Internal consistency reliability
measures cannot therefore be calculated for data gathered through it. However, test-retest
reliability estimates have been found to generally fall in the range of .84 to .87
(Christensen, Parker, & Knezek, 2005; Hancock, Knezek & Christensen, 2007). A study
carried out by the developers Hall and Loucks (1977) involving 1381 Levels of Use
interviews revealed inter-rater reliabilities ranged from .87 to .96 on the overall Level of
Use, demonstrating good to excellent reliabilities.

Validity of the LoU Interview procedure was established by Hall & Loucks (1977)
in a study using an ethnographic methodology. Forty-five junior high school teachers
were interviewed regarding their use/nonuse of the Intermediate Science Curriculum
Improvement Study (ISCS). From this group, seventeen teachers representing all LoU
levels were selected for ethnographic observation. Ethnographers spent one full day with
each teacher. Using the operational definitions of the Levels of Use of the Innovation as
guidelines, the ethnographers took extensive notes on the in-class and out-of class
behaviours and interactions of the teachers in relation to their science teaching. At the end
of the day, the ethnographers assigned a LoU rating to the teachers and developed a set of
written protocols.

Two major comparisons of the data were made as estimates of the validity of the
LoU Interview: (1) the ethnographer's LoU rating of the teacher was compared with the
consensus LoU interview rating, and (2) the consensus ratings of independent readers of
the protocols were compared with the consensus LoU Interview rating. The correlation
coefficient determined for the first comparison was .98, indicating that, for this sample,
the focused interview rating was consistent with a full day's direct observation of the
teacher's use/nonuse of the innovation of ISCS. The coefficient for the second comparison
was .65.
Data Collection and Analysis

Details regarding data collection and analysis are organised in four phases, which
align with the sequential mixed-method approach taken for this study. In order to explain
how each phase of data collection and analysis informed the subsequent phase detail
regarding collection and analysis are provided together in each phase.

Data Collection--Phase one.

Procedures. An email was sent to all 40 vocational teachers who participated in
the Instructional Intelligence Professional Development Program, inviting them to take
part in this research study. A total of 27 individuals responded. Upon the receipt of signed
Consent Forms the contact details of each research participant was entered into a database.

In order to identify to what extent teachers were implementing new instructional
process in their practice, the initial phase of data gathering involved the administration of
the Stages of Concern Questionnaire (SoCQ) followed by the Levels of Use Focused
Interview. SoCQ data were collected over a period of four weeks and the LoU data were
collected over 4 months. To help ensure consistency in the focus of responses across the
two instruments the teacher participants were asked to select a single innovation which
they had acquired from the instructional intelligence program and respond to the SoCQ
and LoU interview based on their implementation experiences for that innovation only.

Stages of concern questionnaire (SoCQ). The Stages of Concern Questionnaire
(SoCQ) (Appendix 1) was converted into hypertext markup language (html) and placed
on a secure on-line survey tool platform. The survey issued an automated email message
to each participant in the database inviting them to complete the SoCQ. The email
message explained the purpose of the SoCQ, provided instructions on how to complete it
and contained a web address which led directly to the on-line version of the questionnaire.
Once participants entered the on-line SoCQ they were required to generate their own
unique identifying number, enabling individual data to be tracked through this and all
subsequent data collection stages. Completion of the SoCQ took between 10-15 minutes,
and the on-line format allowed participants to undertake it at a time and place most
convenient to them. The survey tool automatically stored and saved data for each individual onto a spreadsheet, allowing for systematic collection and statistical analysis.

**Levels of use focused interviews.** Levels of Use focused interviews were conducted on an individual basis with each of the research participants (Appendix 2). Interviews with participants in the metropolitan and regional colleges were conducted on a face-to-face basis, at times convenient to them at their own college campus locations. Interviews with participants based at remote colleges were conducted via telephone interviews. Each interview took between 30-60 minutes depending upon the nature and types of responses provided. All interviews were audio recorded and field notes were also taken.

The interview was segmented into three phases. The first phase involved the collection of demographic data, the second included what CBAM terms a *Configuration Hunt*, and the third was the administration of the Levels of Use Focused Interview protocol. The collection of demographic data included gathering information on the number of years individuals had participated in the Instructional Intelligence Professional Development Program, number of years teaching, vocational area of teaching, qualifications taught and the age and number of students taught.

The *Configuration Hunt* involved asking three questions designed by the researcher to discover the respondents’ understanding of the innovation that he/she was reporting on and the ways in which he/she was using it with students. This allowed data to be gathered on the ways in which the innovation was being configured by the respondent and also allowed an initial assessment to be made regarding whether he/she met the basic criteria to be classified as a user; regardless of any level which may be assigned later (Hall & Hord, 2006). The Levels of Use Focused Interview was conducted using the prescribed focused interview protocol, described above. All questions were asked in sequential order and branches of questioning were followed in accordance with participant’s responses at key decision points.
Data Analysis—Phase one.

**Stages of concern questionnaire (SoCQ).** Data were taken from the spreadsheets generated by the on-line survey. Individual identifying codes along with their number strings were copied from the spreadsheet and loaded into an Excel program developed by the Southwest Educational Development Laboratory (2006) specifically designed to convert raw SOCQ data to percentiles and individual SOCQ profiles. Individual profiles for each teacher, displaying relative intensities of concern for each stage were generated. These scores were transferred onto a graph, visually representing the peaks and troughs in an individual’s concerns profile and into numeric tables. Data were analysed using peak (highest) score and in order to gain additional insight into the dynamics of concerns a first and second highest score analysis was also conducted. Further, individual data were used to identify sub-groups that held similar concerns. Each sub-group’s profile was interpreted by applying the CBAM descriptions of the relevant stages of concern. An overall group profile was also generated by aggregating all individual raw scores and converting them into percentiles, producing a ‘typical group profile.’

**Levels of use interview (LoU).** Interview data were transcribed from the audio recordings and analysed against the LoU categories. An initial decision was made based on the data collected from the Configuration Hunt as to whether the respondent was a user of the innovation. If these data indicated that the respondent was a user then decision points one and two had been passed in the branching format. Data collected from the remaining questions were analysed by comparing responses to the Levels of Use (LoU) of the Innovation Chart, this chart comprises a rubric which classifies levels of performance across a set of seven categories that constitute each LoU: knowledge, acquiring information, sharing, assessing, planning, status reporting and performing. A matrix depicting the behaviours of each individual was developed, indicating levels of use across the categories. A final assessment on a teacher’s overall LoU was made by considering responses to each of the decision points and by examining the behaviour matrix holistically.
Data were analysed using descriptive statistics to identify relationships between individual LoU and SoC scores and to discover patterns within the overall group profile. Associations between the different LoU and SoC groupings were considered and used to identify cases that could provide rich sources of data, allowing inquiry to focus on the relationships between individuals and the systems in which they work. A total of 8 cases were identified as representative of low, medium and high LoU across a range of SoC. This smaller, purposively selected group progressed through the remaining phases of data collection.

**Data Collection—Phase two.**

*Procedures.* To discover more about the reasons underlying individual SoC and LoU profiles and placements and to gain a deeper insight into teacher participants’ experiences of the professional development program and interactions with the wider system, narrative methods were used in the second phase of data collection. Individual in-depth, semi-structured, open-ended interviews were conducted with each of the 8 participants, each lasting for approximately 60 minutes (Appendix 3). Participants were invited to recount *personal experience stories* (Clandinin & Connelly, 2000) in which they focused on stories they felt described their reactions to implementing instructional change at different points in time. The process was designed to allow participants to speak openly about their experiences; prompts were given by the interviewer when required, to elicit stories about teachers’ experiences of implementation of instructional intelligence in different contexts, with colleagues and students over time.

Connelly and Clandinin (1990) and Riessman (1993) have suggested that encouraging individuals to re-tell personal stories and discuss the meaning of these allows for freedom of expression and in-depth, personal disclosure. Narrative inquiry is used increasingly in educational research as a means to better understand the experiences of teachers by exploring their personal and collective stories (Clandinin & Connelly, 1996, 1998; Connelly & Clandinin, 1987, 1990, 1999; Zembylas, 2003). Stories are privileged in narrative inquiry because they contain information related to how individuals construct and mediate relationships with the people, systems and process that surround them.
Stories also provide insight into individual thoughts and emotions and how these in turn influence behaviour (Clandinin & Connelly, 1998; McAdams, 1993; Rosenwald & Ochberg, 1992; Riessman, 1993).

Clandinin and Connelly’s (2000) three dimensional narrative inquiry space research framework was applied to the narratives. Influenced by Dewey’s writings on the nature of experience, Clandinin and Connelly’s framework “creates a metaphorical three-dimensional narrative inquiry space” (p. 50) through which to view teacher stories. Central to Clandinin and Connelly’s interpretation of Dewey’s work is that individuals can only be understood in relation to the social contexts in which they exist, and the notion of individual experience is created over time – as one experience grows out of another (Clandinin & Connelly, 2000). As the name suggests, the framework comprises three dimensions or lenses: 1) personal and social (interaction) – relating to an individual’s social exchanges and making sense of the self in relation to others; 2) past, present, and future (continuity) – a chronological framework which can be used to view experiences over time; and (3) the notion of place (situation) – relating to an individual’s experiences in different places and contexts.

Applying these different lenses to stories helps disentangle the complex nature of the reality of teacher’s lives and their experiences as they implement instructional change. The 3-dimensional framework also provided a clear structure for examining how teachers felt as they interacted with different groups including students, colleagues, managers and professional development consultants (interaction), the extent to which feelings and behaviours changed over time (continuity) and how these experiences changed depending on the context (situation). Examination of data through the three lenses therefore allowed the identification of any patterns or anomalies which might have occurred.

Data Analysis—Phase two.

Interviews were audio-recorded, then transcribed and remapped through the process of re-storying. This process involved analysing and reconstructing the original stories using Clandinin and Connelly’s three dimensional narrative inquiry space using
the following categories; 1) interaction; 2) continuity; and, 3) situation. Re-storied narratives were then returned to participants to enable them to validate the accuracy of the accounts. Stories were then analysed using a thematic content analysis to identify the following:

i. Teacher emotional responses to change (Research aim 2). In order to identify emotional responses, all of the teacher stories were examined for incidences where teachers referred to their affective responses or where they used single words which indicated an emotional response, such as; happy, excited, nervous, frustrated, angry or I felt. Each of the three dimensional narrative inquiry space categories were then analysed to identify any themes or anomalies contained in the stories. For example, when examining stories about continuity, did the teachers report similar emotions at the beginning of their journey and did these emotions change as the program progressed? When examining stories of interaction what emotions did teachers report when interacting with different people, including students, colleagues, and managers participating with them in the program?

In order to identify if there was a pattern between teacher emotions over a period of time (continuity) the SoCQ constructs were used as an additional lens to examine the concerns teachers experienced at different points of the change journey and to discern patterns in emotional responses linked to these concerns across time. The developmental aspect of the SoC framework suggests that individuals move from self to task to impact concerns as they progressively implement change. Teacher stories were analysed to see what emotional responses they reported at different stages of their journey and to see if these related to self, task or impact concerns. This additional frame provided a means of identifying any patterns in emotional responses linked to different stages of concern at different points in time.

ii. Components of the program which facilitated or hindered implementation (Research aim 1). In order to identify the components of the professional development program that facilitated or hindered teachers’ implementation of instructional
innovations; teacher stories were analysed for incidences where participants spoke of their thoughts and experiences of taking part in the professional development program. Themes included, program duration, structure (modelling, demonstration, practice and feedback), peer coaching relationships and the sharing of resources.

iii. Components of the system that facilitated or hindered implementation (Research aim 1). In order to identify the systemic features (surrounding context) that facilitated or hindered teachers’ implementation of instructional innovations, teacher stories were analysed for themes such as support from departmental staff, managerial support for the program in their institutions, adequate time, resources, funding and managing multiple system requirements in the context of meeting the professional development program requirements and implementing change in practice.

Data Collection and Analysis—Phase three.

Procedures. Data gathered from the remaining phases (three and four) were compared against that of earlier phases to better understand the connections between self-reported data and observed levels of classroom implementation. Direct observation of participants in their classroom contexts allowed data to be collected, which then could be triangulated with self-reported data collected earlier on, the sequential mixed methods design. This phase involved observing the 8 participants in their respective classrooms as they used the innovation reported on in phases one and two of data collection. The observations took place one month after the participants had completed the narrative interviews.

Analysis. Field notes were taken and data recorded against rubric descriptors (Appendix 4) devised for four distinct levels of performance, for each instructional innovation. These consisted of level 0 (No use), level 2 (Mechanical), level 3 (Routine) and level 4 (Refined). Rubric descriptors were based on the critical attributes for each innovation aligned with CBAM levels of use profiles. Each participant was observed and ranked at one of these four levels.
Data Collection and Analysis—Phase four.

**Procedures.** One week after the classroom observations a final semi-structured interview (Appendix 5) was conducted with each of the 8 participants. This provided the teachers with the opportunity to reflect on their practice during the observation and to share feelings about the process and their levels of innovation use on the day.

**Analysis.** Interview data were transcribed and then analysed using thematic narrative analysis. Participants were asked if they felt their implementation of their chosen innovation on the day was ‘typical’ and if their students responded in ways they expected. In addition they were asked if they felt that emotions directly impacted their use during observation and if so, how.

These data, in general, corroborated the LoU data gathered during phase one, indicating that participants had changed their instructional practice as a result of the Instructional Intelligence professional development program.

**Limitations in Design and Analysis**

In order to gain an in-depth understanding of the outcomes of the Instructional Intelligence Professional Development Program and, to gain insights about the research and evaluation of professional development and educational change more generally this study’s design incorporates multiple data collection and analysis methods, involving several phases. It is acknowledged, however, that this study has limitations.

First, data collection was conducted towards (and after) the end of the four-year professional development program and therefore provides a cross-sectional ‘snapshot’ of the study group at a particular point in time. Guskey (2000) argues that professional development evaluation efforts should ideally occur over an extended period of time. He cites instructional change as a particular case in point, with teachers typically not getting “better” results until their second or third year of implementation. This has important implications for this study as the LoU and SoCQ constructs reflect evolving stages of implementation and personal development. Whilst the constructs represent a possible but not necessary progression of
affective and behavioural change, they assume a developmental continuum, on which teachers can be placed and therefore, assumptions about their “progress” made.

Second, this study focuses only on the outcomes of professional development program for teacher participants and not on the potential consequences for the students they taught. Despite anecdotal evidence from teachers regarding the impacts of their use of new instructional methods on student interaction, engagement and academic performance, data were not directly collected from students and it is therefore not possible to corroborate the teacher’s views about student impact across these areas.

Third, it is also acknowledged that the volunteers who participated in this study were motivated and interested to do so and it is not surprising that most are implementing, to varying degrees, aspects of the program. However, it was also the case that variations in levels of use, stages of concern and personal experiences were clearly evident amongst the group; the participants, although volunteers, were not monolithic. Therefore, although it is also acknowledged that participants are interested volunteers, and that the number of participants in this study is modest, generalisations of the findings must be made with caution. The varied experiences of research participants nevertheless provide considerable value in helping us better understand educational change initiatives. Whilst the focus of this study was on VET teachers, their experiences are sufficiently similar to those of teachers working in a variety of educational systems and are therefore likely to be common across contexts and settings.

Finally, the LoU and SoCQ measures rely on self-reported data and the trustworthiness of this could be called into question. In an attempt to address this issue data from classroom observations gathered in the final stage of data collection and analysis were used to corroborate individual LoU placements.

The section, which follows contains a more detailed exploration of the relevant literature and research in relation to the research questions, presented in the form of three published papers.
Chapter 4. The Empirical Research

Paper 1

Assessment of professional development for teachers in the vocational education and training sector: An examination of the Concerns Based Adoption Model.

doi: 10.1177/000494411205600206

The Research aims addressed in this paper

1. To better understand the factors that relate to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers.

3. To better understand the usefulness of the Concerns Based Adoption (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

The Research questions addressed in this paper

1. In what ways have teachers changed their instructional practices as a result of the Instructional Intelligence Professional Development Program?

4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector?
Assessment of professional development for teachers in the vocational education and training sector: An examination of the Concerns Based Adoption Model

Rebecca Saunders
Mundor University

The purpose of this article is to describe the use of the Concerns Based Adoption Model (Hall & Hord, 2006) as a conceptual lens and practical methodology for professional development program assessment in the vocational education and training (VET) sector. In this sequential mixed-methods study, findings from the first two phases (two of five) of data collection and analysis are used as examples to profile the journeys of professional change experienced by 27 VET teachers involved in a four-year systemic-change professional-development initiative designed to extend and refine their pedagogical practice. The examples support the view that a Concerns Based Adoption Model provides an effective framework for better understanding teachers’ professional change in a VET context. The conceptual and practical usefulness of this approach is discussed in terms of its implications for the future design, implementation and assessment of professional development initiatives.

Introduction

Professional development has long been viewed as a capacity-building mechanism for teachers, and is widely accepted by governments and organisations as a means to leverage change (Corcoran, 1995; Corcoran, Shields & Zucker, 1998; Fullan, 2001; Guskey, 2002; Lieberman & Pointer Mace, 2008). What constitutes effective provision is a site of contention (Garet, Porter, Desimone, Birman & Suk Yoon, 2001; Guskey, 2002) and—in the vocational education and training (VET) context discourses surrounding teacher professional development—tends to focus on profiling the competencies required to operate effectively in VET systems negotiating escalating rates of cultural, political, economic and technological change. Amongst the most notable contributors in this debate are Attwell (1997); Cort, Harkonen and Volmari (2004); Dickie and colleagues (2004); Guthrie (2010); Guthrie and Clayton (2010); Harris, Simons and Clayton (2005); Mahlamäki-Kultanen, Susimetsä and Iläsvuori...
While there is some discussion in the literature about the design, implementation and assessment of VET teacher professional development (for example, Australian National Training Authority, 1997; Guthrie, 2010; Guthrie, Perkins & Nguyen, 2006; Locketer, 2005; Wheelahan & Moodie, 2010), the scholarly literature base on empirical assessment and evaluation of programs using validated and reliable measures still remains small (Mahlamaki-Kultanen et al., 2006). Despite this, there is no shortage of reports about professional development activities in VET. Some of the biggest contributors to this body of work are from long-term national professional development programs, such as Reframing the Future, which ran from 1998 to 2008, and the e-learning professional support program called the Australian Flexible Learning Framework (2000–2012). Both programs have received significant funding over the years, supported hundreds of projects and have been viewed as key enablers of supporting professional development and change in VET. But research suggests that there are improvements to be made in the assessment and evaluation of such programs. An evaluation of the Reframing the Future program in 2004 found that reporting and evaluation processes relied heavily on self-report data that ‘focused on project activities, processes and reactions of participants rather than outcomes’ (Caven, 2004, p. 10). Recommendations in the report call for ‘an appropriate measurement system’ (Caven, 2004, p. 10) that includes quantifiable indicators. Evaluations of the Australian Flexible Learning Framework have focused predominantly on the broad uptake and use of e-learning, and a report on systemic change initiatives in Australian VET published by the Organisation for Economic Co-operation and Development (OECD) found that, while impressive, the evaluation mechanisms relied heavily on self-report data from participants, and independent criteria and measures were not used.

In this study, the Concerns Based Adoption Model is described as a conceptual lens and methodology for the assessment of professional development programs. The Concerns Based Adoption Model is not presented here as a panacea for assessing VET professional development but instead its applicability and usefulness for program assessment are described and discussed in relation to a four-year system-wide professional development program for VET teachers in Western Australia. Since its development in the early 1980s, this model has been widely used for measuring and explaining educational change, including that resulting from professional development, and it is arguably one of the more conceptually robust and empirically grounded models for examining change (Anderson, 1997). Drawing initially from the work of Francis Fuller (1969), the Concerns Based Adoption Model was developed by researchers at the University of Texas at Austin in the late 1970s and early 1980s. The model is built on the premise that change is a process, not an event, and as individuals navigate their way through the process they encounter not only a number of affective ‘stages of concern’ but they also progress through different ‘levels of use’ (Hall & Hord, 1987, 2006; Hall & Loucks, 1979; Loucks, Newlove & Hall, 1975).
While the Concerns Based Adoption Model has been used extensively within the US K–12 school environment, to date there has been little application of the model within VET. In this mixed methods study, findings from the first two phases of a larger research project are used to profile the journeys of professional change experienced by 27 VET teachers in Western Australia. These teachers participated in a four-year systemic change professional development initiative designed to extend their instructional practices. While this study is Australian, the usefulness and benefits of the approach are discussed in terms of their implications for the design, implementation and assessment of VET professional development initiatives on a wider scale.

Context

Vocational education and training

VET performs an important function in preparing individuals for work and life in the 21st century. In most OECD countries, VET is charged with helping maintain the competitiveness of industries and national economies (Rauner & Maclean, 2008) and is closely linked to national human capital and workforce development agendas (European Centre for the Development of Vocational Training, 2009, 2010; Loveder, 2005). Maintaining a productive VET system capable of operating within a complex and changing environment therefore depends critically on continuing to develop the knowledge and skills of those at the heart of the system—VET teachers (Attwell, 1997; Cort et al., 2004; Volmari et al., 2009). As VET teachers attempt to come to terms with the growing demands placed on them by governments, industries and learners, it is not surprising that debate has intensified regarding how best to deal with the workforce development needs of this group. There have been a number of studies exploring the diversification of roles and changing work practices of VET teachers. A recent study by the European Centre for the Development of Vocational Training (CEDEFOP) also revealed, ‘serious discrepancies between the training of professionals in VET and their work.’ (Volmari et al., 2009, p. 3). In the current climate these issues give rise to important questions and have significant implications for the nature, design, implementation and assessment of professional development for VET teachers.

Vocational and educational training in Australia

Over the past 10 years Australia has benefited from a booming economy, closely tied to growth in Asia. Economic expansion has occurred at such an unprecedented rate that the country recently found itself under-prepared to meet the challenges of significant skills shortages in defined occupations. In response, state and federal governments implemented a number of policy changes. At the front-line of enacting these reforms are VET teachers, who are being called upon to deliver more skills to more people across diverse markets that are influenced by fluctuations in industry and the economy. These changes demand that VET teachers change their views and approaches to training and develop new skill sets and ways of operating (Cort et al., 2004; Harris et al. 2005; Moynagh & Worsley, 2003).
In an attempt to adopt a more proactive approach to dealing with the impact of global challenges, the ministerial advisory body Skills Australia presented its National Workforce Development Strategy to the Australian government in early 2010. This document outlined a range of strategies designed to sustain national economic growth and increase productivity (Skills Australia, 2010). In recognition of the fundamental role VET and those who work within it have to play in realising this vision, Skills Australia recommended that the government invest $240 million over the next six years to build the capacity of the Australian tertiary education system. The release of Skills for prosperity—a roadmap for vocational education and training (Skills Australia, 2011) further strengthened this position. Outlining major reforms for the sector, including a commitment to invest $1.75 billion over five years in VET, the report highlighted the strategic positioning of the Australian VET sector as a ‘principal instrument’ (Skills Australia, 2011, p. 1) in driving economic and demographic change.

**Professional development for VET teachers**

Professional development provision for VET teachers will undoubtedly play an integral role in facilitating this national change agenda, but the design, implementation and evaluation of such professional development are open for debate. In the Australian VET sector, professional development activities are predominantly designed to meet priority skill needs, often linked to implementing aspects of the national training system and responding to system compliance issues (Schofield & McDonald, 2004). Wheelahan and Moodie (2010, p. 49) found that the majority of programs in VET are ‘event focused’, rolled out as ‘just in time’; they are designed to meet the latest VET policy revision (Guthrie & Clayton, 2010; Harris et al., 2001; Perkins, 1997). Underpinning the design of these programs are assumptions that there is a gap in skills or knowledge, that new information is given, that learning occurs and that change in practice results. Funding models also largely reflect this short-term perspective, providing seed funding that fails to support any long-term systemic embedding of new skills and knowledge (Harris et al., 2001; OECD, 2008, 2009). A significant body of research supports the view that short-term approaches focused on promoting the latest political initiative work against building emergent practices; this is a critical design flaw when attempting to initiate and embed long-term sustainable change (Cort et al., 2004; Dickie et al., 2004; Forewood, Mclean & Butler, 2001; Guthrie, 2010; Guthrie & Clayton, 2010; Harris et al., 2001; Villegas-Reimers, 2003; Wheelahan & Moodie, 2010; Wilson, 2003).

Between 2002 and 2008, $1.5 million per annum was spent in Western Australia on professional development for VET teachers through the Teaching Learning and Assessment Strategy Group program. It was under this program that the professional development program described in this article was funded. A review of these activities in 2006 recommended that they needed to be more strategically positioned, and robust evaluation mechanisms were required to determine the programs’ impact (Perkins, Guthrie & Nguyen, 2006). This view is consistent with other studies, already outlined, that draw attention to the lack of systematic research and assessment of the impact of change and professional development initiatives in
Australian VET and call for greater accountability by increasing the systematic assessment of publicly funded programs (Guthrie, 2010; McDonald, 1999; OECD, 2008, 2009). A recent report on the VET workforce produced by the Productivity Commission (2011) found that data on professional development expenditure was ‘patchy’ (p. 277) and that the sector lacked an evidence base to inform decision-making about professional development. The report also supported calls from the Victorian TAFE Association and the TAFE Directors Association for the use metrics to measure and capture ‘meaningful data’ (Productivity Commission, p. 280) about the effects of professional development, which in turn can be used to inform future planning and implementation. This position is further supported by the findings from a study conducted by the OECD on VET systemic reform projects, which identified the Australian VET sector as having a ‘weak evaluation culture’ (OECD, 2009, p. 52) with no frameworks or feedback loops to help establish evidence-informed approaches for the future design and implementation change initiatives. The report called for an increased focus on evaluation that is based on evidence and research and also for the establishment of guidelines for measuring efficacy and increasing accountability (OECD, 2009).

**Educational change and professional development**

There is a substantial body of research on educational change and its relationship to teachers' professional development (Fullan, 2001; Fullan & Hargreaves, 1992; Hall & Loucks, 1979; Hord, Rutherford, Huling & Hall, 2004; Huberman, 1983; Huberman & Miles, 1984; Joyce & Showers, 1995; Joyce & Weil, 1996). The role of professional development as a mechanism for supporting the implementation of change is widely accepted and a summary of research reports into professional development by the Australian National Training Authority (1997) identified it as a key enabler of supporting the change process in the VET sector. Although theories of change often underpin the design and implementation of models of professional development, like that of the Instructional Intelligence program, often too little attention is paid to the research and to what constitutes effective professional development (Bennett & Rolheiser, 2006; Fullan, 2001). But the research corpus is clear and broadly agrees on several features of change:

- change is a process, not an event
- change is made by individuals first, then by organisations
- change is a personal experience and evokes emotional and behavioural responses based on individual thoughts and feelings
- change takes time.

In addition Fullan (2001) has identified three dimensions to change:

- possible use of new or revised materials—this can include curriculum materials and instructional resources
- possible use of new teaching approaches, strategies or methodologies
- possible change in beliefs—challenging the existing assumptions or theories that underlie programs or policies.
More often than not a change initiative is concerned with all three of Fullan's dimensions, as each is intrinsically linked in teaching and learning practice. An understanding of the developmental nature of change is vital when implementing professional development and designing models for it, as the models need to embody strategies that acknowledge that change is a process that occurs over time. Fullan (2001) identified three broad phases of this process:

- Phase I—initiation (the process leading up to and the decision to proceed with change)
- Phase II—implementation (putting into practice new ideas and practices)
- Phase III—continuation (sustaining the program and its effects after implementation)

Depending upon their level of involvement, individuals may not experience all stages of the process and often will not be at the same stage in the process as their colleagues. Time phases are not clearly demarcated and are often re-negotiated; moderately complex change can take approximately three to four years to complete and significant change can take up to 10 years. So what robust and reliable evaluation methods that acknowledge change as a dynamic and complex process can inform our conceptual understanding, how can we use them and of what value are they to us?

The purpose of this article is to examine the usefulness of the Concerns Based Adoption Model in the context of state systemic reform in the Australian VET sector. Specifically, the following questions related to professional development provision for VET teachers are explored:

- What information does a Concerns Based Adoption Model provide? How does this facilitate a better understanding of VET teachers’ responses to professional development initiatives requiring substantial change in instructional thinking and practice?
- In what ways can the Concerns Based Adoption Model be used for professional development program assessment in the Australian VET sector?

There are numerous models and approaches to planned change (Cummings & Worley, 2008; Fullan, 2001; Kotter, 1996; Senge, 1990) and a growing body of literature in VET that also speaks to ‘bottom up’ or localised change in the form of innovation (Figgis, 2009; Figgis & Hillier, 2009; Smith, Courvisanos, Tuck & McEachern, 2012). Similarly, there are many approaches to evaluating or assessing the impact of change initiatives for example, Kirkpatrick’s levels of learning evaluation model (Kirkpatrick & Kirkpatrick, 2006) and Unger and Rutter’s (1997) strategic training evaluation model have both received attention and application within the VET context. While these models and approaches are valuable, the Concerns Based Adoption Model is the specific focus of this article for a number of reasons:

- it is specifically designed to measure the impact of reform programs or initiatives for educators (Hall & Hord, 1987, 2006; Hall & Loucks, 1979; Loucks, Newlove & Hall, 1975). Based on systemic change theory, it recognises educational change
is multifaceted and involves the complex and dynamic interplay between people, organisations, systems and processes.

- it comprises a researched conceptual framework for change, proposes principles for effective change implementation and profiles the styles of change agents. The model is composed of three dimensions that act as lenses through which to view the change process and these potentially afford insight into how change is experienced and mediated at individual and group levels. The three dimensions are 'stages of concern', which relates to the affective experience of change, 'levels of use', which focuses on the behavioural dimension, and 'innovation configurations', which is used to profile the different ways in which the change process should be implemented.

- each dimension of the framework has a corresponding set of methods specifically designed to measure individuals' feelings, perceptions and behaviour in response to change initiatives, including professional development.

Not only does the Concerns Based Adoption Model provide a framework for guiding the design, construction and implementation of professional development programs across a diverse range of educational and training systems and settings, it also provides a set of researched valid and reliable measures that can be used to assess the impact of change initiatives (Hall & Hord, 2006; Hord et al., 2004).

**Method**

**The Instructional Intelligence professional development program**

The professional development program that provided the vehicle for this study is known as Instructional Intelligence (Bennett, 2002, 2010). The program was initiated in response to a change in West Australian state legislation that permitted senior secondary school students (15–17 years old) to enter the VET system; it aimed to support VET teachers to engage this cohort by extending their instructional repertoire and ran for four years (2005–2008).

The model of professional development used to implement the Instructional Intelligence program was based on research into educational change and staff development, recognising that change can take time and that effective staff development occurs when individuals work in teams, have opportunities to practise, reflect on progress and receive constructive feedback and coaching (Fullan, 2001; Joyce & Showers, 1995; Showers, Joyce & Bennett, 1987). All program participants were volunteers and attended workshops in teams of between two and four. Workshops were held twice a year; each workshop session ran for three days. At each session the program consultant modelled a selected range of instructional innovations, and participants considered the theory and research that supported the use of these innovations. For example, participants learnt how to use graphic organisers such as concept maps, Venn diagrams and mind maps to present content and assess student work. They considered the potential impact and process of integrating innovations across different content domains and with different cohorts.
of students. Participants returned to their colleges to integrate the new instructional methods into their practice and reflected on their progress at regular team meetings.

**Research participants**

In Western Australia, there are 11 publicly funded VET colleges, comprising 50 campuses situated in metropolitan, regional and remote locations. They offer over 400 full-time courses that lead to nationally and internationally recognised vocational qualifications issued under the Australian Qualifications Framework. All research participants in this study worked in the public VET system in Western Australia and were recruited from the group of 35 VET teachers in the Instructional Intelligence professional development program. A total of 27 teachers volunteered to take part in this research. This group is broadly representative of VET teachers in Western Australia, working across diverse content and vocational areas including: adult literacy; business studies; graphic design; metal, mining and engineering trades; building and construction; and community services.

Research participants comprised 8 male and 19 female teachers and were distributed across the 11 college campuses in metropolitan, regional and remote locations (see Table 1). Fourteen participants were from regional colleges, four were from remote locations and nine were from metropolitan colleges. Given there are four metropolitan and seven regional and remote colleges within the West Australian public system, the sample is approximately evenly spread across the geographical distribution of colleges.

**Table 1 Participants by years of teaching experience and years of program participation**

<table>
<thead>
<tr>
<th>Teaching experience (years)</th>
<th>Number of years of Instructional Intelligence program participation</th>
<th>Male</th>
<th>Female</th>
<th>Metro</th>
<th>Regional</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4 (n = 2; 7.5%)</td>
<td></td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>5–10 (n = 8; 30%)</td>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11–15 (n = 9; 33%)</td>
<td></td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>16–20 (n = 2; 7.5%)</td>
<td></td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 or more (n = 6; 22%)</td>
<td></td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Participants varied in their teaching experience and the number of years they had participated in the program. The majority of the sample could be described as experienced, with 17 having 11 years or more teaching experience; six of this number had been teaching for more than 20 years. Out of the remaining 10 participants, two had been teaching for between one and four years and eight for between five and ten years. Seventeen out of the 27 had participated in all four years of the program, four for three years and six for two years. (Relationships between the amount of time participants had been involved in the program and their Concerns Based Adoption Model profiles are discussed later.)

The Concerns Based Adoption Model

As noted previously, the Concerns Based Adoption Model comprises three dimensions that act as lenses through which to understand the change process and gain insight into how change is experienced by individuals and groups:

- stages of concern, which focuses on the affective domain (how individuals feel about the process)
- levels of use, which assesses the behavioural aspects of change (ways in which individuals put professional learning into practice)
- innovation configurations, which describe the various forms of an innovation that educators adopt during implementation.

For this study, the Concerns Based Adoption Model provided an appropriate model to conceptualise and assess the impact of a systemic change. For this study, the 'stages of concern' and 'levels of use' dimensions were used as they provide insights into change at the individual level: how it is experienced and felt, and the extent to which new practices and processes are implemented.

The stages of concern dimension captures individuals’ feelings, preoccupations and perceptions towards implementing change in their context. There are several assumptions:

- change is a developmental process that occurs over time
- as individuals progress through change they experience a range of feelings
- although there are seven defined stages of concern grouped into self, task and impact not all individuals follow this progression at the same rate or in a linear fashion
- it is typical for individuals to display a combination of concerns simultaneously (George, Hall and Stiegelbauer, 2006; Hall & Hord, 2006).

The seven stages of concern are detailed in Table 2.

The Stages of Concern Questionnaire quantifies these seven different stages of concern. The instrument comprises 35 Likert scale questions in which respondents are asked how they feel about the professional change that they are experiencing. The following scale is used with all items: (0) irrelevant, (1–2) not true of me now, (2–4) somewhat true of me now and (5–7) very true of me now. Hall, George & Rutherford (1979) determined that the Stages of Concern Questionnaire has good reliability, with Cronbach-α (internal consistency) coefficients ranging
Table 2 The stages of concern in the Concerns Based Adoption Model

<table>
<thead>
<tr>
<th>Type of Concern</th>
<th>Stages of concern</th>
<th>Explanation of concern</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impact</strong></td>
<td>(6) Refocusing</td>
<td>Making or considering making major modifications to the innovation or replacing it completely</td>
</tr>
<tr>
<td></td>
<td>(5) Collaboration</td>
<td>Interested in working with others to jointly improve the benefits of use for students</td>
</tr>
<tr>
<td></td>
<td>(4) Consequence</td>
<td>Concerned about the impact use is having on students</td>
</tr>
<tr>
<td><strong>Task</strong></td>
<td>(3) Management</td>
<td>Concerned about managing tasks and the logistics related to use</td>
</tr>
<tr>
<td><strong>Self</strong></td>
<td>(2) Personal</td>
<td>Concerned about his/her ability to use the innovation and uncertain about personal investment involved</td>
</tr>
<tr>
<td></td>
<td>(1) Informational</td>
<td>General awareness of the innovation and interested in learning more</td>
</tr>
<tr>
<td><strong>Unrelated</strong></td>
<td>(0) Unconcerned</td>
<td>Little concern or interest in the innovation</td>
</tr>
</tbody>
</table>

Source: George, Hall & Stiegelbauer, 2006

from 0.64 to 0.83, and the test–retest (Pearson–r) coefficients ranging from 0.65 to 0.86 (Hall & Hord, 2006). Hall, George and Rutherford (1998) used a number of approaches to determine the validity of Stages of Concern Questionnaire scores including inter-correlation matrices, judgements of concerns based on interview data and confirmation of anticipated group differences and changes over time. The results of these studies indicate that the reliability and validity of the questionnaire are within acceptable ranges for assessing individual concerns within professional change initiatives.

The levels of use dimension of the Concerns Based Adoption Model considers the behavioural aspect of change; specifically, to the extent to which individuals are implementing new practices. This dimension is founded on assumptions similar to those of the stages of concern: that change is a developmental process, that individuals move through defined levels of use and that they are unlikely to all move at the same rate or in a linear fashion (Hall, Dirksen & George, 2006; Hall & Hord, 2006). Levels of use are detailed in Table 3.

Individual levels of use can be determined using either the Levels of Use Branching Interview or the Levels of Use Focused Interview. For both protocols, an individual’s placement at a level of use is determined by decision points (Hall & Hord, 2006). For the branching interview the interviewer conducts a short, informal interview to gain a broad view of an individual’s level of use. The focused interview is a longer, more formal process and was selected for this study because it affords deeper probing into the implementation of the innovation. This interview takes 30 to 40 minutes and involves asking questions based on a set of seven categories that constitute each level of use: knowledge, acquiring information, sharing, assessing, planning, status reporting and performing. A matrix is constructed
Table 3 Levels of use

<table>
<thead>
<tr>
<th>Category</th>
<th>Levels</th>
<th>Type of Use</th>
<th>Explanation of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td>VI</td>
<td>Renewal</td>
<td>Re-evaluates use and considers making or makes modifications to use or explores new fields or development to increase impact on students</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>Integration</td>
<td>Combines efforts with colleagues to increase impact of the innovation on their students</td>
</tr>
<tr>
<td></td>
<td>IVB</td>
<td>Refinement</td>
<td>Varies use of innovation to meet specific student or organisational needs and to increase the impact on students</td>
</tr>
<tr>
<td></td>
<td>IVA</td>
<td>Routine</td>
<td>Use has stabilised; little preparation is required for use and no consideration is given to changing the innovation</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>Mechanical</td>
<td>Focuses on short-term use with little or no reflection and is preoccupied with following a stepped approach to mastery</td>
</tr>
<tr>
<td>Non-users</td>
<td>II</td>
<td>Preparation</td>
<td>Preparing for use</td>
</tr>
<tr>
<td></td>
<td>I</td>
<td>Orientation</td>
<td>Acquiring or has recently acquired information about the innovation</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Non User</td>
<td>Little or no knowledge or involvement with the innovation</td>
</tr>
</tbody>
</table>

Source: Loucks, Newlove & Hall, 1975

The level of use is considered a single item survey (Loucks et al., 1975) and therefore internal consistency measures are not appropriate. But test–retest reliability estimates have been found to fall in the range of 0.84 to 0.87 (Hancock, Knezek & Christensen, 2007). Additionally, a study by Hall & Loucks (1977) involving 1381 levels of use interviews revealed inter-rater reliabilities ranging from 0.87 to 0.96 demonstrating good to excellent consistency among raters. Some evidence for the validity of the levels of use was provided by Hall & Loucks (1977) in a study involving 45 teachers. Comparisons were made between ethnographic data gathered by researchers observing teachers in the field and the ratings assigned by the levels of use protocol. Correlation coefficients ranged from 0.65 to 0.98.
Data collection and analysis

For the current study, data were collected in two stages: administration of the Stages of Concern Questionnaire followed by the levels of use focused interview. To help ensure consistency in the focus of responses across the two instruments, participants were asked to choose a single innovation that they had acquired from the Instructional Intelligence professional development initiative, and to base their responses on their implementation experiences for that innovation only. The questionnaire was administered using a secure online survey platform that saved responses to a spreadsheet. The levels of use interviews were conducted by the author on a one-on-one basis with each research participant. All interviews were audio recorded and field notes were also taken.

For each participant, individual profiles were generated from the questionnaire data that displayed relative intensities of concern for each stage. Data generated by the questionnaire can be analysed in two ways. The more common method of analysis is the ‘peak stage concern’. This involves identifying the peak concerns of individuals and interpreting them in relation to the model’s user profile descriptors. The second involves analysing the ‘first- and second-highest stages’ of concern in combination. Examining both highest and second-highest concerns provides additional insight into the dynamics of concerns and reveals general developmental patterns for both groups and individuals. For this study, both peak and combination of highest and second-highest stages of concern analysis were conducted. The data were also analysed to identify subgroups who had similar concerns. An overall group profile was generated by averaging all of the raw scores and converting them into percentiles, producing a ‘typical group profile’. Interview data were transcribed and analysed against the levels of use categories. An assessment on an individual’s overall level of use was made by considering responses to each of the decision points and by classifying behaviour holistically using the levels of use matrix. Finally, data were analysed to identify relationships between levels of use and stages of concern profiles, and also to identify relationships to the overall group profile.

Findings

Stages of concern profiles: Peak-stage concern group results

Analysis of the questionnaire findings for the study group revealed that the peak stage of concern was Stage 5—collaboration. These scores are shown in Table 4. Stage 5 concerns are ‘impact’ concerns (Hall & Hord, 2006) and relate to the impact the use of the innovation is having on those around the user and on the wider system.

Table 4 Frequencies and percentages for highest stages of concern for the study group

<table>
<thead>
<tr>
<th>Highest stage of concern</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals (n)</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Individuals (%)</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>7</td>
<td>0</td>
<td>74</td>
<td>4</td>
</tr>
</tbody>
</table>
Group characteristics were defined using the Concerns Based Adoption Model user-profile descriptions as elaborated below.

**Stage 5—collaboration concerns** Twenty individuals or 74% of the group had peak Stage 5 concerns indicating that the majority of the group is concerned about collaborating with others in their use of the innovation. Hall & Hord (2006) suggested that collaboration concerns are ‘very rare in any organisation, including schools’ (p. 150) and when this occurs, ‘something very special’ (p. 137) has been done to manage and support the process. Concerns Based Adoption Model literature (Hall & Hord, 2006) states that if an innovation is appropriate and the change process, including professional development, is facilitated wisely, then implementers will move from self concerns (information and personal) to task (management) concerns within three years. At three to five years, they will progress to impact concerns (consequence, collaboration and refocusing). This developmental process is in line with the work of Fullan (2001), who suggested that once a decision has been taken to adopt or proceed with change (Phase I—initiation), the next stage (Phase II—implementation) or initial use usually takes two to three years (Concerns Based Adoption Model self and task concerns) and involves early attempts at putting the initiative into action. The transition to the final Phase III (institutionalisation—the model’s impact concerns) refers to the change being built into the system and becoming part of routine working practice. Fullan (2001) suggested that the time taken to move from initiation to institutionalisation takes between three and five years with reasonably complex initiatives and five to 10 years for large-scale efforts. For the majority of this group to have developed to collaboration ‘means that change has truly been treated as a process, that the innovation has been given sufficient time to be implemented’ (Hall & Hord, 2006, p. 150).

With regard to the amount of time individuals had participated in the professional development program, 12 individuals had taken part in all four years, 3 had been involved for three years and five had participated for two years. For three-quarters of the group (15) to be displaying impact concerns after three to four years of participation indicates that the program has been successfully implemented and participants were using different instructional innovations in their practice. For the remaining 5 participants to be at this level after only two years of participation in the program is significant and further research is need to establish what factors facilitated their rapid transition to this level.

**Stages of concern profiles: Highest and second-highest concerns group results**

As depicted in Table 5, a matrix was developed which cross-tabulated each individual’s highest and second highest stage of concern.

Results for the questionnaire revealed that 74% of the group were concerned with collaborating with others about a range of issues. Further analysis (also examining the second-highest stage) indicates that the reasons individuals want to collaborate are varied and range across the full spectrum of concerns, from collaborating about any issue regarding use (Stage 0); gaining more information
Table 5  Distribution of second-highest stage of concern in relation to the study group’s highest stage of concern

<table>
<thead>
<tr>
<th>Highest stage of concern</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Unconcerned</td>
<td>—</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 Informational</td>
<td>0</td>
<td>—</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 Personal</td>
<td>0</td>
<td>2</td>
<td>—</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>3 Management</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>4 Consequence</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5 Collaboration</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>—</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>6 Refocussing</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>1</td>
</tr>
</tbody>
</table>

27

about the use of innovations (Stage 1); managing time and resources (Stage 2); considering the impact use has on students (Stage 4); to changing the way the innovation is used (Stage 6).

Analysis of subgroups

Analysis of subgroups using the questionnaire profiles reveals some interesting findings. A selection of illustrative cases is discussed below.

Highest stage of concern Stage 2 (personal) and second-highest stage of concern Stage 1 (information): two individuals These individuals have intense personal concerns, are uncertain about the innovation and are analysing their relationship towards use. When combined with Stage 1, this profile indicates that they are seeking more information about use. George and colleagues (2006) stated that this profile is indicative of early users who require more information and need to resolve personal concerns related to their status within the organisation. This profile is also known as a negative one-two split (George et. al., 2006). When Stage 2 concerns override Stage 1, individuals may have various degrees of self-doubt and resistance to use of the innovation use, suggesting that the person is preoccupied with the innovation’s effect on their personal position or job security. These concerns are often so powerful that they overwhelm any desire to learn more and the individual is unable to deal with the innovation objectively until these concerns have been reduced. Both individuals had participated in the program for the full four years with one ranked at IVA Routine use and the other, IVB Refined use, so they are clearly implementing innovations. For them to have this stages of concern profile after this length of time is uncommon, and the reasons are not clear. Concerns Based Adoption Model authors suggest an appropriate intervention strategy would be to discuss the issues in a generalised and non-threatening manner; this support often helps alleviate intense personal concerns and produces a more positive disposition to implementation.
Highest stage of concern Stage 2 (personal) and second highest stage of concern Stage 5 (collaboration): two individuals These individuals have intense personal concerns and uncertainties about the innovation and are analysing their relationship towards the status and rewards of using the innovation within their organisation. As mentioned above, this profile is indicative of early users, and, combined with Stage 5, indicates that users would like to collaborate with others regarding these issues. Stage 2 concerns indicate uncertainty regarding implementation and additional research would be needed to discover the reasons for this. Neither participant had taken part in the full four years of the professional development program; one had participated for two years, the other for three years. Examination of the levels of use interview data revealed that both participants were both ranked at IVA Routine use but one had recently moved to a new position and was currently re-negotiating her role, something that could explain the profile. There was no indication of any change to the second individual’s role or status, indicating a need to gather additional data to explain the result.

Highest stage of concern Stage 3 (management) and second highest stage of concern Stage 5 (collaboration): two individuals High Stage 3 (management) concerns indicate that these individuals are experiencing difficulty implementing the innovation and are preoccupied with task-related issues, such as organising their time and the resources related to implementation. When combined with the second-highest concern Stage 5 (collaboration), this suggests they would be interested in working with others to discuss their concerns and possibly obtain assistance. Both individuals had participated in the full four years of the program and additional information would be required to establish what specific task concerns these individuals are experiencing.

Highest stage of concern Stage 6 (refocusing) and second-highest stage of concern Stage 2 (personal): one individual This individual had participated in all four years of the program and is focused on exploring new ways of using the innovation or has ideas about improvements, including the possibility of making major changes to it or replacing it. Hord and colleagues (2004) issued a word of caution regarding this profile, as it could indicate the person may be considering a return to old practices and, unless something changes, may abandon use of the innovation. George and colleagues (2006, p. 54) stated that when a Stage 6 profile ‘tails up’ it can represent a negative attitude towards the innovation or may suggest non-use. Combined with high Stage 2 concerns, the profile becomes even more intriguing. Personal concerns are typical of non-users and indicate intense concerns, often pointing to an uneasiness regarding use. Analysis of the levels of use data revealed this individual was indeed a user but the profile certainly warrants further investigation to establish the issues that contributed to it.

Levels of use

Findings revealed that all the teachers involved in this study were implementing the innovations in their practice as a result of the Instructional Intelligence professional development program. Three distinct groups were identified in the sample (Table 4).
Group characteristics were defined using the Concerns Based Adoption Model user profile descriptions and are elaborated in Table 6.

<table>
<thead>
<tr>
<th>Table 6 Levels of use amongst the group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of use</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Individuals</td>
</tr>
<tr>
<td>(n)</td>
</tr>
<tr>
<td>Individuals</td>
</tr>
<tr>
<td>(%)</td>
</tr>
</tbody>
</table>

Level of use IVA—routine: 11 individuals (41%) Hall & Hord (2006, p. 13) stated that a 'lack of change' in the way an individual is using an innovation is the key to identifying a routine user. Having mastered use, routine users establish a regular pattern of working with the innovation and have no plans to adapt or change. While placement at this level provides information about an individual’s type of use, it is not clear if he or she has changed their use over the four-year program period or if they have made a recent change and are waiting to see the effects. The relationship between the number of years individuals have participated in the program and their placement in this category provides additional information about an individual’s progress through the levels of use and the implementation of the professional development program. Five individuals in this group had participated in the program for 4 years, two for 3 years and four for 2 years. These findings suggest that it is possible for individuals to become routine users of an innovation within two years; Hall and Hord (2006, p. 172) suggested that to move to this higher level of use such individuals need to ‘have had appropriate facilitative assistance and time’ and it is indicative of the change initiative being implemented appropriately. But additional investigations are required to establish the different characteristics of use and the length of time established patterns have been operating.

Level of use IVB—refinement: 14 individuals (52%) This group is actively involved in planning or making amendments to the way they use the innovation to improve student outcomes. To be placed at this level, individuals must have changed within the past three months, be planning a change or be in the process of changing or evaluating use. Hord and colleagues (2004) stated that these individuals make excellent models for other users (including those who may be struggling) and should be encouraged to share their ideas and demonstrate their use of the innovation. A key way to support this group is to provide opportunities for collaboration with others using the same innovation, to foster new ideas and reinforce use. This information is particularly valuable when read in conjunction with the questionnaire data, which revealed the majority of the group were placed at Stage 5 (collaboration). Most of the group do indeed wish to collaborate; providing opportunities for them to work together would be an appropriate support strategy at this point in time. The majority of this group (10 individuals)
had participated in the program for four years, two for three years and two for two years. These findings demonstrate that is it is possible for individuals to reach higher levels of use after two years of program participation, although the proportion in this category is smaller than the number in ‘routine’ use. Hall and Hord (2006) stated that there is a correspondence between levels of use and stages of concern, in that a non-user is likely to have more intense self concerns and it would be reasonable to assume that an individual with higher levels of use will have impact concerns. But they caution against making assumptions and stress that, despite the attractiveness of such a relationship, there is no research to support a correlation and it oversimplifies the complex dynamics of change. Additional information is required here to establish individual issues.

**Level of use V—integration: two individuals (7%)** Both the individuals in this group had participated in the program for the full four years. Placement in this group indicates that they have moved beyond personal use to work with others to coordinate their efforts for the purpose of improving student outcomes. Any changes being made do not relate to merely disseminating information about an innovation but instead focus on increasing the impact on students and must benefit the students of all collaborators. Movement to the higher levels of use is not always possible or suitable for all individuals and Hord and colleagues (2004) affirmed that individuals within this group are in a unique position to be able to influence the change effort and support others on their change journeys. In this sense this group require ‘special consideration’ (Hord et al., p. 68). Once more, the provision of structured collaborative activities for this group and their colleagues would be appropriate.

**Discussion**

The aim of this article is to describe and examine the use of the Concerns Based Adoption Model as a framework for the assessment of professional development initiatives in the VET sector using examples from the recent implementation of the Instructional Intelligence program in Western Australia. These examples illustrate the use of the model and its potential for strengthening the evaluation and assessment of professional development initiatives in the Australian VET sector. Specifically, these examples illustrate the use of the model as a means of answering questions such as how individuals respond to professional change initiatives and what support mechanisms best suit their needs at different stages of the change process. This information can be used to adjust the support provided in the current program, as well as to inform the design of future models of professional development that meet the needs of individual VET teachers operating in dynamic systems.

In this study, the use of the model (the Stages of Concern Questionnaire and the Levels of Use Focused Interview) provides insight into how change has been experienced as a result of the Instructional Intelligence professional development program and to what degree changed practice has been implemented by individuals. The example findings indicate that teacher participants in the professional development initiative are implementing instructional innovations in their practice.
at routine, refined and integrated levels of use: learning has been transferred into practice. Results for the stages of concern also reveal that 74% of the group are concerned with collaborating on issues ranging from gaining more information about use and managing time and resources to further investigating the impact that innovations have on their students’ learning. These types of findings are particularly helpful in assessing the progress of change as a result of professional development. In addition, and arguably more importantly in a systemic approach to professional development, knowledge of concerns and levels of use can usefully inform the design and provision of ongoing support or intervention strategies targeted to meet the specific needs of both individuals and the overall group (Hall & Hord, 2006; Hall & Loucks, 1979). For example, the findings indicate that the majority of the participants were interested in sharing their experiences; this knowledge was used by developers to establish a 'community of practice', which thereby met the group's most immediate need: opportunities for further collaboration.

Knowledge of individual and group levels of use is also valuable for those responsible for managing the change process; this information can be used to help establish peer coaching relationships and help reduce the feelings of isolation often experienced by implementers. For example, individuals focusing on the use of specific innovations could be matched with others using the same instructional strategies in their classrooms. Working together they could exchange ideas about the different ways in which they are using the innovation with their students, share resources and provide collegial support to each other. Additionally, an individual who has had several years' experience implementing a particular innovation or aspect of change could act as a mentor to another who may be struggling or who is just about to embark upon the process.

The conceptual framework that underpins the Concerns Based Adoption Model also proved helpful in better understanding how change is mediated at the individual and system levels. Research that underpins the model indicates that, when change is implemented and supported appropriately, individuals move from self- to task-related concerns within three years, and from task- to impact-related concerns within three to five years (Hall & Hord, 2006). Combining the Concerns Based Adoption Model with another theoretical framework of change (for example, Fullan, 2001) provided an additional lens through which to investigate and to corroborate assumptions about the dynamics of change further. For example, Fullan's theoretical model suggests that it takes three to five years for change to move from 'initiation' to 'institutionalisation' for reasonably complex change initiatives. Examining change from different theoretical perspectives offers comparable views; these lenses provide additional insight into the process and in turn contribute to our understanding of how different theoretical perspectives can be aligned to deepen our knowledge. In turn, this can add to the further development of theories of change (Anderson, 1997; Fullan, 2006; Hargreaves, 2005; Hargreaves & Fullan; 2009).

While the findings generated through the use of the Concerns Based Adoption Model in this study are generally positive and potentially useful to professional development managers and developers, there are also some limitations of the data.
that readers should note. First, the model's instruments were applied in this study to provide a cross-sectional 'snapshot' of the study group at a particular point in time. But this model's instruments could be used at several points in a longitudinal study to obtain a picture of the developmental pattern of change experiences, thereby helping to strengthen understanding of the process of change (Anderson, 1997; Hargreaves, 2005). This would still not reveal why individuals are at different stages of concern and levels of use, or how they got there. For example, it is unclear what elements mediated use, or what supported or hindered individual progress. In order to better understand the wider systemic issues that affect individuals and their unique experiences, additional data needs to be collected. But the model does provide a research-based framework to understand the change process, and its instruments generate solid empirical data that can serve as a starting point from which to further explore the systemic issues that contribute to individual placements. Second, the professional development participants who volunteered to take part in this research study were motivated and interested to do so and it is not surprising that they are implementing aspects of the program. It is also the case that variations in levels of use and stages of concern exist amongst the group and that findings based on the Concerns Based Adoption Model can still be used to help us better understand the group's experience of change associated with professional development. The volunteer nature of the research participants does not diminish the value of using this model for helping us better understand wider change initiatives.

As the Australian VET sector, like many others in the international community, embarks on meeting the challenges of the 21st century, planned, proactive approaches to building and sustaining change and to those who make it are urgently required (Guthrie & Clayton, 2010; OECD, 2008, 2009; Skills Australia, 2011). Without effective planning and appropriate resources, any change effort is likely to fail (Hall & Hord, 2006). While a solid plan is required at the start of the process to help to articulate a shared vision and to outline the steps that need to be taken, the planning process should not be a one-off event, and neither should plans be rigid and inflexible. Resource requirements change as individuals become more expert in their implementation of change, as circumstances change, or if they are suddenly required to respond to and integrate the latest policy reform or curriculum mandate. In order to support the change process effectively, reliable data are required to help capture how individuals negotiate and respond to change-related issues.

Ultimately, change is a multidimensional process and characteristically a long and messy business. For teachers to become effective at facilitating sustainable change, these features need to be kept in mind; the use of valid and reliable methods can help to develop a better understanding of these processes. Incorporating mechanisms to systematically monitor and assess the complexities of the process, particularly in the dynamic environment of VET, is vital when implementing suitable intervention strategies (Cort et al., 2004; OECD, 2008, 2009). The design and implementation of this process needs to be informed by rigorous, evidence-based assessment and evaluation practices. While it is acknowledged that the Concerns Based Adoption Model has limitations, the findings in this study have revealed that it can be useful in assessing the impact of a professional development
initiative for VET teachers. These findings can be used to not only help inform the future design and implementation of programs, but also (and arguably most importantly) to support those who are at the forefront of making the changes demanded by the sector—VET teachers.

**Keywords**

educational change  professional development  program effectiveness
instructional innovation  vocational education  trainers
and training

**References**


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Paper 2

The role of teacher emotions in change: Experiences, patterns and implications for professional development.


Research aims addressed in this paper

1. To better understand the factors that relate to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers.
2. To better understand the emotional experiences of teachers involved in a systemic change professional development initiative.
3. To better understand the usefulness of the Concerns Based Adoption (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

Research questions addressed in this paper

2. What factors facilitate or hinder teachers’ implementation of instructional innovations?
3. In what ways do teachers’ emotional responses mediate their behaviours when implementing new instructional practices?
4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector?
The role of teacher emotions in change: Experiences, patterns and implications for professional development

Rebecca Saunders

Abstract  Research literature in the field of teacher emotions and change broadly accepts that behaviour and cognition are inseparable from perception and emotion. Despite this, educational reform efforts tend to focus predominantly on changing individual behaviours and beliefs and largely neglect or at best pay token attention to the emotional dimensions of the change process. This study examines teacher emotions in the context of educational reform and focuses on the role emotions play when teachers transfer new instructional processes into their practice. The teachers involved in this study took part in a four year systemic change professional development program designed to refine and extend their instructional practice. A sequential mixed methods research design consisting of the administration of a quantitative questionnaire followed by in-depth qualitative narrative interview analysis was used to gain insight into this complex area of educational change. Findings revealed that the teachers involved in this study experienced a range of emotions when participating in professional development and their emotional responses directly impacted their use of new instructional processes. A cyclical pattern of emotions emerged influenced by time, place and interpersonal relationships. Implications for the future design and implementation of professional development change initiatives are discussed.

Keywords  Teacher emotion · Educational change · Professional development · Instructional change · Mixed methods · Vocational education and training · Australia

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Introduction

There is a growing body of research which examines the relationships between teachers’ emotions and their professional practice. This emerging research encompasses a range of orientations or emphases, including psychological, sociological, organisational, physiological and philosophical perspectives. When applied, different epistemological and theoretical (paradigmatic) approaches and their accompanying methods or inquiry act as lenses offering diverse views of a complex and multifaceted field (Hargreaves 2005b; Sutton and Wheatley 2003; Schutz and Zembylas 2011; van Veen and Lasky 2005; Zembylas 2002).

Despite growing acceptance of the integral link between teacher emotions and change Spillane et al. (2002) argue that this area is “overlooked and understudied” (p. 411), a sentiment echoed by a number or scholars including; Nias (1996), Hargreaves (2000, 2001, 2005b, c), Harris (2004), Lee and Yin (2010), Sutton and Wheatley (2003) and Zembylas (2002). Many argue we lack a coherent definition of emotions or a unified approach to their measurement (Pekrun 2006; van Veen et al. 2005; Zembylas and Schutz 2009), most likely due to the diverse range of theoretical approaches used to examine them. Scott and Sutton (2009) believe this fragmentation has resulted in the majority of research in the area of emotions and change being primarily quantitative, attempting to classify and make generalisations about emotions. On the other hand, within education circles, research on teacher emotions and change has predominantly used qualitative methods such as semi-structured interviews (Sutton and Wheatley 2003). Whilst both approaches yield important information about the emotional experiences of teachers during times of change both have limitations. To gain a more comprehensive picture of teacher emotions in relation to professional change, a pragmatic approach is required, one which embodies a combination of methods designed to uncover and better understand the role of emotions as part of the diverse nature of educational change processes (Scott and Sutton 2009; Sutton and Wheatley 2003).

A mixed methods approach has been used in this study to help better understanding the emotions teachers experience when implementing new instructional processes as a result of a systemic change professional development initiative. Notwithstanding recent contributions, (Scott and Sutton 2009 and Turner et al. 2009) few studies specifically examine the role emotions play in teacher professional development programs or chart teacher emotional experiences over time, with different people, in different contexts and different places. The majority of studies in this area are predominantly situated in school systems; in this study the research participants are vocational education and training (VET) teachers who volunteered to take part in a four year system wide professional development program designed to extend their instructional practices.

Given that teachers are frequently asked to change their pedagogical and instructional practices as part of reform efforts, we know very little about the emotions teachers experience when they make such changes as part of professional development programs. The purposes of this study therefore, are to (a) better understand the role emotions play in mediating teachers’ implementation and transference of new instructional skills and knowledge gained through professional
development; (b) identify any discernible patterns of emotions experienced by individuals on their change journey; (c) examine how teachers’ emotional experiences align with theoretical understandings of processes of change; and, (d) consider the implications the study’s findings might have for designers of teacher professional development programs and for change agents in education.

Understanding teacher emotion in the context of reform

It is widely accepted that we lack a coherent theoretical framework for understanding teacher emotions in the context of reform (Sutton and Wheatley 2003; van Veen and Sleegers 2009; van Veen and Lasky 2005; Zembylas 2005). This is perhaps unsurprising given the youthful and emergent nature of the field. Despite this, attempts have been made in recent years to categorise different approaches. van Veen and Sleegers (2006, 2009) suggest that a theory for examining emotion and reform is needed which, “takes both the individual and the environment into account.” (2009, p. 235). They call for the development of a theory that encompasses both social-psychological perspectives (intrapersonal)—exploring the interaction between individual identity and the environment; and, sociological approaches (interpersonal)—focusing predominantly on the environment and relationships and less on identity. However when exploring teacher emotions more broadly, Zembylas (2005) argues “teacher emotion is the product of cultural, social and political relations” (p. 4) and claims that what is missing from theory is an examination of how emotions are embedded in power relations inherent in education practices and relationships. He proposes a framework inclusive of intrapersonal, interpersonal, feminist and poststructuralist lenses to uncover the “invisible aspects of emotional work” (2003c, p. 113). Although it is acknowledged that it is neither possible nor desirable to disentangle the study of emotions in this context from socio-psychological notions of identity and self, this study places primacy on exploring the contexts, places and social situations in which emotions arise and change over time. In this context then, this study is more closely aligned with a sociological approach and broadly informed by social constructionism.

Social constructionism has its origins in social phenomenology and interactionism and provides a framework to explore the ways in which individuals actively participate in their perception of reality and construction of self through social relations (Denzin 1984). When viewed as social constructions, emotions are individual lived experiences that are understood, mediated and co-constructed by interaction with others and directly linked to the organisations, cultural and social contexts in which they occur (Denzin 1984; Fineman 1993; Hargreaves 2001; Lord and Harvey 2002).

The process of instructional change is complex and dynamic; teachers don’t implement in isolation but instead work with colleagues, students and administrators in a range of different situations over a sustained period of time. Examining these variables provides insight into what emotions teachers experience at different times, in different places with different people and allows us to search for patterns. Viewing emotions as social constructions helps us to appreciate and explore the complexities of teachers’ journeys of instructional change.
When socially constructed emotions are not merely a genetically determined psychological phenomenon situated purely within the self but are products of consciousness—lived, experienced, felt and articulated; inextricably linked to individuals’ interactions with their environment and their personal interpretation of their experience (Averill 1980; Denzin 1984; Harre 1986). Exploring individuals’ emotions as constructs which are separate from the environment and their social relationships denies the complex and inherently social nature of teaching. As Denzin (1984), Hargreaves (1998) and Nias (1996) remind us, teaching is fundamentally an emotional practice which elicits strong feelings in individuals, and these feelings are influenced by complex interchanges between people, systems and structures. If teacher emotions are viewed as social products, generated by interactions with the environments in which individuals operate, it is reasonable to deduce that emotive reactions to environmental influences will in turn mediate behaviour (Schmidt and Datnow 2005) thus highlighting the powerful interdependence between emotions, the contexts in which they arise and individual behaviours.

Hochschild’s (1993) work on emotional labor explores the relationship between, environment, emotions and behaviours more deeply. She argues that teaching is a profession that calls for emotional sensitivity and teachers learn to manage and suppress their true feelings in order to display behaviours which fit with organisational expectations. Hochschild largely views the concept of emotional labour as a negative but ultimately necessary part of teaching within systems—wherein a part of the self is exchanged for security, acceptance and organisational reward.

Social constructionism then provides a framework which recognises teaching is an emotional practice, that education systems are complex and dynamic and that implementing change involves social interactions bound by time and place which arouses emotional responses.

Teacher emotions, reform and professional development

The majority of studies on emotion and reform have focused on teacher rejection or acceptance of change efforts and whilst professional development programs are often referred to they are not the primary focus of inquiry. These studies explore how teachers appraise, interpret, make sense of and adapt mandated reforms based on the degree to which aspects of the change agenda are consistent (or not) with teachers’ personal ideologies (Schmidt and Datnow 2005; Spillane et al. 2002; van Veen and Sleegers 2006). The extent to which a teacher experiences congruence between their professional beliefs, values and practices and the reform agenda is used to predict whether they are likely to emote positively or negatively towards the change (Lee and Yin 2010; Jeffrey and Woods 1996; Little 1996, 2000; Little and Bartlett 2002; van Veen and Sleegers 2006). This information is useful in helping us better understand the relationship between emotions and teacher change. However, there is still much to be learnt and Hargreaves (2005a, b, c) calls for the need to move beyond acknowledging teacher emotions in reform in terms of how they can help administrators and reformers ‘manage’ resistance and help set climates conducive to change. Simply accepting that teachers are likely to be positively or
negatively emotively orientated to reform oversimplifies the intricate and dynamic process of change and the inherently complex nature of the educational systems teachers work within. This type of information therefore can only be used in a limited way when it comes to designing professional development programs and supporting the teachers who take part in them.

Teachers are often required to make extensive alterations to their practice during reform efforts and professional development has long been used as a mechanism to support these efforts and leverage change (Fullan 2001; Guskey 2002). Changing teacher practice however is notoriously difficult to achieve as it involves modifying teachers’ ways of working (Fullan 2001; van Veen and Sleeegers 2009). Fullan (2001) cites three dimensions of change, all of which have a direct impact on teachers and their work: (1) possible use of new or revised materials—this can include curriculum materials and instructional resources; (2) use of new teaching approaches, strategies or methodologies; and, (3) possible change in beliefs—challenging existing assumptions or theories that underlay programs or policies. More often than not, professional development as part of reform is concerned with modifying all three areas. It is not surprising then that professional development programs often initiate strong emotional reactions in teachers (Darby 2008; Lasky 2005; Reiö 2005), often challenging their deeply held beliefs, values and sense of professional identity (Turner et al. 2009). Teachers’ ways of working are inexorably bound by personal beliefs, values, notions of self efficacy and professional identity. Schmidt and Datnow (2005) argue that this means educational reforms are complex and subject to “interpretation and reinterpretation by the teachers who implement them” (p. 952). This negotiation process is heavily influenced by individuals’ sense of moral purpose (Hargreaves 2001), their cultural backgrounds (Zembylas 2003b), and their sense of personal identity (Cross and Hong 2009; Hargreaves 2005a; Reiö 2005; Zembylas 2005). In this context professional development programs become sites for complex and emotionally demanding teacher experiences.

Teacher identity

Teacher identity is a complex phenomenon and has received considerable attention from scholars over recent years (Cross and Hong 2009; Day 2002; van Veen et al. 2005; Zembylas 2003a, b). This paper seeks to explore the sociological issues related to teacher emotion in the context of professional development—approach to exploring teacher emotions it is beyond the intention and scope of this paper to explore the issue in great depth. Nevertheless it is important to acknowledge the significance of teacher identity and the dynamic interplay between notions of self and emotion at the interface of change. Drawing from the work of Nias (1989), Van Veen and Sleeegers (2009) suggest that teacher professional identity comprises elements such as; self image, self esteem, job motivation, core responsibilities and perceptions about teaching and subject pedagogy. Cross and Hong (2009) elaborate further and suggest that teachers’ professional identity is fundamentally grounded in personal belief systems and can be understood as “a framework established and maintained through interaction in social situations, and negotiation of roles within the particular context” (p. 278). Beliefs strongly influence how an individual frames issues, organises tasks and solves problems and can be
organised into three categories, (1) beliefs teachers hold about epistemological issues; (2) interpersonal beliefs which include notions of self-efficacy; and, (3) domain specific beliefs that relate to how an academic discipline should be taught. In this circumstance it becomes difficult to separate teachers’ beliefs from their instructional practice which in turn informs their selection and use of curriculum and support materials.

Teacher professional identities then develop over time and are constructed by a complex interplay between personal values, beliefs and past experiences which are bound by social, cultural and institutional relationships (Day and Qing 2009; Zembylas 2005). In this sense, notions of professional identity are dynamic, and continually being formed and reformed through interactions with others and are directly challenged when teachers are asked to change their beliefs about themselves in their instructional role and how they relate to their colleagues, students and parents (Cross and Hong 2009). Inevitably this process is accompanied by a range of emotional responses (Schmidt and Dutnow 2005).

From a sociological perspective emotions are viewed as ‘relational’ (Schultz et al. 2009, p. 202) in that they are activated by transactions between an individual and their environment. Hochschild (1990) suggests that four inter-related elements are operative when an individual experiences an emotion; (1) appraisal of the situation; (2) changes in physical sensations; (3) inhibited or open gesticulation; (4) application of a cultural label to the way in which the first three elements are assembled. An individual makes a judgement or appraisal based on their personal goals, values, beliefs and social networks. These are the reference points an individual uses (consciously or unconsciously) to decide where he/she is in relation to where they want to be (Schultz et al. 2009). If an event is appraised to be going well and in congruence with an individual’s goals, values and beliefs a pleasant emotional response is expected. Conversely, if things are not going well an unpleasant emotional episode is likely. Schultz et al., also argue that teacher appraisals are influenced by the social–historical context in which transactions occur. For example, values and beliefs about education and the role of teachers are socially constructed over time and lie embedded within education systems and processes, and society at large. A teacher must develop knowledge of these values and beliefs and adopt them personally for them to become part of their own internal belief and value system, and ultimately part of their professional identity.

Accepting the interconnectedness of these elements is important for this study because it reflects the complexity of the change process and also highlights the inseparable nature of cognitive, behavioural and affective dimensions of change. Reform efforts frequently challenge teachers to re-examine, abandon or adopt new ways of working. Ultimately these are filtered through belief and value systems and conceptions of identity. Cross and Hong (2009) remind us that reformers need to be aware that the interplay between teachers’ positive and negative emotions during change efforts has strong potential to influence the success or failure of educational reform.

Concerns based adoption model

In order to explore the relationship between behavioural and emotional aspects of change at the individual level, a model of educational change which recognises both
dimensions was required. For this study, the Concerns Based Adoption Model (CBAM) was used as both a conceptual lens and an empirical framework because it is based on change theory and is specifically designed to measure the impact of educational reform programs for intended adopters. CBAM has been used extensively in educational research in the United States since its development in the late 1970s and early 1980s. Over the years it has been widely researched and has been found to be generally robust and reliable. It has received little attention or use in the Australian context and even less in the examination of professional development change initiatives for vocational teachers. In this sense the application of the CBAM framework provides a fresh empirical approach to examining professional development for vocational education teachers in the Australian context. In addition to providing a conceptual framework for understanding change, CBAM also comprises a set of measures, including: Stages of Concern (SoC), Levels of Use (LoU) and Innovation Configuration (IC) (Hall and Hord 2006; Hall and Loucks 1979; Loucks et al. 1975).

Fundamental to CBAM is that educational or professional change is a process and not an event, and as individuals navigate their way through change they encounter not only a number of affective “stages of concern” but also progress to different “levels of use.” The developers George et al. (2006) argue “Together, the Stages of Concern and the Levels of Use provide a powerful description of the dynamics of an individual involved in change, one dimension focusing on feelings, the other on? performance.” (p. 4).

The SoC framework and the accompanying measure—The Stages of Concern Questionnaire (SoCQ) was used in this study for three reasons; (1) it focuses on the affective or personal side of the change process (George et al. 2006; Hall and Hord 2006); (2) it aligns well with a social constructionist view of emotions in that implementing change involves interaction with the environment and other people, and during the process of interaction concerns arise; and, (3) it provides a conceptual framework which can be used to examine the process and progress of change at both group and individual levels.

Whilst the SoCQ instrument is not specifically designed to measure emotions, Hall and Hord (2006) state that it is designed to examine “feelings and perceptions about innovation and the change process” (p. 134) and these “can be sorted and classified into what we call concerns” (p. 134). In the context of the SoCQ, Hall and Hord define the term ‘concern’ as “The composite representation of the feelings, preoccupation, thought, and consideration given to a particular issue or task is called concern. Depending on our personal make-up, knowledge, and experiences, each person perceives and mentally contends with a given issue differently; thus there are different kinds of concerns” (p. 138). Horsely and Loukes-Horsley (1998) also remind us that as individuals experience change and adapt to new circumstances different concerns give rise to “many different and powerful emotions” (p. 5). In this sense, emotions are products of concerns, generated by an individual’s appraisal of a situation and environment based on how they interpret self, social and cultural contexts. This aligns well with the constructionist view of emotions in that they are inextricably linked to an individual’s interaction with their environment and their personal interpretation of their experience (Hargreaves 2001). SoC is therefore
Valuable in helping us develop a better understanding and exploring the affective dimension of change by identifying teacher concerns, which in turn can be used to assist inquiring more deeply into the emotional dimension of the experience.

The developmental nature of the SoC framework is based on the view that concerns emerge and must be resolved before later concerns arise (George et al. 2006). Understanding the developmental pattern of concerns allows us to better understand teacher’s experiences of change over time and this is of particular relevance for this study in seeking to explore teacher professional development. The CBAM literature (e.g., Hall and Hord 2006) states that when professional development is facilitated well implementers will move from self-related concerns to task concerns within 3 years, and will progress to impact-related concerns within 3–5 years. This conceptualisation aligns well with the work of Fullan (2001) who suggests that once a decision has been taken to adopt or proceed with change (Initiation) the next stage of use (Implementation) or initial use, usually takes 2–3 years and involves early attempts at putting the initiative into action. Transition to the next stage (Institutionalisation) refers to change being built into the system and becoming part of routine working practice. Fullan (2001) suggests that the time taken to move from initiation to institutionalisation takes between 3 and 5 years for reasonably complex initiatives and 5–10 years for large scale efforts.

If we better understand teachers’ emotional reactions that arise from their concerns at different points of time when trying to implement new practices as part of a professional development program we are better placed to be able to support them more effectively as well as improve our understanding of educational change processes.

Method

The instructional intelligence professional development program

The professional development change initiative that provided the context for this study is known as Instructional Intelligence (Bennett 2010). For Western Australia (WA), the Instructional Intelligence (II) professional development program ran for a period of 4 years, (2005–2008) and was designed to extend the instructional repertoire and expertise of tertiary vocational teachers. The system-wide program was initiated in response to a change in state legislation which raised the school leaving age from fifteen to seventeen years of age. In an attempt to widen provision and provide options for students the vocational education and training system was required to provide school students with access to their existing courses and develop new ones specifically designed to meet their needs. As an increasing number of young students entered a principally adult learning environment, many of them reluctantly, it became evident that vocational teachers required new or upgraded instructional skills to successfully engage and manage this cohort.

Instructional intelligence (II) was developed by Barrie Bennett (Bennett 2002; Fullan 2002; Bennett 2010). Working towards a theory of instruction Bennett has progressively developed the concept over the past thirty-six years of his own

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teaching, research and work with teachers. Bennett describes II as the point at which the art and science of instruction meet and merges curriculum, assessment, knowledge of how students learn, instructional skills, tactics and strategies and theories of change (Bennett and Rolheiser 2001). In describing the “science” component of II, Bennett refers to it as the way in which teachers pay attention to the research on the impact of using different instructional methods on student learning (in this context effect size) by stacking and integrating different methods to create the most powerful learning environments for students. “Art” is the creative and individual way in which each teacher will stack and integrate different instructional methods to suit different groups of students. By increasing teachers’ instructional repertoire Bennett argues; “we are more likely to become artful or creative and more scientific or intentional when differentiating our instruction to meet the diverse needs of students” (2010, p. 69).

Developing instructional intelligence involves more than teachers simply collecting an extensive assortment of instructional methods in that developing expert behaviour in the use of any new skill takes time and practice. A central tenet of the concept is helping teachers better understand and work effectively with educational change and this was reflected in the design and implementation of the II professional development program in WA. The program was based on research and theory into educational change (Fullan 2001; Hall and Hord 2006; Huberman 1983) and effective staff development (Bennett 1987; Joyce and Showers 1995; Joyce and Weil 1996; Huberman and Miles 1984), which recognises that change occurs over time and is a developmental process, and effective staff development occurs when individuals work in teams, have opportunities to practice and reflect on their progress and receive constructive feedback and coaching.

Program participants attended the II professional development workshops in college-based teams comprising between two to four individuals. Over the 4 years of the program, workshops were held two or three times a year with each session running for three consecutive days. At each session, participants engaged with theory and research on a selected range of instructional innovations. The steps involved in implementing the innovations were modelled and participants practiced them and received feedback and coaching on their progress. Participants then considered the process and impact of integrating innovations across different content domains and with different cohorts of students. When they returned to their colleges the teachers were required to trial the instructional methods in their classrooms, reflect on the process and meet in their teams to discuss progress and provide support using peer coaching methods.

In this sense, the professional development program involved a complex and lengthy journey of instructional change for participants. The process was highly interactive and involved teachers seeking to make change in different contexts with different people.

Research participants

The research participants for this study were recruited from a group of thirty-five VET teachers who participated in the instructional intelligence professional
development program. Drawn from across the ten public VET colleges in WA—
comprising fifty campuses situated across metropolitan, regional and remote
locations—twenty-seven teachers volunteered to take part in this study. This group
is broadly representative of teachers in the vocational training and education sector
working across diverse content areas including; adult literacy, business studies,
metal, mining, electrical and engineering trades, building and construction and
community services. Participants varied in teaching experience and comprised 8
males and 19 females. Years of teaching experience varied across the group with 4
individuals (14.8 %) having between 1 and 4 years teaching experience, 4 (14.8 %)
between 5 and 10 years, 11 (40.8 %) between 11 and 15 years, 2 (7.4 %) between
16 and 20 years and 6 (22.2 %) having over 20 years teaching experience. More
than half (17 teachers, or 63 %) had taken part in all 4 years of the II professional
development, 4 (14.8 %) had participated for 3 years and 6 (22.2 %) had been
engaged with the professional development program for 2 years.

Research design

In seeking to better understand teacher emotions in multiple contexts and
relationships over time, a pragmatic mixed methods approach informed the design,
data collection and methods of analysis for this research study. Quantitative data
collection involved the use of the CBAM SoCQ which provided a ‘snapshot’ of
teacher concerns at the close of the program. To gain a deeper insight into teachers’
experiences over time qualitative data were gathered using in-depth semi-structured
interviews and these data were examined using narrative analysis. Drawing from
varied sources of data affords opportunities to examine the complex nature of the
change process as a personal, emotional, behavioural, systemic and dynamic process
which occurs over a period of time. As already described, adopting a mixed methods
approach to examining the relationship between teacher emotions and change can
work to address any potential weaknesses that may be inherent in a single method
approach (Johnson and Onwuegbuzie 2004).

The mixed methods research design was explanatory in that it comprised four
complimentary sequential phases of data collection and analysis, with each phase
informing the subsequent phase. Quantitative methods were used first to identify
meaningful patterns; this was followed by qualitative methods designed to help
elaborate the quantitative data and gain insight into more complex experiential
phenomena (Greene and Caracelli 1997). Specifically, data collection methods
comprised the following; (1) administration of a 35-item questionnaire (quantitative,
Stages of Concern Questionnaire); (2) in-depth semi-structured interviews
(qualitative); (3) classroom observations and; (4) short reflective interviews
(qualitative). Analysis involved the application of mainly descriptive statistics for
quantitative data, and narrative and interpretive analysis for qualitative data.

This paper focuses on phases one and two of data collection and analysis only,
for a number of reasons. Data gathered in phases one and two were self-reported.
The use of CBAM instrumentation in phase one focused on participants’
experiences of implementing a single innovation and was used as a mechanism to
identify individual concerns and levels of use and has several limitations when
exploring the emotional dimension of the change process. Quantitative data
gathered by the SoCQ are used to generate individual and collective concerns
profiles; these data however provide only a snapshot of concerns at a particular time
which is then interpreted by the use of generic concern descriptors. Several
important questions still remain, such as why do individuals possess certain
intensities of concern, how did they reach these points, what were their thoughts,
feelings, emotions and experiences as they developed, who or what helped or
hindered their journey and how did their emotional engagement with the change
process affect their progress and ultimately their implementation of change?

Phase two therefore focused specifically on narrative methods providing space
for personal expression unconstrained by structured pre-determined interview
questions, thereby encouraging more in-depth disclosure.

Phases three and four gathered observational and self-report data focused on
participants’ classroom implementation of the innovation they reported in phase
one. These data were not related to the emotional dimension of the change process.
Therefore for the purposes of this paper it is appropriate to focus only on data
collected from phases one and two.

Although this methodology has limitations in regard to measuring an individual’s
full range of emotional experiences throughout the entire change process, the design
nevertheless provided participants the opportunity to share in-depth personal
insights into emotional experiences and was used to better understand the emotional
dimension of the change process and inform the direction of further research.

Data collection and analysis

As outlined above, quantitative data gathered from phase one was used to initially
categorise individuals into different SoC; from this, distinct sub-groups were
identified. These data were then used to identify individuals representative of the
sub-groups who would proceed to phase two of data collection and analysis. The
individuals who proceeded to phase 2 were representative of all the different sub-
groups.

Phase one: Stages of concern questionnaire (SoCQ)

CBAM instrumentation SoCQ was used in the first phase of data collection. The
SoCQ instrument identifies and measures 7 different stages of concern including:
(0) Unconcerned, the teacher indicates little concern about or interest in the
innovation; (1) Informational, the teacher indicates a general awareness of the
innovation and wants to learn more; (2) Personal, the teacher is concerned about
his/her ability to implement the innovation and uncertain about the personal
investment involved; (3) Management concerns arise when the teacher has started
to implement the innovation and is focussed on the logistics involved in putting it into
practice; (4) Consequence, the teacher is concerned about the effect of change on
his/her students; (5) Collaboration, concerns are highlighted when the teacher is
interested in working with others to jointly improve the benefits of use for students;
(6) Refocusing, the teacher is making or considering making major modifications to the innovation or replacing it completely.

The SoCQ instrument comprises 35 Likert-scale questions in which respondents are asked how they feel about the professional change that they are experiencing. The following scale is used with all items: (0) irrelevant, (1–2) not true of me now, (2–4) somewhat true of me now, and (5–7) very true of me now. Hall, George and Rutherford (1979) determined that the SoCQ has good reliability, with Cronbach-$\alpha$ (internal consistency) coefficients ranging from .64 to .83, and test–retest (Pearson-$r$) coefficients ranging from 0.65 to 0.86 (Hall and Hord 2006). Hall, George, and Rutherford (1998) used a number of approaches to determine the validity of SoCQ scores including inter-correlation matrices, judgments of concerns based on interview data, and confirmation of anticipated group differences and changes over time. The results of these studies indicate that the reliability and validity of the SoCQ are within acceptable ranges for assessing individual concerns related to professional change initiatives.

All participants completed an on-line version of the SoCQ. The resulting raw data were converted into percentile scores and used to generate individual profiles for each participant, displaying relative intensities of concern for each stage. These scores were transferred onto a graph, visually representing the peaks and troughs of an individual’s concerns associated with each stage. In order to gain additional insight into the dynamics of concerns, a first and second highest score analysis was conducted for each participant. Data were then analysed for the group by identifying the group’s modal score and by generating an overall group profile by averaging all of the raw scores and converting them into percentiles. In this way, quantitative data gathered by the SoCQ were used to generate both individual and group concerns profiles. Individuals representative of different peak and second highest score concerns profiles were isolated resulting in a total of 8 cases based upon different first and second highest stages of concern. What circumstances, experiences and relationships had contributed to these results, what were the different individual stories of the change process? This smaller group of participants progressed into the remaining phases of data collection.

**Phase two: Narrative inquiry**

In order to gain insight into these questions and better understand the role emotions play in individuals’ experiences of change, narrative inquiry was used for the second phase of data collection and analysis. Narrative inquiry is used increasingly in educational research as a means to better understand the experiences of teachers by exploring their personal and collective stories (Clandinin and Connelly 1996, 1998; Connelly and Clandinin 1987, 1990, 1999; Zembylas 2003a). Fundamental to narrative inquiry is the notion that humans live “storied lives” (Connelly and Clandinin 1990, p. 2) and we share these stories with others in order to communicate and make sense of our world. Stories are privileged in narrative inquiry because they contain information related to how individuals construct and mediate relationships, their personal identities, and provide insight into individual thoughts and emotions and how these in turn influence behaviour (Clandinin and Connelly...
In the context of exploring teacher emotions Zemblyas (2003b) states that narrative research “analyzes the discursive environments that effect the process by which experiences and meanings are assembled into identities” and this in turn serves to highlight the “situativeness of self” (p. 215).

Clandinin and Connelly’s three dimensional narrative inquiry space research framework was used into gain insight into the emotional experiences of teachers (2000). Influenced by Dewey’s writings on the nature of experience, Clandinin and Connelly’s framework “creates a metaphorical three-dimensional narrative inquiry space” (p. 50) through which to view teacher stories. Central to Clandinin and Connelly’s interpretation of Dewey’s work is that individuals can only be understood in relation to the social contexts in which they exist, and the notion of individual experience is created over time—as one experience grows out of another (Clandinin and Connelly 2000). They adapted Dewey’s terms interaction, continuity and place for viewing experience and incorporated these constructs into the foundations of their own three dimensional narrative inquiry space. As the name suggests the framework comprises three dimensions or lenses: (1) personal and social (interaction)—relating to an individual’s social exchanges and making sense of the self in relation to others; (2) past, present, and future (continuity)—a chronological framework which can be used to view experiences over time; and (3) the notion of place (situation)—relating to an individual’s experiences in different places and contexts. Applying these different lenses to stories helps disentangle the complex nature of the reality of teacher’s lives and their emotional experiences as they implement instructional change. It also provides a clear structure for us to examine teacher emotions over time, how they feel as they interact with different groups of people including students, colleagues, managers and professional development consultants (interaction), if emotions (feelings) change over time (continuity) and if their emotions are context bound (situation). Examination of data through the three lenses therefore allows us to identify any patterns or anomalies which might have occurred.

In phase two of the data collection, individual in-depth, open-ended interviews were conducted with each of the 8 participants, each lasting for approximately 60 min. Participants were invited to recount personal experience stories (Clandinin and Connelly 2000) in which they focused on stories they felt described their emotional reactions to implementing instructional change at different points in time. The interview process was designed to allow participants to speak openly about their experiences; prompts were given by the interviewer when required, to elicit stories about teachers’ experiences of implementation of II in different contexts, with fellow workers and students over time. For example, participants were first asked to recount stories about how they felt about the II professional development program when they first began their journey. They were asked to focus on the emotions which arose at the time and to consider their initial reactions to their fellow participants, the way in which the program was structured and how they felt about making instructional change in their practice. Interviews were audio-recorded, then transcribed and remapped through the process of re-storying.
Individual stories are a complex mix of thoughts, feelings, relationships, places and events bound by time. In order to unravel these elements and provide form and structure to accounts it is common for narrative researchers to analyse the data using a process called re-storying. This process involves analysing and reconstructing the original story using a pre-determined framework. As outlined, Clandinin and Connelly’s three dimensional narrative inquiry space was applied and narratives were re-storied under the following categories; (1) interaction; (2) continuity: and, (3) situation. Re-storied narratives were then returned to participants to enable them to validate the accuracy of the accounts. Stories were then analysed using a coding system which flagged incidences where teachers referred to their affective responses or to their experiences with words which indicated an emotional response such as; happy, excited, nervous, frustrated, angry or I felt. Stories which explicitly contained references to emotions were selected for use in this paper. Each of the three categories were then analysed to identify any themes or anomalies contained in the stories. For example, when examining stories about continuity, did the teachers report similar emotions at the beginning of their journey and did these emotions change as the program progressed? When examining stories of interaction what emotions did teachers report when interacting with different people, including students, colleagues, and managers participating in the program with them? 

When analysing emotions over a period of time (continuity) the SoCQ constructs were used as an additional lens to identify the concerns teachers experienced at different points of the change journey and to discern patterns in emotional responses linked to these concerns across time. The developmental facet of the SoC framework suggests that individuals move from self to task to impact concerns as they progressively implement change. Teacher stories were analysed to see what emotional responses they reported at different stages of their journey and to see if these related to self, task or impact concerns. This additional frame provided a means of identifying any patterns in emotional responses linked to different stages of concern at different points in time.

**Findings**

Findings from this study are described in the order in which data were collected and analysed. The SoCQ data were used first, to profile individual SoC and identify meaningful patterns across the twenty-seven teacher participants—findings from this phase are discussed initially. This is followed by description of findings derived from the narrative analysis of interview data collected in phase two of the study.

Stages of concern questionnaire: Peak score analysis

Analysis of the SoCQ responses revealed that the modal stage of concern for the sample was Stage 5—Collaboration. Twenty out of 27 individuals (74 %) of the group held peak Stage 5 concerns indicating that at the end of the program the majority of the group wished to collaborate with others with regard to their use of the innovation. Collaboration concerns are classified as impact concerns and
Table 1 Frequencies and percentages for highest stages of concern for the study group

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<th>Total</th>
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<tr>
<td>Number of individuals</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>20</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>Percent of individuals (%)</td>
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<td>0</td>
<td>14.9</td>
<td>7.4</td>
<td>0</td>
<td>74.0</td>
<td>3.7</td>
<td>100</td>
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indicate that the individual has moved beyond initial self and task concerns and is now focused on working with others and sharing ideas to continue and improve their use. Further analysis (examining the peak and second highest stage in combination) revealed that the reasons individuals want to collaborate are varied and range across the full spectrum of concerns, from collaborating about any issue regarding use (Stage 0); gaining more information about the use of innovations (Stage 1); managing time and resources (Stage 2); considering the impact use has on students (Stage 4); and changing the way the innovation is used (Stage 6). Table 1, displays the frequencies and percentages for the highest Stages of Concern for the group.

When examined in relation to the developmental dimension of the SoC framework, these findings also provide information about the design and implementation of the II professional development program. CBAM literature (Hall and Hord 2006) suggests that if an innovation is appropriate and the change process is facilitated wisely over time then implementers will move from early self concerns (Information and Personal) to task (Management) concerns within 3 years. Between 3 and 5 years they will progress to impact concerns (Consequence, Collaboration and Refocusing). For the majority of the group to have developed to this Collaboration Stage “means that change has truly been treated as a process, that the innovation has been given sufficient time to be implemented” (Hall and Hord, p. 150).

The peak scores for the remaining 26 % of participants—those other than reported at Peak Stage 5 were as follows:

Stage 2: Personal, 14.9 % (4 individuals)

Personal concerns are related to the self and indicate uncertainty about the demands of making change and how this relates to the teachers’ role and status in the organisation. Hall and Hord (2006) state that personal concerns are usually found in the early stages of change and indicate that individuals are concerned about potential conflicts which may arise with existing structures as they begin to use an innovation.

Stage 3: Management, 7.4 % (2 individuals)

Management concerns are classed as task concerns and show that the individual is focused on the processes and steps related to using an innovation. Issues relating to managing time, resources and logistics related to the innovation are of primary importance to these individuals.
Stage 6: Refocusing, 3.1 % (1 individual)

Refocusing concerns are *impact* concerns and indicate that the individual is focussed on exploring new ways of using an innovation. This may include the possibility of making major changes to it or replacing it entirely. Individuals at this stage often have very clear ideas about alternatives to the current form of the innovation and are looking to change.

Whilst the SoC descriptions provide us with useful information on the affective concerns and preoccupations of individuals the findings are limiting in terms of better understanding the emotional dimension of the change process. In order to gain a deeper insight into these issues eight individuals were selected from the sample representative of all the first and second highest stages of concern. These individuals participated in phase two of data collection and analysis involving narrative methods.

For the purposes of this study the findings from two stories analysed using narrative methods are shared. These two cases were taken from the largest SoC sub group (Stage 5—Collaboration) which comprised 74 % of teacher participants and were selected for a number of reasons. Firstly, they are representative of the majority of the sample and provide insight into the largest number of participants in the sample. Secondly, analysing two stories from the same group allows data to be compared and examined for any similarities, patterns and anomalies. Whilst caution regarding the generalisability of any findings to other teachers in the sample needs to be exercised, these two stories are typical of those told by others in this group and provide valuable insight into personal experience. Finally, Creswell (2008) points out, “narrative typically focuses on studying a single person” (p. 512) and provides deep insight into individual lived experiences. Therefore incorporating all eight stories in this paper would result in the integrity of the teacher stories and the process of narrative methods being compromised.

Narrative analysis

The stories are analysed and are presented thematically in line with Clandinin and Connelly’s (2000) three dimensional narrative structure:

1. *Continuity*—stories about implementing new instructional practices: past, present and future;
2. *Interaction*—stories about relationships, feelings and emotions; and,
3. *Situation*—stories about physical context

The story tellers

The names of the participants who have shared their stories have been changed, but their narratives are original. Rosie is a commercial business consultant for a large Perth metropolitan college. She has been a college teacher for over 20 years and has taught in the adult literacy, business and community services areas. Rosie participated in all four years of the professional development program. Amber
works for the Western Australian Department of Education and Training as a project manager. She has worked as a college teacher and as a principal lecturer for over 10 years in regional and metropolitan colleges in the education and business services areas. She attended 3 years of the professional development program.

Continuity: Stories about implementing new instructional practices: Past, present and future

The past

Individual stories of implementation of new instructional innovations vary but are characterised by emotional highs and lows. Rosie recalls her feelings when she first began to use new instructional processes in her classroom.

I felt nervous at first, using new stuff, feeling like it might go “pear shaped.” There was the stress of getting thorough the timeframe, 6 weeks to get through content and I was worried that I would waste a session and I did end up wasting a session because it took me more time than it would normally. I was anxious because I wasn’t sure if it was going to work. I was concerned about managing the process, about how many people there should be in a group, were there enough handouts, when should we have morning tea, would it wreck the activity if I stopped for a break too soon? What would other lecturers say about it, what would I do if the students refused to do it, how would I deal with it?

Rosie’s apprehensions reflect a complex blend of self and task concerns, predominantly Stage 2—Personal and Stage 3—Management. She talks about internal conflict between fitting into organisational structures and frameworks whilst managing the logistics of a new instructional process for the first time. This tension generates feelings of nervousness, anxiety and worry. Rosie is also concerned about the impact the process will have on her students, her relationships with them and with her colleagues. The stress of managing time and resources is further compounded by feelings of uncertainty relating to her self-efficacy when attempting to meet the demands of the innovation.

Amber’s journey of implementation charted a similar path, but additional complexities arose when she worked with two different groups of students. One group comprised teaching colleagues in her role as a staff development trainer and the other a class of students training to become teacher assistants:

There was uncertainty at first I wasn’t sure how people were going to respond. I try to have fun and I know I have had feedback in the past that I don’t take things seriously because I get them to do activities. I was always a bit tentative, anxious, unsure whether I should go down the path and how much I should do when delivering to staff. However, when I was delivering to my external students I was a lot braver and a lot more of a risk taker with them in the early days.
Amber recalls a specific experience which illustrates and legitimises her ‘tentative’ feelings regarding the use of the new strategies with colleagues:

I remember a group of trade lecturers that had been there for 18 months. I started off using the stuff and there was one lecturer and he was really not happy. He just didn’t want to do it, he basically thought it was a whole lot of bullshit. He just wanted me give him the info so he could walk away. So there are always people like that in the back of your mind you always want it to be purposeful for learners, they are busy people. I don’t want to waste their time but if I present it in a different way, for me it doesn’t work.

Amber and Rosie’s stories reveal their concerns about implementation new instructional innovations in different contexts with different groups of students as they undertake different organisational roles. For example when having to use the instructional innovation with her colleagues for the first time the situation left Amber feeling tentative, anxious, unsure. Both teachers speak of their concerns about how their colleagues will view them, causing each to question what this means for their role and status within the organisation and relates to Stage 3—Management concerns. In Amber’s case this had a direct impact on how each choose to implement stating that she was “a lot braver and a lot more of a risk taker” with her students than with her colleagues. For Amber there is much more at stake for her with her colleagues than with her students and she decides not to risk her professional self in front of her colleagues and doesn’t use the instructional innovations to their full extent.

The present

Four years into the professional development program Rosie and Amber reported positive orientations to towards their implementation of innovations:

Rosie: I feel confident on most things, a few things I wobble on, it may take years for me to get there but overall I feel pretty good. I feel at a pretty good level of confidence for most strategies and I mix and match and change things pretty quickly for the students I am working with if it’s not going well. Things that require a lot of layering and are more complex I think I am still at that operational stage of checking, ‘am I doing the right thing?’ Some I am unconsciously competent in, they are like second nature to me. I feel good.

Amber: I feel very confident being able to walk into a classroom and pull out a number of strategies and not worry about them. As I’ve progressed I haven’t hesitated in using them regardless of the audience, in particular when I have been doing department professional development over the past few years. I enjoy bringing together all sorts of bits and pieces and having complete confidence knowing it’s going to work and knowing that I am able to change and be responsive.

Both speak of a sense of ‘confidence’, ‘feeling good’ and ‘enjoying’ what they are doing and talk of easily moving between innovations in order to meet student needs displaying Stage 5—Consequence concerns. However, things are not quite that
simple when implementing change as another of Rosie’s stories about the present highlights.

Rosie: Recently I got angry I felt like all the resources were going back into things like admin, documentation and compliance related issues. I got really, really despondent and then we got a new round of funding for the professional development so now I feel happy and encouraged. I have a sense that my insights were right this is a good thing. In a system as big as this one you go up and down with your emotions, you get encouraged, you go up and then plummet when it feels like you’re losing it. It’s just the normal flow.

Rosie’s story illustrates they way in which system issues created blockages to her continued implementation of change. Her emotions of anger and despondency are in response to Stage 3 Management concerns—and relate to a lack of resources to support the professional development at her college. It is clear from this story that even 4 years into the program concerns from earlier stages of the SoC framework emerge. These are triggered by Rosie’s interaction with the environment—the wider system and evoke negative emotional responses as she perceives the lack of resources as a barrier to her achieving her implementation goals. Her recognition of the journey of implementation in a large system as essentially an emotional one is significant. At the end of the 4 years she has accepted, “you go up and down with your emotion…… It’s just the normal flow.”

The future

When speaking of their future both teachers displayed confidence affirming their continued use of their chosen innovations, and II at a broader level.

Rosie: I believe in it. I’m also really worried about the quality of the education and training in my sector and I truly believe that we can do a much better job and this is one way in which we can do a better job. I have children and I want them in the best system that gives them the best opportunities to learn and this helps you do that.

Amber: Even today I look back on the professional development with a lot of fondness and feel myself very successful and it’s completely embedded in my practice now. I truly believe most of my learners if given a chance to do different things are happier. I want them to walk away getting something out of the day. It’s in me and I just won’t change. It excites me and it makes my life when I go out to work interesting, it’s fun and much more interactive and enjoyable.

Both teachers talk of the process of change and the concepts and strategies of the II program now being firmly embedded in their professional practice, personal belief systems and educational philosophies and firmly tied to their sense of identity; as Amber claims, ‘It’s in me and I won’t change’. For Rosie her identity as a mother merges with that of her as a teacher to assert that the reason she will continue to do this is because, ‘I want them in the best system that gives them the best opportunities to learn and this helps you do that.’ The internalisation of the change process into
becoming an integral part of the professional self is arguably one of the most important goals of educational change.

**Situation: Stories about physical context**

In addition to the personal journeys of implementing instructional change in their practice, Rosie and Amber also recount their emotional responses as they navigated their way through the wider systemic dynamics of the change process. These stories are situated in a number of different physical places and contain their feelings towards their interactions with system structures, procedures and hierarchies. Their change processes have similar beginnings. Both begin by recalling their experiences of attending the first II professional development workshops held in Perth. Both name ‘excitement’ as the predominant emotion. Rosie cites social interaction with others and ‘networking’ as a key reason why she was happy to attend and, ‘having the space to do professional development, I didn’t have to race somewhere to do it and go back to my job’. Amber also believes that the time and space away from the college was instrumental in her feeling positive and enthusiastic, ‘we went to Perth for the workshops and got quite excited by that part.’ Both also spoke of the fact that by participating in the workshops they felt ‘validated’ that what they were doing was right and that they were good teachers. This had a significant impact on the way both felt about the workshops and the way in which they openly embraced the content. During the first year of the program participants were required to use only the new instructional strategies in their own classrooms. When the group entered the second year of the professional development program they were then required to start to share their knowledge and skills with their colleagues in the colleges, by conducting short professional development sessions. As the change process began to radiate beyond the personal sphere and the college team, different stories and feelings begin to emerge.

Rosie: So I went back from the workshop initially excited, enthusiastic, I wanted to do it and I want to do it all, then I hit the real world, suddenly resourcing issues hit home. You get back and have to start implementing this and I hit considerable blocks, like organising common professional development time, time for our team to meet. But with increasing lecturer workloads it didn’t happen and I got very disappointed. There were supposed to be four of us in our college team but realistically there was only one or two of us really prepared to push this thing and I started to realise that there was a strategic element to this change thing.

Amber: Because of my enthusiasm and belief I thought it would be easy because I didn’t have to pretend, I believed in it. I had a great Director at that point, she is a great person and was very supportive of the program. She was quite a driver in helping us set it all up and start to embed it into qualifications, so my internal beliefs and levels of support were good. There’s always going to be colleagues who cause you grief and don’t want to do anything regardless, but even managers put up obstacles like timetabling, not having enough
lecturers, it’s the same old story. It made me feel very annoyed, I actually got quite down about it.

Both teachers express feelings of annoyance and disappointment when faced with system challenges and blockages. When enthusiasm and positivity are not shared or given the opportunity to be expressed in a system, emotional responses quickly become negative.

Rosie: So you go to the professional development and get all excited and all enthusiastic, then you go back to the college, get blocked, get down, get despondent and then get over it. Something in you just keeps going, pushing, pushing, pushing. It’s like a cycle, go back to college, hit reality, get cranky, get over it and you just keep moving along, there’s quite a cyclic thing to it. I was really committed to it but used to get cross. I got quite angry. I didn’t act out or anything but I would get very angry and also very distressed because I thought focus on administrative tasks and compliance issues, which I am part of, but were being favoured over the core business of teaching. Even though we had been given money by the department to fund our release from teaching duties it didn’t happen. Both lecturers and students were suffering, I was cranky.

Although the two experienced similar system blockages and have almost parallel stories to tell to they both find their own personal ways of negotiating their way through the process. For Amber, a change in job was instrumental in giving her a different systemic perspective.

When I became a principal lecturer a few years later I could see that it was hard from the managers’ point of view. I didn’t understand what pressures management was under. They might actually be interested and supportive of what we were doing and see it as beneficial; they have the funding from the department but they’ve also got kids, they have places to fill. When you have a little campus out in a remote community one lecturer has to cover everything and then I come along and want that lecturer to come to professional development, something has to give. From their point of view money and profiling hours come first, not so much the skills and abilities of teachers.

Acknowledging the wider system constraints that other have to negotiate assists Amber to be more sympathetic towards her colleagues and the hurdles to implementing change at her college.

Stories about relationships

Both teachers speak passionately about the interpersonal relationships that supported them along their change journeys and the influence these relationships had on them emotionally. Rosie cites the program consultants as key individuals who helped her continue.

Rosie: I found them incredibly easy to relate to and that had a profound effect on me, I looked up to them and saw them as mentors. I respected them and
then found out that they were actually good people. They walked the walk and they talked the talk I found that incredibly important. For me they became people I trusted interpersonally and on a professional level. They made me feel supported made me feel like ‘I can go back and do this’. I had a great deal of trust I trusted them both completely, as human beings. You could tell them your horror stories and you could say very easily that sometimes the things you tried actually hindered the students. I wouldn’t necessarily do that with my colleagues, but they supported you and when you trust somebody you take risks and I did. When you take risks you grow and keep trying stuff. If you don’t trust you’re not going to tell them the truth, not take risks and not go back and do things in your classroom.

Amber talks about the importance of her relationship with her fellow college team member:

We would come back and forth to Perth and then after a while start to embed things into the curriculum. I was excited and getting a lot out of it mainly because I was working quite closely with Ann. We were both at the same campus, we both knew what we wanted and we were doing it with the same intent. I felt things were going well.
There have been lots of challenges along the way but having Ann there on my team to work with has been a huge help. Me and Ann, we had a vision for the college, this could be huge, really huge and really change the way we view, support and retain teachers, it kept us going.

The support of the department II project manager was also identified as a key relationship which Rosie felt supported her on a strategic and systemic level:

She helped us a lot to see the strategic vision. She kept reminding us that we had money and resources to support us. We got sucked into the micro college stuff and struggled with them but she sent emails to our directors and we talked to her a lot about small concerns. She was a person of continuity all the way through, with a strategic view but someone who had been a teacher, a manager and a project manager herself and that was a key thing for most of us. She had credibility she was there for us in my personal opinion that was crucial.

Discussion

The purposes of this study were to, (a) better understand the role that emotions play in mediating teachers’ implementation of new instructional practices gained through professional development; (b) identify discernible patterns of emotions experienced by individual teachers on their professional learning journeys; (c) examine how teachers’ emotional experiences align with theoretical understandings of processes of change; and, (d) consider implications for designers of teacher professional development programs.
The study found that emotions played a role in teachers’ experiences of professional development and at times mediated their behaviours and interactions with others, the teachers reported that different emotions were experienced at different times and were influenced by context, situations and relationships and are best be described as cyclical.

The role of emotions

This study’s findings corroborate the view that emotions play a role in teachers’ experiences of change. Both teachers describe relationships with others and interactions with the wider system during the change process as responsible for activating their emotions. The teachers’ emotional experiences were an integral part of their thought processes and their views of reality and in some instances mediated the way they behaved. For example, both teachers expressed unease regarding how their colleagues viewed them as they began to implement new instructional practices. Their discomfort led them to question their roles and status within their organisations. In Amber’s case, anxiety and insecurity prevented her from trying new things with particular groups of students. Her response was triggered by past interactions with a staff member; this episode had such a strong emotional impact on her that it prevented her from taking risks and implementing things the way she would have liked, even though she admitted, presenting in a different way didn’t work for her. Rosie also experienced similar feelings and said she was “stressed”, “nervous” and “worried” about what her colleagues would think of her and whether trying something new would hinder her students’ learning.

At the end of the 4 years both teachers’ in different ways spoke of how participation on the program had as influenced their personal belief systems and identities. Amber states;

I look back on the professional development with a lot of fondness and feel myself very successful and it’s completely embedded in my practice now…… It’s in me and I just won’t change.

Rosie makes similar claims and makes direct reference to this internal state supporting her continued implementation of instructional change;

I believe in it, it’s like a belief system, if you have a strong belief system it stands up to the big and the little disappointments.

Both of these statements highlight the interconnection between emotions, personal belief systems and identity. Amber talks about a “fondness” for the program and states “[I] feel myself very successful” these positive emotional responses are talked of in connection to her internalisation of the program, “It’s in me and I just won’t change”. Rosie makes similar comments and explicitly refers to how the adoption of change during the professional development program has become an integral part of self—“I believe in it, it’s like a belief system”. She considers this strong belief system to be a key factor in supporting her emotional resilience during the inevitable ups and downs of implementing change. Both of these teacher stories tell of how they have accepted change and integrated it into their personal belief
systems and identity and the emotional journey which has led them to this point is described by one teacher as "cyclical". Amber states that her "enthusiasm and belief" helped keep her going along with supportive relationships from those also involved in the professional development program. Positive and negative emotions have both played a part in this journey but holding a deep seated belief about the value of the program and their work along with supportive relationships appear in this case to be instrumental in keeping the teachers going.

The literature often suggests that negative emotional responses often inhibit teachers' ability to fully implement change. In this study however, both teachers speak openly about their negative emotions and the impact they had on them, but then go onto share the ways in which they overcame these to continue their use. Their stories provide valuable insight into how they managed their negative emotions and what factors helped them continue. Both report that supportive relationships with others had an impact on their emotional state and their continued use. Rosie identifies her relationships with program consultants as instrumental in continuing with the change process, "they made me feel supported made me feel like—I can go back and do this.... I trusted them both completely"; in turn this empowered her to "take risks" in her classroom and "grow". She also talks of the importance of her relationship with the departmental II project manager, stating, "we talked to her a lot about small concerns". Rosie viewed her as "a person of continuity all the way through" who "was there for us in my personal opinion it was crucial." Amber also cites a positive relationship with her colleague Ann as a key factor in enabling her to manage, "challenges along the way". Feeling supported by individuals in the wider system who were "credible" that the teachers could "trust" with a shared vision of the change process emerged as a critical factor in helping the teachers continue to implement change even in the face of seemingly insurmountable systemic blockages.

Strong emotional reactions were provoked when the teachers’ encountered obstacles to their progress and development. When describing her attempts to implement new instructional processes at her college Amber describes feeling disappointed when confined by system restrictions such as conflicting timetabling commitments and a lack of staffing and resources 'It made me feel very annoyed, I actually got quite down about it'. Rosie's story is similar in that she described feeling 'cross', 'angry', 'distressed' and 'cranky' when faced with similar issues. Interestingly both teachers displayed the ability to mask or shield their true emotional feelings. Despite her emotions Rosie stated, 'I didn't act out or anything but I would get very angry'. This is clearly an example of Hochschild's (1993) emotional labour. Rosie initially recognised her emotional reaction to the situation but then made a conscious decision "not to act out" or express how she felt in front of colleagues—thereby attempting to preserve her identity within the confines of organisational expectations. Hargreaves (1998) argues that emotional labour is an important and valuable part of teaching and has several positive implications such as protecting teachers from the often emotionally charged work of teaching and helping them to understand and control their emotions which could otherwise unsettle students and colleagues. Rosie’s story certainly demonstrates her awareness of the interplay between the two and her conscious choice of how to manage the
situation. This is an interesting emotional landscape characterised by conflicts between an emotionally fractured self negotiating and interacting with system norms and expectations.

Both teachers speak of negotiating the change process within a fractured system, one where meeting administration demands conflicts with meeting the needs of teachers and students; interestingly both display different but equally successful ways of dealing with system issues. In manifesting emotional labour Rosie remained quiet but continued to ‘chip away slowly’. Amber’s more sympathetic approach to dealing with managers allowed her to appreciate their situation and design alternative professional development opportunities for staff, more suited to the architecture of the system.

Patterns of emotions and relationships to change

Throughout the journey of professional change the teachers experienced a range of emotions in response to different tasks, contexts and relationships. Although emotions generally became more positive over time specific patterns did not mirror a linear or staged configuration like that suggested by much of the change literature. Moreover, emotional responses were cyclical, often experienced and re-experienced at different stages of the change journey and influenced by physical context, situation and personal relationships. This type of patterning is what Scott and Sutton (2009) describe as “mixed” (p. 165). In their study on emotions, change and teacher professional development, Scott and Sutton argue that simply charting teachers’ emotional responses to change on a continuum from positive to negative is unhelpful and negates the significance of the “emotionally intense process” (p. 166) of changing teacher practice. This mixed emotional patterning response does indeed characterise the journeys of professional change as we see emotions range from worry, anxiety, uncertainty, disappointment and anger to happiness, enjoyment, confidence and enthusiasm.

When viewed longitudinally—over the four year period of the professional development program a generalised pattern of affective responses emerges from the data. This aligns well with the SoC constructs and CBAM change literature which states that over time, as teachers change, they move from one stage of concern to another. For the teachers in this study this movement through the stages is accompanied by emotions. For example, Rosie and Amber both report anxiety, tension and stress when they first implemented new instructional processes or when they used the process with a new student cohort. When these emotions are reported they are in stories which relate to self and task concerns and directly align with SoC Personal and Management concerns. At the end of the program Rosie and Amber are more familiar with the use of the instructional innovations and they both report a mix of Consequence and Refocusing concerns accompanied by emotions such as enjoyment and confidence. However, there is not a seamless or sequential pattern of movement through the SoC; instead of teachers experiencing one stage at a time, in this study they simultaneously exhibit a combination of concerns, often accompanied by strong positive and negative emotions. For example, whilst her peak SoC is Stage 5 Collaboration, in her story about her present situation Rosie talks of her
anger and despondency at a lack of support and adequate resources illustrating her primarily Stage 3 Management concerns. Interestingly this does not seem to relate to Rosie’s first peak score which is Stage 5 -Collaboration and second highest peak score which is Stage 0—Unconcerned. It would appear that Rosie is experiencing simultaneous concerns and moving up and down the stages is a typical process for her, describing it as, “just the normal flow”. She describes her emotional reactions to this flow as “up and down”, speaking of feeling encouraged when things go well and plummeting and “feeling like you’re losing it” when things don’t go well.

Further insights into the causes for this can be found when examining other stories through the lenses of continuity (time), interaction (relationships) or situation (physical context). It would appear that both the teacher’s emotional responses to change can be charted as cyclical, dependent upon place, time and relationships. Both speak of feelings of apprehension and fear when first encountering a new phase of change in a new place, which then transition to enthusiasm and excitement and then to despondency when blockages occur, which then return to stoicism and enthusiasm. When reflecting on her experiences over time Rosie describes these emotional experiences as cyclical:

It’s like a cycle, go back to college, hit reality, get cranky, get over it and you just keep moving along, there’s quite a cyclic thing to it.

In this case, orchestrated rationalistic models of change which assume that change occurs in a series of discrete steps are limiting when considering the emotional landscape of professional change. The reality is that change is played out at the complex and dynamic interface between individual emotions, identities, beliefs and systems, relationships and politics.

Implications for professional development programs

Educational change initiatives are complex and dynamic processes fuelled by the emotional investments individuals have in the people and the processes that surround them. It is important for designers of professional development to recognise that more than not educational reform can be abstract and dispassionate, portraying change as a mechanistic journey on which individuals and organisations progress through a series of staged steps (Cross and Hong 2009). This negates a significant and vitally important dimension of change; the role emotions play in this process. The stories told by the teachers in this study show their experiences of change are highly personal and the process evokes emotional and behavioural responses. In some instances the emotions they experienced impacted their implementation of instructional practices. Knowledge of how emotions work to mediate and construct the change process and how these affect teachers can assist us in initiating and managing educational change more wisely, paying attention to the emotional needs of those involved and supporting them more effectively.

So what are the implications for reform efforts—how might future models of professional development affirm and subsume the emotional dimension of the change process? Findings from this study inform the following suggestions:
Teacher change through professional development needs a literature base which informs designers and policy makers of the importance of teacher emotions and it needs to make practical recommendations that can assist teachers on their change journeys. To be truly representative of the diverse and multifaceted nature of change this literature base needs to encompass multiple theoretical perspectives and methodological approaches (van Veen and Lasky 2005; Zembylas and Schutz 2009). We need to expand the range of scientific and inquiry based methods used to explore this area to build a deeper and more comprehensive understanding of the processes involved. Only then can these findings be used to develop a shared language and conceptualisation of the experiences, patterns and relationships involved in professional change at the individual and system levels.

Second, as we develop our understanding of the relationship between emotions and change researchers have a moral imperative to disseminate and act on empirical findings. Recent research in the area of teacher emotions and change had led us beyond the limitations of simply viewing teacher emotions as either positive or negative and providing advice to administrators and change agents about how best to deal with resistance and apathy (Hargreaves 1998). Given the current status of our understanding there is sufficient evidence to support the relocation of emotions from the private domain into the public. Professional discourses on educational reform and professional development need to recognise the pivotal role of emotions in the change process. Policy makers, administrators, consultants and teachers need to give voice to these issues, openly discuss the impact of emotions and build strategies and processes which allow those engaging with change to openly share and explore their experiences.

Third, the emotional experiences of teachers involved in change processes need to be acknowledged by policy makers, administrators and those at the centre of professional development design. Findings from this study support those of others in that teachers experience a range of emotions as they negotiate and assimilate new learning into their teaching practice. It is important therefore to inform those who make the journey of change that the feelings they encounter are a natural part of the process (Schmidt and Day 2005). Time and space needs to be built into professional development processes for teacher dialogue to allow them to discuss feelings such as fear, anxiety and worry and to share enjoyment and confidence. The teachers in this study reported that supportive relationships with others involved in the program helped reduce feelings of isolation and helped support them on their journey. The concept of emotional safety and the importance of assuring it for teachers involved in reform processes are therefore of critical importance (Beatty 2007; Harris 2004; Lee and Yin 2010). In order to do this they need a shared language to articulate and negotiate their reality, and this can only be achieved by paying attention to the literature in this area and working collaboratively to exchange stories of experience.

Fourth, findings from this study highlight the vital importance of establishing and building relationships with others involved in the change process. Having close collegial interpersonal relationships based on mutual trust, respect and reciprocity was pivotal in enabling the teacher participants in this study to sustain the momentum of change even when faced with significant system restrictions.
Developing trust and holding a shared vision enabled the teachers to take risks and keep going when times were tough. Fostering and nurturing relationships built on trust, credibility and respect appear to be integral components of administering the change process effectively; components that change agents need to take seriously.

Fullan and Hargreaves (1992) state that teacher development, “must actively listen to and sponsor the teacher voice” (p. 5). Deliberately building time and resources into the design of change initiatives to allow frequent opportunities for sharing and exchanging ‘voice’, where teachers attend in teams, and are provided access to a number of supportive individuals at different levels of the system who hold the same vision is of critical importance to the successful implementation of change. This cannot be achieved unless deliberate changes are made to fundamental design of professional development programs during reform efforts.

This study has highlighted that even when change is facilitated and supported effectively at the system level it is clear that the interpersonal relationships and the emotional investments individuals make in them impact significantly on those who make the change journey. This study provides evidence for the need for designers of professional development programs to deliberately create opportunities for teachers to share—as Rosie states, their “horror stories”. It is only by placing teachers’ voices firmly in the public domain and then using their emotional experiences to inform the ways in which we manage and implement educational reform, that we can work towards achieving inclusive and sustainable educational change.

References


Paper 3

Effectiveness of research-based teacher professional development: A mixed method study of a four-year systemic change initiative.


Research aims addressed in this paper

1. To better understand the factors that relate to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers.
2. To better understand the emotional experiences of teachers involved in a systemic change professional development initiative.
3. To better understand the usefulness of the Concerns Based Adoption (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

Research questions addressed in this paper

1. In what ways have teachers changed their instructional practices as a result of the Instructional Intelligence Professional Development Program?
2. What factors facilitate or hinder teachers’ implementation of instructional innovations?
3. In what ways do teachers’ emotional responses mediate their behaviours when implementing new instructional practices?
4. How can CBAM be used to assess the behavioural and affective responses of teachers involved in a systemic reform in the Australian vocational education and training (VET) sector?
Effectiveness of Research-Based Teacher Professional Development:

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Effectiveness of Research-Based Teacher Professional Development: A Mixed Method Study of a Four-Year Systemic Change Initiative

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Introduction

Research literature related to identifying the desirable characteristics of professional development for teachers is considerable and has grown steadily over the past 15-20 years. This research includes large and small scale studies that examine pre and in-service programs and different types of professional development such as seminars, workshops, communities of practice and on-line programs. Despite the diverse content of the literature it is possible to draw conclusions about the general characteristics of professional development that facilitate change in teacher practice. For example, broad agreement exists that effective models of professional development should have clear goals and objectives, be aligned with teacher and student needs (Desimone, 2009; Garet, Porter, Desimone, Birman & Suk Yoon, 2001), provide time for teachers to engage with the subject matter over an extended period of time (Birman, Desimone, Porter and Garet, 2000; Garet et al, 2001; Ingvarson, Meiers, & Beavis, 2005), provide teachers with active learning opportunities (Birman et al, 2000; Garet et al, 2001), include opportunities for feedback and reflection and be collaborative in nature (Darling-Hammond & McLaughlin, 1995; Ingvarson et al, 2005; Joyce & Showers, 1995 & Lieberman & Pointer Mace, 2008).

Notwithstanding these generally agreed principles, questions remain about the impact of professional development programs on teacher beliefs and practices (Garet et al., 2001). How effective are programs built on research-based principles in terms of influencing teacher’s attitudes and behaviours, and supporting them in their journeys of professional change? Wilson and Berne (1999), for example, argue that there is a notable lack of empirical evidence about what teachers learn or do not learn in professional development, a position supported by numerous researchers (Dede, Ketelhut, Whitehouse, Breit & McCloskey, 2009; Guskey, 2000, 2009; Hill, Beisiegel & Jacob, 2013; Ingvarson et al., 2005 and Piggot-Irvine, 2007) who all call for the development of more sophisticated methods of evaluating professional development programs. Given a shortage of studies which explicitly examine the impact of professional development designed on research based principles, is it enough to know that programs are planned and implemented based on research and theory and then assume that change in teacher behaviours and beliefs will occur?

Teachers implement aspects of their professional learning in complex systems which we know little about. Thus, there remains a strong need to systematically examine the outcomes of professional development programs built on research-based design principles (Bransford, Bransford, Brown & Cocking, 1999; Garet et al., 2001; Hill et al., 2013; Mouza, 2009; Villegas-Reimers, 2003). Further, there is also a professional and moral imperative held by educational researchers to serve the needs of teachers and policy makers by continuing to extend, refine, and disseminate their findings in this area and to act upon them. The purpose of this study, therefore, is to examine a four-year research-led systemic professional development initiative designed to extend and refine teachers’ instructional practice in the vocational education and training (VET) sector in Western Australia. The study used a mixed-methods approach to:

1. discover if teachers have changed their instructional practices as a result of the professional development program;
2. identify components of the professional development program that facilitated or hindered teachers’ implementation of instructional innovations;
3. identify systemic features (surrounding context) that facilitated or hindered teachers’ implementation of instructional innovations; and,
4. contribute to a better understanding of the design and implementation of teacher professional development informed by research.

Examining Teacher Professional Development

Examining professional development programs for teachers is notoriously challenging, a process Joyce and Calhoun, (2010) have described as “technically demanding” (p. 2). Whilst it is possible to draw general conclusions from research about what elements support teacher change as a result of professional development, drawing valid and reliable conclusions from such a diverse literature base about what works is a more complex task.

In his 2003 analysis of the features of effective professional development Guskey examined 13 different lists of the characteristics of effective teacher professional development. He concluded that there appears to be little agreement amongst researchers regarding the criteria for what constitutes effective professional development and contended that the evidence was “inconsistent and often contradictory” (2003, p. 4). There are several reasons for this. First, a wide variety of professional development models exist, with diverse goals and objectives, aimed at different aspects of teaching and designed for teachers working in different contexts. Additionally, programs are implemented at different periods of time in different political circumstances. Given this diversity, comparisons among models, measuring outcomes and making generalisations is challenging.

Second, models come alive in complex systems which are made up of individual schools, communities, districts, government departments and union structures. The literature reminds us that teachers work within a broader contextual framework, which Smith, Dwyer, Prunty and Kleine (1987) have described as a “nested system”. Guyton (2000) used a similar metaphor, stating that developing powerful professional development programs based on research theory and practice is like playing with “nested dolls” (p. ix). It is important therefore to take account of the nature and structure of these contexts and to examine any model of professional development in close relation to the systems which influence its design, operation and assessment.

Third, professional development is not confined to what occurs in a workshop or on a course, but rather is what happens when teachers attempt new practices and processes in their work. Teachers necessarily negotiate a host of variables as they enact new practices and processes. Some of these include student behaviours and abilities, relationships with colleagues, school climate, availability of resources and competing policy imperatives. These variables result in teachers potentially having quite different experiences, and in part account for what Joyce and Calhoun call “variance of implementation” (2010, p. 2). In other words, teachers mould their practices to suit the needs of their immediate environments. What may work for one teacher in one context may hinder another in a different situation. When considering the effectiveness of any model, examining the variance of implementation and reasons for it, is central to helping better support teachers who encounter challenges enacting professional learning. In addition, understanding variance of implementation can help inform the future design of models in different contexts. Given the importance of context, should questions about program effectiveness centre on what models best suit the specific needs of teachers in a particular context? In other words; does the design of the professional development fit its intended purpose, within a specific context?
Finally, there are also diverse approaches to the assessment of professional development making it very difficult to make valid comparisons among data. Guskey (2009) and Duke (2008) also note the proliferation of the use of stories and anecdotes in the evaluation of teacher professional development and whilst these help illuminate evidence they are “no substitute for it” (p. 227).

Method

The purpose of this study is to examine the outcomes of a research-based systemic professional development program for teachers in the VET sector. As suggested above, the professional change process is multifaceted and a research design is needed which recognises the complex nature of change as a personal, emotional, behavioural and dynamic process which occurs over a period of time, enacted within particular contexts or systems. In this circumstance a mixed methods approach was used. Using mixed methods allows varied sources of data to be collected and provides the opportunity for the triangulation of data, which can work to address any potential weaknesses that may be inherent in a single method approach and provides opportunities to test the consistency of research findings (Johnson & Onwueguzie, 2004).

The Instructional Intelligence Professional Development Program

The professional development program that provided the context for this study is known as instructional intelligence (Bennett, 2010). Instructional intelligence (II) was developed by Bennett (Bennett, 2002 & 2010; Fullan 2002) working towards a theory of instruction, and drawing on thirty-six years of his own teaching, research and work with teachers. Bennett describes II as the point at which the “art” and “science” of instruction meet (2010, p. 68). II is intended to merge curriculum, assessment, knowledge of how students learn, instructional skills, tactics and strategies and theories of change (Bennett & Rolheiser, 2001). In describing the “science” component of II, Bennett refers to it as the way in which teachers pay attention to research on the impact of using different instructional methods on student learning by stacking and integrating different methods to create powerful learning environments for students. “Art” is the creative and individual ways in which each teacher uses different instructional methods to suit different groups of students. By increasing teachers’ instructional repertoire Bennett argues; “we are more likely to become artful or creative and more scientific or intentional when differentiating our instruction to meet the diverse needs of students” (2010, p. 69).

Instructional intelligence involves more than teachers simply collecting an extensive assortment of instructional methods in the sense that developing expert behaviour in the use of any new skill takes time and practice. A central tenet of the II concept is helping teachers better understand and work effectively with educational change and this was reflected in the design and implementation of the professional development program in Western Australia. The program was based on research and theory into educational change (Fullan 2001; Hall & Hord, 2006; Huberman, 1983) and effective staff development (Bennett, 1987; Huberman & Miles, 1984; Joyce & Showers, 1995; Joyce & Weil, 1996) which recognises that change occurs over time and occurs when individuals work in teams, have opportunities to practice and reflect on their progress and receive constructive feedback and coaching.

For Western Australia (WA), the II professional development program ran for a period of four years, (2005-2008) and was designed to extend the instructional repertoire and
expertise of tertiary vocational teachers. The system-wide program was initiated in response to a change in state legislation which raised the school leaving age from fifteen to seventeen years of age. In an attempt to widen provision and options for students the vocational education and training (VET) system was required to provide school students with access to existing courses and develop new ones specifically designed to meet students’ needs. This policy resulted in an increasing number of young students entering an adult learning environment. Anecdotal feedback from teachers and the State School Teacher Union of WA (SSTUWA) was that teachers required new or upgraded instructional and behaviour management skills to successfully engage and manage this cohort of learners. In response to calls for support, the Western Australian Department of Education and Training (WADET) worked in collaboration with program consultants, the teacher’s union, college administrators and VET teachers to establish a four year systemic professional development program. The collaborative way in which the program was designed in direct response to calls for support from teachers and involving numerous stakeholders was unique to the sector and the first time a commitment was given to a single program dedicated to instructional improvement which was supported over time.

The design of this program differed from previous professional development provision in many ways. Firstly, rather than individual teachers attending the program and having to implement changed practice in isolation, II participants attended workshops in college-based teams comprising two to four individuals. The program ran for an extended period of time – four years. Workshops were held two or three times a year with each session spanning three consecutive days. At each session, participants engaged with theory and research on a range of instructional innovations. The steps involved in implementing the innovations were modelled and participants practised them and received feedback and coaching on their progress. Participants then considered the process and impact of integrating innovations across different content domains with different cohorts of students. When they returned to their colleges, teachers were required to trial the instructional methods in their classrooms, reflect on the process and meet in teams to discuss progress and provide support using peer coaching.

Research Participants

All research participants in this study taught in the public VET system in Western Australia and were recruited from the group of 35 teachers in the II professional development program. Twenty seven teachers volunteered to take part in this study and comprised 8 males and 19 females distributed across 11 colleges in metropolitan, regional and remote locations (see Table 1). Fourteen participants were from regional colleges, four from remote locations and nine from metropolitan colleges. The group was also broadly representative of VET teachers in WA, working across diverse content and vocational areas including adult literacy, business studies, building and construction, community services, graphic design, metal, mining and engineering trades.

Participants varied in their teaching experience and the number of years they had participated in the program. Seventeen had 11 years or more teaching experience; six had been teaching for over 20 years. Of the remaining 10 participants, two had been teaching for between one and four years and eight for between five and ten years. Seventeen of the 27 had participated in all four years of the program, four for three years and six for two years.
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<table>
<thead>
<tr>
<th>Number of years teaching experience</th>
<th>Years of II participation</th>
<th>Male</th>
<th>Female</th>
<th>Metro</th>
<th>Regional</th>
<th>Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–4 (n = 2; 7.5%)</td>
<td></td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>5–10 (n = 8; 30%)</td>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11–15 (n = 9; 33%)</td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
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<tr>
<td>16–20 (n = 2; 7.5%)</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>20 or more (n = 6; 22%)</td>
<td></td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Participants by years of teaching experience and years of II program participation

Instruments

The Concerns Based Adoption Model (CBAM) (Hall & Hord, 2006) is a conceptual framework and set of measures specifically designed to monitor and assess teachers' educational change. CBAM has been widely used by those researching and implementing educational change initiatives and is recognised as one of the most empirically grounded and reliable approaches to assessing educational change (Anderson, 1997; George, Hall & Stiegelebauer, 2006; Hall, Dirksen & George, 2006; Hall & Hord, 2006). CBAM was selected for use in this study because it is anchored in change theory and reflects the view that change is implemented by individuals who enact it nested within wider system contexts.

The model comprises a conceptual framework and a set of dimensions which act as lenses through which to view and understand change processes at the individual and system level. These dimensions are Stages of Concern (SoC) which focuses on affective aspects of change or how individuals feel about the process; Levels of Use (LoU) which focuses on behavioural aspects of change or the ways in which individuals put learning into practice, and Innovation Configurations (IC) which identifies and describes various forms of an innovation that educators adopt throughout the change process. Each dimension comprises a framework and a corresponding set of methods designed to measure the implementation of innovations (Hall & Hord, 2006; Hall & Loucks, 1979; Loucks, Newlove & Hall, 1975).

CBAM SoC and the LOU interview protocol were used for data collection and analysis procedures for the first phase of this study. The Innovation Configuration Map (IC Map) tool was not used in this study. IC Maps are primarily used in a strategic manner to plan and monitor stages of a change process over time. The aims of this study were to better understand teacher's individual use of instructional innovations and to identify factors which facilitated or hindered their implementation of change; in this circumstance IC Maps were not appropriate for use. The SoC has good reliability with test re-test coefficients ranging from .65 to .85, and internal consistency (Chronbach's alpha) ranging from .64 to .83 (Hall & Hord, 2006). The LoU instrument has strong internal consistency measured by Chronbach's alpha ranging from .65 to .98 (Hall, Dirksen & George, 2006) and has test-retest reliability estimates ranging from .84 to .87 (Hancock, Knezek, & Christensen, 2007).

Research Design

The design incorporated four sequential phases, employing quantitative methods for the identification of meaningful patterns followed by qualitative methods for gaining insight into
more complex phenomena (Greene & Caracelli, 1997). Analysis involved the application of descriptive statistics for quantitative data, and interpretive analysis for qualitative data. Figure 1 outlines these corpus of data.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Data collection</th>
<th>Participant n</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stages of Concern Questionnaire (SoCQ)</td>
<td>27</td>
<td>Descriptive statistics</td>
</tr>
<tr>
<td></td>
<td>Levels of Use Interview (LoU)</td>
<td></td>
<td>Interpretive analysis</td>
</tr>
<tr>
<td></td>
<td><strong>Case analysis / selection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Semi-structured interviews</td>
<td>8</td>
<td>Narrative analysis</td>
</tr>
<tr>
<td>3</td>
<td>Classroom observations</td>
<td>8</td>
<td>Interpretive analysis</td>
</tr>
<tr>
<td>4</td>
<td>Short semi-structured interviews</td>
<td>8</td>
<td>Interpretive analysis</td>
</tr>
</tbody>
</table>

Figure 1: Phases of data collection and analysis.

**Phase One**

In order to identify to what extent teachers were implementing new instructional process in their practice, phase one comprised the administration of the Concerns Based Adoption Model (CBAM) instruments, the Stages of Concern Questionnaire (SoCQ), a 35-item questionnaire, and Levels of Use (LoU) interview protocol. To ensure consistency in the focus of responses across the two instruments, participants were asked to select a single innovation they had acquired through the professional development program and to respond to both instruments based on their experiences of implementation with that innovation.

Data were analysed to identify any relationships between individual LoU and SoC scores and to discover patterns within the overall group profile. Associations between the different LoU and SoC groupings were considered and used to identify cases that could provide rich sources of data, allowing inquiry to focus on the relationships between individuals and the systems in which they work. A total of 8 cases were identified as representative of low, medium and high LoU and different SoC; this group progressed through the remaining phases of data collection.

**Phase Two**

To discover more about the reasons for individual SoC and LoU profiles and placements and to gain a deeper insight into the teachers’ experiences of the professional development program and interactions with the wider system, narrative methods were used in the second phase of data collection. Connelly & Clandinin (1990) and Riessman (1993) have suggested that encouraging individuals to re-tell personal stories and discuss the meaning of these allows for freedom of expression and in-depth, personal disclosure.

Individual in-depth, open-ended interviews were conducted. Each interview typically lasted for about 60 minutes. Participants were invited share personal experience stories (Connelly & Clandinin, 2000) in which they focused on episodes they felt best described their experiences associated with professional development. The interviews were audio-recorded, transcribed and re-storied (analysing and reconstructing the original story using a pre-determined framework). The re-storied interviews were returned to the participants for verification and endorsement. Connelly and Clandinin’s (2000) three dimensions of
interaction, continuity and situation were applied, providing a three dimensional framework to the narratives, allowing individual experiences to be tracked during the life of the program.

Phase Three

Data gathered from the remaining phases (three and four) were compared against that of earlier stages to better understand the connections between self reported data and observed levels of classroom implementation. Phase three involved observing the 8 participants in their respective classrooms as they used the innovation reported on in phases one and two of data collection. Field notes were taken and data recorded against rubric descriptors devised for four distinct levels of performance, for each instructional innovation. These consisted of level 0 (No use), level 2 (Mechanical), level 3 (Routine) and level 4 (Refined). Rubric descriptors were based on the critical attributes for each innovation aligned with CBAM levels of use profiles. Each participant was observed and ranked at one of these four levels.

Phase Four

One week after the classroom observations a final semi-structured interview was conducted. This provided participants with the opportunity to reflect on their practice during the observation and to share feelings about the process and their level of innovation use on the day. Interview data were transcribed and then analysed using thematic narrative analysis and triangulated with that gathered from the previous phases of collection.

Limitations in Design and Analysis

In order to gain an in-depth understanding of the outcomes of the II professional development (consistency) program this study’s design incorporates multiple data collection and analysis methods, involving several phases. It is acknowledged, however, that this study has limitations. First, data collection was conducted at the end of the four year program and therefore provides a cross-sectional ‘snapshot’ of the study group at a particular point in time. Despite this, the study’s results reveal important insights about individual experiences of the II professional development and insights about the research and evaluation of professional development more generally.

Second, this study focuses only on the outcomes of professional development program for teacher participants and not on the potential consequences for students they taught. Despite anecdotal evidence from teachers regarding the impact of their use of new instructional methods on student interaction, engagement and academic performance, data were not directly collected from students and it is therefore not possible to corroborate the teacher’s views about student impact across all these areas.

Third, it is also acknowledged that the volunteers who participated in this study were motivated and interested to do so and it is not surprising that most are implementing aspects of the program. However, it was also the case that variations in levels of use, stages of concern and personal experiences were clearly evident amongst the group; the participants, although volunteers, were not monolithic. Therefore, although it is also acknowledged that the number of participants in this study is relatively modest, and that generalisations of the findings must be made with caution, the experiences of research participants nevertheless provide considerable value in helping us better understand educational change initiatives.
Findings

The findings from this study are described in the order in which data were collected and analysed. The SoCQ and LoU data were used to first profile participants' *stages of concern* and *levels of use* and to identify meaningful patterns across the twenty-seven teachers. This is followed by description of findings derived from the narrative analysis of interview data collected in phase 2, followed by a brief explanation of the findings from phases 3 and 4.

Phase One – Stages of Concern Questionnaire and Levels of Use Interview Protocol
First and Second Highest Concerns Group Results

For each participant, individual profiles were generated from the SoCQ that displayed relative intensities of teacher participants’ first and second highest stages of concern in combination. Examining participants’ first and second highest concerns provides insight into the dynamics of concerns and reveals general developmental patterns for both groups and individuals. Participant’s highest and second highest stage of concern are given in Table 2.

<table>
<thead>
<tr>
<th>Highest Stage of Concern</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Uncconcerned</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1 Informational</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2 Personal</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3 Management</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4 Consequence</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5 Collaboration</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6 Refocusing</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Distribution of teacher participants’ first and second highest stages of concern.

The SoCQ revealed that 74% of the group wanted to collaborate with others about a range of issues. CBAM literature (Hall & Hord, 2006) suggests that if an innovation is appropriate and the change process facilitated wisely over time then implementers will move from early self concerns (*Information* and *Personal*) to task concerns (*Management*) within 3 years. At the 3-5 year point of a change process participants tend to reach impact concerns (*Consequence, Collaboration* and *Refocusing*). For the majority of the group to have developed to the *Collaboration* stage “means that change has truly been treated as a process, that the innovation has been given sufficient time to be implemented” (p. 150).

Examining participants’ second highest concern indicates that the reasons individuals want to collaborate range across the full spectrum of concerns, from collaborating about any issue regarding use (Stage 0); wanting more information about the use of innovations (Stage 1); managing time and resources (Stage 2); considering the impact of use for students (Stage 4); to changing the ways the innovation is used (Stage 6).

Levels of Use Interviews

Interview data were transcribed and analysed against LoU categories. Assessment of participants’ LoU was made by considering responses to interview questions reflecting decision points for each level of use and by classifying behaviours holistically using the LoU.
matrix. These data revealed that all the teacher participants were implementing innovations in their practice as a result of the II professional development program. As shown in Table 3, three distinct groups were identified and their characteristics described using the CBAM user profiles.

<table>
<thead>
<tr>
<th>Levels of Use</th>
<th>0 Use</th>
<th>I Orientation</th>
<th>II Preparation</th>
<th>III Mechanical</th>
<th>IVA Routine</th>
<th>IVB Refinement</th>
<th>V Integration</th>
<th>VI Renewal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Individuals</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>14</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Percent of Individuals</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>41%</td>
<td>52%</td>
<td>7%</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3: Levels of use amongst teacher participants

LoU IVA – Routine - 11 Individuals (41%)

Hall and Hord (2006) have stated that a “lack of change” (p. 13) in the ways an innovation is used is the key to identifying a Routine user. Having mastered use, routine users establish a regular pattern of working with the innovation and have no plans to adapt or change. Whilst placement at this level provides information about a participant’s level of use it is not clear if use has changed over the four year program period or if he/she has made a recent change and is waiting to see its effects. The relationship between the number of years teachers have participated in the program and their placement in this category provides additional information about progress across LoU and the implementation of professional learning. Five teachers in this group had participated in the program for 4 years, two for 3 years and four for 2 years. This suggests that it is possible for teachers to become routine users of innovation within 2 years; Hall and Hord (2006) suggest that to move to this level of use participants need to “have had appropriate facilitative assistance and time.” (p. 172) which in turn is indicative of the change initiative being implemented appropriately.

LoU IVB – Refinement - 14 Individuals (52%)

To be placed at this level of use individuals must have enacted a recent change, be planning a change, or be in the process of changing or evaluating use. A key way to support this group is to provide opportunities for collaboration with others using the same innovation to foster new ideas and reinforce use. This information is particularly valuable in conjunction with the SoCQ data, which revealed the majority of the group were at stage of concern - 5 (Collaboration). Most of the group would like to collaborate and therefore providing opportunities for them to work together would be an appropriate support strategy.

LoU V – Integration - 2 Individuals (7%)

Both teachers in this group had participated in the program for the full four years. Placement in this group indicates that they have moved beyond personal use to work with others to coordinate their efforts for the purpose of improving student outcomes. Any changes being made do not relate to merely circulating information about an innovation but instead focus on increasing impact for students. Progression to higher levels of use is not always
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possible or desirable for all teachers, however, the participants in this group are in the unique position of being able to influence change efforts and support colleagues on their change journeys (Hord, Rutherford, Huling, & Hall, 2004).

Phase Two – Narrative Interviews

As outlined above, quantitative and qualitative data gathered from phase one were used to initially categorise individuals into different SoC and LoU. Distinct sub-groups were identified representative of different levels of use and stages of concern. These were used to identify eight individuals representative of each sub-group. These eight teacher participants proceeded to phase two of data collection and analysis.

Clandinin and Connelly’s (2000) three dimensional narrative inquiry framework was used in to gain insight into teachers’ experiences in relation to participation in the program and interactions with the wider system as they attempted implementation. As its name suggests, the framework comprises three dimensions: 1) personal and social (interaction) – relating to an individual’s social exchanges and making sense of the self in relation to others; 2) past, present, and future (continuity) – a chronological framework which can be used to view experiences over time; and (3) the notion of place (situation) – relating to an individual’s experiences in different places and contexts. Applying these three lenses to the stories helped disentangle the complex reality of teachers’ lives and experiences as they implemented instructional change. The 3-dimensional framework also provided a clear structure for examining how teachers felt as they interacted with different groups including students, colleagues, managers and professional development consultants (interaction), the extent to which feelings and behaviours changed over time (continuity) and how these experiences changed depending on the context (situation). Individual in-depth, open-ended interviews were conducted with each of the 8 participants, each lasting for approximately 60 minutes. Participants were invited to recount personal experience stories (Clandinin and Connelly 2000) in which they focused on stories they felt described their experience of implementing instructional change at different points in time.

The data gathered in phase 2 revealed that the features of professional development design that built the capacity of teachers to implement change in their instructional practices included: (1) the extended duration of the program which provided time to build skills and knowledge; (2) sharing of resources and ideas and being part of a college based team and larger community; (3) program structure which included modelling, demonstration, practice and feedback; and, (4) working in peer coaching relationships. Paradoxically, participants reported that peer coaching relationships were a hindrance to their progress when relationships in the teams broke down.

Despite implementing the program on research-based principles; several obstacles emerged for teachers as they began to change their practices, these included: (1) lack of support, negativity and the withholding of resources by college based administration, specifically middle management; (2) competing demands on teacher time due to increased workloads, meeting system compliance requirements and changing job roles; (3) impact of individual emotional responses to change – feelings of fear and insecurity had a significant impact on teachers’ choice to implement new instructional processes as they negotiated wider system expectations embedded in their job role and workload allocation. Teachers didn’t report any aspects of their interactions with the wider system which helped them implement new instructional practices.
Phase Three – Classroom Observations

The data gathered in phase 3 were used to compare LoU findings from phase 1. This phase involved observing the 8 participants in their classrooms whilst they used the instructional innovation they reported on in phase one and two of data collection. Field notes were taken and data were recorded against rubrics. Rubric descriptors were devised for four distinct levels of performance for each instructional innovation, these levels consisted of – level 0 (No use), level 2 (Mechanical), level 3 (Routine) or level 4 (Refined). The descriptors were developed based on the critical attributes for each innovation and aligned with the CBAM levels of use profile descriptions. Participants were observed using their selected innovation in their classrooms and their use was ranked at one of the four levels. In general, findings from classroom observations supported the LoU classifications and revealed that all participants were implementing instructional innovations at Routine and Refined levels.

Routine Use (2 Participants)

Two participants were classified as Routine users of their selected innovation. These teachers explained the use of the innovation to students clearly, implementation was smooth and they were able to clarify any issues raised. Skilled at re-directing students and keeping them on task, these teachers were able to successfully implement the innovation to support the learning outcomes they had targeted.

Refined Use (6 Participants)

The difference between Routine and Refined users is that in addition to displaying instructional practices outlined for Routine use, Refined users demonstrated their capacity to stack and integrate other instructional processes with their chosen innovation. This was a positive but unintended outcome of the professional development program and indicates that these teachers were developing instructional intelligence.

Phase Four – Short Semi-Structured Interviews

Short semi-structured interviews were conducted one week after classroom observations took place and provided participants the opportunity to reflect on their instructional practice during the observation, and to share their thoughts on the level of innovation use during the observation. Two teachers said that they were worried about doing it wrong and felt that their concerns directly impacted their use during observation; reporting that they missed steps or felt that the students didn’t engage in the way in which they had hoped or had done in the past. Interestingly, both of these participants had been classified as Refined users and in fact hadn’t missed any steps, displaying smooth and sophisticated use. The remaining 6 participants reported that they felt their use on the day was typical and that their students responded in ways they expected. These findings reveal that despite some participants experiencing a range of negative emotional responses all were able to overcome these and implement their innovation successfully.
Discussion

The aims of this study were to: (1) discover the extent to which teachers changed their instructional practices as a result of a 4-year II professional development program; (2) identify components of the II professional development that facilitated or hindered teachers’ implementation of instructional innovations; (3) identify systemic features that facilitated or hindered teachers’ implementation of instructional innovations; and (4) contribute to a better understanding of the design and implementation of teacher professional development informed by research.

Extent to which teachers changed their instructional practices

The study’s findings reveal that participating teachers changed their instructional practices as a result of the professional development program and are implementing innovations at Routine, Refined and Integrated levels of use. In this sense the program has been effective at changing teacher practices. The fact that teachers have changed aspects of their instructional practice and demonstrated high levels of use indicates that the content was relevant and the design and implementation of the program was appropriate for their needs and the context in which they worked.

Components that facilitated or hindered teachers’ implementation of instructional innovations

Teachers in this study identified several features of the II program design which supported them in enacting change in their instructional practice. The first was, having an extended period of time (four years) to learn, trial and reflect upon their practice. This finding aligns with the literature (Birman et al., 2000; Garet et al., 2001; Hall and Hord, 2006; Little, 1988). Providing teachers with an extended amount of time to adequately engage with the program content, to be able to trial and reflect on their practice is crucial for effective teacher learning to occur. However, as Guskey (2009) reminds us simply adding more time to professional development activities does not automatically equate to making them more effective. Rather, it is the nature of what is done during that time that makes it effective. In this study teachers reported that having time allowed them to reflect and discuss their experiences and ideas – it provided them with a space to examine their beliefs and values in relation to new ways of teaching and also to share resources. Sufficient time also allowed teachers to engage in the second successful feature of program design, sharing contextualised resources, strategies and materials. This finding is also supported by the literature (Darling-Hammond & McLaughlin, 1995; Garet, et al., 2001; Kennedy, 1998) in that when teachers are given opportunities to work with the relevant application grounded in their day to day work, the resulting learning “enables teachers to make the leap from theory to accomplished practice” (Darling-Hammond and McLaughlin, 1995, p. 598). Program designers therefore need to not only consider how much time they allocate for teachers to learn and engage with material but also provide guidance on the nature and structure of the activities teachers take part in. Consideration should be given to how time is allocated and used in teacher professional development and this needs to be built explicitly into program design.

The third positive aspect teachers noted was the structure of the program. Participants reported that the cyclical, iterative nature of theory, demonstration, practice and reflection helped them embed new instructional practices into their repertoires. Despite criticisms of training models of teacher professional development which suggest that they are inadequate
for the current complex nature of educational reform agendas (Little, 1993 & Rhine, 1998), and the emergence of more transformative models which allow teachers to develop a sense of personal agency in the process (Collinson, Kozina, Lin, Ling, Matheson, Newcombe and Zogla, 2009). In this study the Skill Training Model (Joyce and Showers, 1995) was appropriate for the needs of the participants and was instrumental in helping teachers change their practice. This reminds us that professional development takes place in real-world contexts and whilst similarities exist, the complexities of these worlds, like the teachers that work in them are diverse, complex and unique. It is important to consider a range of factors such as, the scale, type and nature of the change required, the numbers of participants involved, their prior knowledge and experience, their degree of commitment to the process, funding available and the intended outcomes of the program. These variables need to taken into account in the design of the program and the most appropriate model selected to meet the unique profile of the context and participants.

The fourth design feature viewed positively by participants was peer coaching (Joyce & Showers, 1995; Sparks & Loucks-Horsley, 1990). Teacher participants stated that peer coaching relationships helped reduce feelings of isolation and provided opportunities to exchange ideas and problem solve. Early research by Showers and Joyce (1996) showed that “teachers who had a coaching relationship—that is, who shared aspects of teaching, planned together, and pooled their experiences—practiced new skills and strategies more frequently and applied them more appropriately than did their counterparts who worked alone to expand their repertoires” (p. 14).

In this study peer coaching was considered overall by participants a favourable component of program design. However, some also spoke of the negative impact of these relationships. Two key issues emerged; (1) some team members failed to attend scheduled meetings and complete the allocated team tasks, resulting in a single team member taking responsibility for the team and its outputs and, (2) interpersonal relationship breakdowns. Conflict is not uncommon to any group process and something Achinstein (2002) identifies as a central and necessary part of the micro politics of teacher change in communities. In all cases, however, participants were able to overcome these breakdowns and completed the program and requirements successfully. Nevertheless, in terms of program design there are important implications to consider regarding the use and role of peer coaching. When teachers work collaboratively to make change the space inevitably becomes a site for potential conflict as different beliefs, values and practices collide. Asking teachers to negotiate and manage this process without providing support and guidance can create unanticipated negative consequences, which could in turn impede individual teacher change; a design feature initially created to support can actually hinder progress. Interestingly, Guskey and Yoon (2009) call for stronger, “valid and scientifically defensible evidence” (p. 496) on the role of peer coaching in professional development programs, whilst Little (1993) claims that peer coaching only suits specific types of content and contexts and it is important to be mindful of the wise application of peer coaching and the need to support teachers throughout the process.

Systemic features that facilitated or hindered teachers’ implementation of instructional innovations

Whilst participants identified a number of features of the program design which supported or hindered their implementation of change, when asked to comment on features of the system or the surrounding context which had the same impact, participants reported only negative aspects and were critical of several broader systemic issues they negotiated. These included, (1) lack of support for teams from managers in the colleges, resulting from a lack of
understanding of the program requirements and prioritising other system compliance and reporting requirements, (2) securing time and space to meet in peer coaching teams at their respective colleges, and; (3) dealing with wider system expectations and requirements when these conflicted with their own emotional responses to change.

Despite gaining administrative support and allocating appropriate funds to ensure release time for participants to take part in professional development activities (including peer coaching meetings) related to the program, many reported that competing demands in their workplaces resulted in these often being postponed or cancelled. Further, as new priorities and initiatives arrived in their workplaces; new demands were placed on teacher participants who then had to re-negotiate their time previously allocated to meeting the professional learning program requirements. Many participants also commented on the pressure from managers to use their professional learning time to complete documentation required for auditing purposes and meeting system compliance requirements as contrasted with spending it on professional learning. The misalignment of priorities between academic and administration staff resulted in a lack of systemic support from management and compounded an already pressured space for participants.

In addition to the system barriers identified by participants, individual emotional responses to the change process also proved to be barriers to implementation. As participants interacted with the processes and systems that construct their day to day lives as teachers conflicts arose as they found aspects of implementation were in opposition to wider expectations and normative social practices. Teacher emotional responses to this can be categorised into two distinct areas, (1) emotional responses to their personal use of new instructional process and (2) emotional responses when faced with system blockages (perceived or actual) to their implementation of aspects of the professional development program.

Many teachers reported feeling anxious, nervous or stressed when initially trying out new instructional methods. These emotional responses arose from; (1) teacher concerns regarding what their colleagues would think of them whilst they were trying new instructional practices, (2) teacher concerns about whether trying something new would hinder her students’ learning and, (3) teacher concerns over their personal competence in using new practices (remembering the steps and the process, and overall task design). Whilst many reported overcoming these negative emotions with support from colleagues and program consultants, one participant noted that these fears prevented her using new practices with certain groups of students – this emotional dimension of the change process should not be ignored by designers of professional development programs. It is not only important to inform teachers that the feelings they encounter are a natural part of any change process (Schmidt and Datnow 2005) but time and space also needs to be built into professional development processes to allow teachers to discuss their emotional experiences and support one and other (Saunders, 2013).

Exploring the emotional dimension of professional development change process remains a largely neglected area of inquiry findings from this study support growing calls from researchers to develop our understanding in this important area (Hargreaves, 2000, 2001, 2005; Harris, 2004; Nias, 1996; Lee and Yin, 2010; Saunders, 2013; Sutton and Wheatley, 2003 and Zembylas, 2002).
Conclusion
Towards a better understanding of the design and implementation of teacher professional development informed by research

So what can be taken from this study to help better inform the design and implementation of teacher professional development programs informed by research? Although the findings reveal that we still have much to learn, specifically in relation to meeting the individual needs of teachers in different contexts within complex systems. We can conclude that when it comes to professional development one size definitely doesn’t fit all. Each change landscape is characterised by multiple relationships, places and contexts mediated over time by competing priorities and personalities. Two programs may be designed and implemented in similar ways but provide very different results; context then must be taken into account. Despite the endless lists of desirable characteristics of professional development Guskey reminds us to pay attention to the “nuances of context” (2003, p. 16) and suggests that instead of trying to compile a definitive list of professional development “best practices” (2009, p.231) designers would be better working with “collection of core elements” (p.231) based on the research. Programs need to be adapted and contextualised for specific purposes and situations (Pennel, Fishman, Cheng & Sabelli, 2009) and designers need to be able to combine the “core elements” of good design with a solid understanding of the context.

Findings from this study indicate that the program was successful in supporting teachers to change their instructional practices and beliefs. However, we can also conclude that there is a continued need to research programs built on research-based principles and this study provides evidence to support this claim. For example, the II professional development program was structured in accordance with research based principles, for example; (1) stakeholder support was sought and won, which included – the state education and training department, the teachers union and all 11 publically funded colleges in the state; (2) the program was implemented over a prolonged period of time to give teachers time to practice and embed new skills (in this case, four years), (3) the program’s design incorporated theory, demonstration, practice and feedback and follow up and participants attended in teams and engaged in peer coaching, and (4) content was contextualised, work related and integrated into teachers’ learning areas. However, it is clear that it is not as simple as putting structures in place (providing funding and signing formal agreements) and assuming implementation will automatically occur, as several unforeseen issues arose. ‘Set and forget’ is not the answer, there is still much to learn about the individual experience of change nested within complex systems. Lessons learnt from this study are that middle management needs to be fully informed, involved and held accountable for ensuring agreements made at the beginning of the outset are followed (kept) for the duration of the professional development program. There is also need to better understand the dynamics of implementing professional learning ‘back at the ranch’, the barriers teachers most commonly experience, the reasons they occur and what strategies we can use to support teachers.

Participants who took part in the II professional development program would also have benefited from guidance on managing peer coaching relationships including for example, developing team conflict management and negotiation skills and creating shared team expectations and accountability strategies. Additionally, developing participants’ understanding of the affective aspects of a change process could be beneficial. Helping teachers develop an understanding of their emotional responses to change and providing opportunities for them to share these with others may assist them to better manage their emotions and negotiate the process (Saunders, 2012). As discussed, these issues are largely neglected by educational change researchers in favour of a focus on the mechanistic nature of
the change process. More research is needed of the personal, individual experience of the system change experience.

To simply implement professional development programs that have been designed based on research and theory is not enough. There is a need to extend and build upon our empirical knowledge based on evidence of what works (Fishman, Marx, Best & Tal, 2003 & Hill et al. 2013) and to use this knowledge wisely in specific contexts. It is important therefore to continue to explore, refine and develop our understanding to enable educational reformers, policy makers, and those directly involved in the design and implementation of professional development to better support the needs of teachers.

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This chapter draws together the main findings of this empirical research study into teachers’ emotional and behavioural responses to an educational change initiative, delivered via a 4-year program of professional learning. The chapter brings together the findings reported in each of the three published papers that form the centerpiece of this thesis. The discussion begins by examining what has been learnt from this research study and is structured in accordance with the research aims of the project. This is followed by a discussion of the methodological, theoretical and implementation-related implications of the research for the conceptualisation, design and effective implementation of teacher professional development. The chapter concludes with suggestions for further research.

The research aims of this study were to better understand: 1) factors that relate to the uptake of the Instructional Intelligence Professional Development Program by tertiary teachers; 2) the emotional experiences of teachers involved in a systemic change professional development initiative, and; 3) the usefulness of the Concerns Based Adoption Model (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs.

Each published paper presented in this study addressed different research aims and questions. A brief reminder of the relationship between the research aims of this study and the individual papers is provided below.

**Paper 1: Assessment of Professional Development for Teachers in the Vocational Education and Training Sector: An Examination of the Concerns Based Adoption Model**

This purpose of this paper was to examine the usefulness of the Concerns Based Adoption Model (CBAM) as a conceptual lens and methodology for the assessment of teacher professional development programs; specifically those involved in systemic reform in the Australian vocational education and training (VET) sector. The paper addressed research aims 1 and 3.
Paper 2: The Role of Teacher Emotions in Change: Experiences, Patterns and Implications for Professional Development

The purpose of this paper was to better understand the emotional experiences of teachers when implementing new instructional practices as a result of a systemic change professional development initiative. The paper addressed research aims 1, 2 and 3.


The purpose of this paper was to better understand the ways in which teachers changed their instructional practices as a result of the Instructional Intelligence Professional Development Program; specifically, what factors facilitated and what factors hindered the change process? The paper addressed research aim 1, 2 and 3.

Aims and Findings

Research Aim 1: To Better Understand the Factors that Relate to the Uptake of the Instructional Intelligence Professional Development Program by Tertiary Teachers

Findings from this research indicate that the teachers involved in this study changed their instructional practices as a result of participation in the Instructional Intelligence Professional Development Program. The use of CBAM instrumentation, specifically the LoU interview protocol, revealed that teachers were implementing new instructional strategies at routine, refined and integrated levels of use. Results from CBAM’s Stages of Concern Questionnaire (SoCQ) showed the majority of the group (74%) were engaged at Stage 5 (Collaboration) and were interested in collaborating with colleagues on any issue regarding use. Analysis of the second-highest stage of concern revealed the reasons individuals wanted to collaborate were varied and ranged from collaborating about any issue regarding use (Stage 0); gaining more information about the use of a particular innovation (Stage 1); managing their time and resources in relation to use (Stage 2); considering the impact use has on students (Stage 4); and, making changes to the way an innovation is used (Stage 6).

In this sense the Instructional Intelligence Professional Development Program can be considered successful in facilitating positive change in teachers’ instructional behaviour. In
addition, findings from phase two of data collection (individual in-depth, semi-structured, open-ended interviews) and analysis revealed the participants involved had also changed their personal beliefs about instruction as a result of their participation in the program; and had integrated these beliefs into their sense of professional identity. For example, the teachers studied for Paper 2 made reference to the internalisation of aspects of the instructional intelligence program using statements such as, “It’s in me and I just won’t change” and “I believe in it, it’s like a belief system”. This depth of affective change was an unexpected finding. Whilst the research literature frequently refers to educational change as having both behavioural and affective dimensions (Cross & Hong, 2009; Fullan, 2001; Hall and Hord, 2006) few studies actually explore the affective dimension in any depth. Measures that do account for teachers’ affect, for example CBAM’s SoCQ, place participants at a stage of concern. Although such placement can be helpful in identifying the concerns individuals may have at a certain point in the change process there is no way of knowing or understanding the internal processes or the degree to which change has impacted personal beliefs and values. Nor is there any way of identifying the antecedents, which contributed to an individual’s placement or the emotional journey he/she has taken. The use of in-depth narrative interviews in phase 2 of data collection and analysis in this study has provided insight into the largely unexplored affective side of the change process. This study’s findings then, have made a contribution to a better understanding of this largely uncharted dimension of educational change and provide a more in-depth picture of the personal emotional dimension of professional development change processes.

The factors that facilitated the uptake of professional development in this study were found to be consistent with those described in previous research on the core characteristics of effective teacher professional development (Borko, Jacobs & Koellner, 2010; Darling-Hammond & McLaughlin, 2011; Guskey, 2009; Wayne, et al., 2008). The teacher-participants cited a number of features of the professional development program design as having facilitated their implementation of instructional change. These included a) having an extended length of time to participate in the professional development program; b) sharing with colleagues contextualised resources, strategies and materials; c) the cyclical nature of the training model which included the iterative processes of theory, demonstration, practice and
reflection; and, d) peer coaching. In addition, the supportive collegial relationships described in Paper 2 emerged as a significant factor in supporting participants to address their negative emotions in response to system blockages throughout the program. For example, one participant commented on the important role two of her colleagues played in her implementation of the program, “they made me feel supported made me feel like – I can go back and do this... I trusted them both completely”.

Teacher-participants also identified a number of factors that hindered their implementation of change. Interestingly, all of the blocking factors teachers identified related to enacting instructional change in their colleges and were not linked to participation in the face-to-face professional development sessions.

In exploring the perceived barriers and facilitators to teacher change, this study contributes to a better understanding of interaction between individual teachers and the wider systems in which they attempt to enact change. Participants in this study reported that the following factors impeded their attempts to implement change: (1) a lack of support for change implementation teams from managers in the colleges, resulting from a lack of understanding of the program requirements and prioritising other system compliance and reporting requirements; (2) challenges in securing time and space to meet in peer coaching teams at their respective colleges; and, (3) dealing with wider system expectations and requirements when these conflicted with their own emotional responses to change.

These factors are not uncommon or surprising for teachers who work amongst and manage the tensions of competing system requirements on a daily basis. As Joyce and Calhoun (2010) note, the implementation of professional development “comes to life in the complex organization” (p. 2) and it is when the nexus between individual and system needs collide that participants encounter barriers and restrictions to implementing change. Interestingly, little attention is afforded in the educational change literature to these real-life tensions that teachers face. Thus, whilst there is much about the processes and structures that should be in place to facilitate system change and support teachers, such as gaining district and administrative support (Fullan, 2001), developing a professional learning culture (Hall & Hord, 2006),
providing adequate time and resources (Darling-Hammond & McLaughlin, 2011; Guskey, 2009) more research is needed to better understand how these factors are implemented and monitored at a micro level.

Findings from this study show that even when professional development is planned according to research-led principles and best practice, there is nevertheless a need to actively monitor and manage programs. Furthermore, when necessary, interventions need to ensure competing system requirements don’t limit teachers’ potential to implement change. With so much research literature available to inform the design and implementation of effective professional development the findings from this study remind us that each context is unique and needs to be carefully considered.

**Research Aim 2: To Better Understand the Emotional Experiences of Teachers Involved in a Systemic Change Professional Development Initiative**

The teachers involved in this research reported that their emotional responses to change directly impacted their behaviours throughout the professional development implementation process. Emotions are inexorably linked to personal beliefs and values and teachers’ notions of professional identity (Cross & Hong, 2009; Schmidt & Datnow, 2005; Turner, Waugh, Summers & Grove, 2009) and the interaction between these various individual constructs at the interface of change can trigger both positive and negative responses. Many studies of emotions related to educational reform have tended to focus on teacher rejection or adoption of change efforts. The underlying premise of these studies is that the extent to which teachers experience compatibility with the beliefs and practices required by the reform the more likely they are to have positive emotional responses and therefore the more likely they are to accept and implement the required change. Conversely, if teachers experience incongruence or encounter barriers, they tend to emote negatively and are likely to be resistant and not implement changes (Lee & Yin, 2010; Little, 1996, 2000; Little & Bartlett, 2002; Jeffrey & Woods, 1996; van Veen & Sleegers, 2006).

Findings from this study portray and contribute to a growing body of research (for example, Cross & Hong, 2009; Schmidt & Datnow, 2005; Scott & Suttton, 2009) which
presents a more nuanced picture of teachers' change-related emotions and experiences challenging the simplistic views of compatibility/incompatibility or congruence/incongruence. The teachers in this study indeed experienced negative emotions when they came across people, processes and situations that they perceived as blocking their progress toward intended change. This, however, did not prevent them from fully implementing instructional change. Moreover, teachers identified a cyclical nature to their emotional reactions, with emotions being experienced and re-experienced at different stages of the change journey mediated by physical context and place, time and interpersonal relationships. Scott and Sutton (2009) describe this type of emotional patterning experienced by teachers during professional change as “mixed” (p. 165), which more accurately reflects the reported experiences of teachers in this study. Teachers not only experienced a range of positive and negative emotions at different points in the change journey but they simultaneously exhibited a combination of emotions at any given time. Whilst there was a trend for teachers to report negative emotions in the early stages of the change process and positive emotions towards the end of the journey, this ignores the complex, sometimes paradoxical, range of emotions teachers experienced over time.

Models of change that present a linear and mechanistic view of the change process limit our understanding of the actual lived experience of those who undertake the journey. Participants in this study didn’t neatly or conveniently step through a series of stages. The reality of change for those who experience it is that it is dynamic, recursive and highly emotive. In many ways individual emotional responses are indicative of the complex, nonlinear and unpredictable systems within which teachers enact change. Thus, although the teacher-participants reported emotions such as anxiety, stress and uncertainty when required to implement new instructional practices in their classrooms at the beginning of the professional development program, these emotions didn’t ultimately prevent them from enacting change. It would not be unreasonable to experience such emotions in the face of uncertainty. The teachers reported that they managed these emotions with help from supportive colleagues and a developing personal belief that what they were doing was right and in alignment with their own values and sense of professional identity.
Interestingly, relationships emerged as a key influence in mediating teachers’ emotional responses and were an important factor in helping them regulate and overcome any negative emotional responses to change. Relationships that teachers perceived as supportive and trustworthy typically generated positive emotions such as excitement, trust and confidence. These enabled teachers to take risks with new practices and grow professionally. Most importantly for the teachers these relationships helped them manage challenges along the way and kept [them] going. Conversely, relationships that the teachers perceived as unsupportive engendered negative responses such as anger, distress and annoyance. Developing positive and supportive relationships would appear to be an important factor in supporting teachers emotionally to effect change in practice. The importance of collegial relationships is largely neglected in the change research literature and often marginalised in favour of a focus on steps in the change process, or system features. This issue is discussed further in the implications for professional development section of this chapter.

Research Aim 3: To Better Understand the Usefulness of the Concerns Based Adoption Model (CBAM) as a Conceptual Lens and Methodology for the Assessment of Teacher Professional Development Programs

In this study CBAM provided useful insights as a conceptual lens and framework for the assessment of teacher professional development programs. CBAM can be used in a number of ways and for different purposes. For example, the instrumentation (SoCQ, LoU Focused Interview Protocol and Innovation Configuration (IC) Maps) can be used as both diagnostic and evaluative tools. They can also be used to inform the design of support and intervention programs for teachers during a change process, and they can be used for planning, tracking and monitoring purposes.

CBAM instrumentation measures teacher behaviour and affect, and IC Maps are used to design and monitor the implementation process. The measures can be applied on multiple occasions at different points over the duration of a change initiative, affording insight into progress and the individual experiences of participants. In this sense, the CBAM measures are versatile and can be used in different change contexts for different purposes. For example, Paper 1 noted the lack of empirical evaluation of professional development programs in
Australian VET. In an age of increasing accountability, findings from this study reveal that the use of CBAM to measure the outcomes of teacher professional development programs provides one avenue for greatly improving what the OECD calls a “weak evaluation culture” (2009, p. 52). The use of CBAM as a conceptual lens and set of measures has therefore been valuable in understanding a long-term instructional reform initiative within the Australian VET sector.

In this study, the SoCQ and LoU were used as they aligned most appropriately with the research aims and questions framing this study. Thus, whilst this study focused on description and assessment of the impact of the Instructional Intelligence Professional Development Program, its findings could be applied toward program information dissemination and future professional development aimed at sustaining the effects of the program.

The use of the SoCQ instrument was useful in terms of providing insight into the affective concerns of the teachers involved in the Instructional Intelligence Professional Development Program and has the advantage of being used at individual and group levels to produce “teacher concerns” profiles. In addition to providing information on the highest stages of concern, analysis of peak and second highest stages of concern reveals more detailed information about an individual or group placement. For example, although the peak concern for the majority of the group (74%) was Collaboration, analysis of the second highest stage of concern revealed that the teachers wished to collaborate about a whole range of issues from how to manage their time more effectively to how to work in an integrated manner with their colleagues to implement instructional innovation.

This additional insight into individuals’ concerns is valuable for those responsible for implementing change initiatives and assessing the impact of professional development programs, as it allows intervention and support activities to be targeted to the specific needs of the teachers involved and the information can be used to inform the implementation of future programs. Knowledge of peak and second highest concerns is particularly valuable for those individuals who don’t display the ‘typical’ profile associated with their group’s concern profile. Understanding individual profiles provides unique insight into how certain participants differ.
from the majority of the group and affords an empirical basis to design appropriate support mechanisms for individual participants. The Concerns Profiles, which accompany the SoCQ instrumentation, display ‘typical’ profiles and are also helpful in providing additional insight into concerns. For example, Hall and Hord (2006) describe a nonuser profile as one that typically displays high Awareness and Informational concerns and low Collaboration and Refocusing concerns. In contrast, an experienced user’s profile has low Awareness concerns and high Consequence and Collaboration concerns.

The LoU interviews revealed that participants involved in this study were implementing new instructional practices as a result of the Instructional Intelligence Professional Development Program. Being able to identify change in behaviour (in this instance instructional practice) as a result of a professional development program is not routinely achieved. Guskey (2000) notes that all too often evaluations of professional development are inadequate or “shallow” (p. 9) because they tend to either document activities that took place, or to focus primarily on participant reactions to the experience (e.g., satisfaction) with no analysis of outcomes or impact. LoU interviews allow us to probe much deeper than initial reactions or surface level responses. Additionally, analysis of the CBAM’s levels of use data shows the degree and depth to which participants are implementing their newfound knowledge and skills and this evidence is useful for evaluation of professional development as well as substantiating the effectiveness of the change process.

The conceptual framework which underpins CBAM proved useful in helping to better understand the change process and provides an additional lens through which to assess the impact of the Instructional Intelligence Professional Development Program. For example Hall and Hord (2006) claim that when change is implemented and supported appropriately individuals move from self to task concerns within three years and from task to impact concerns within five years. Similarly, other research suggests teachers need between three to five years to make major change in practice as a result of a change program (Bishop, O'Sullivan & Berryman, 2010; Loucks-Horsley, Love, Stiles, Mundry & Hewson, 2003; Stein, Schwan-Smith & Silver, 1999). Combining the results from the SoCQ and LoU interview with the CBAM’s conceptual model helps deepen our understanding of context and allows us to
corroborate our assumptions about the process of change. Drawing on CBAM’s theoretical underpinnings, Hall and Hord (2006) suggest that when this happens at this stage of a professional development program, “change has truly been treated as a process, that the innovation has been given sufficient time to be implemented” (p. 150). Comparing CBAM against other theoretical perspectives of change also provides additional insights into the process of change and contributes to our understanding of how different theoretical perspectives can be used to deepen our knowledge. In turn, this can add to the further development of theories of educational change (Anderson, 1997; Fullan, 2006; Hargreaves, 2005; Hargreaves & Fullan; 2009).

Discussion

Having synthesised the major findings of this study in the first part of this chapter, according to the overarching aims of the research project, the section that follows provides discussion of the key concepts that emerged from the research, and importantly, their implications. This discussion is presented through three lenses: (a) methodology; (b) theory; and, (c) the design and evaluation of teacher professional development. In each section key concepts are identified and briefly discussed and the implications from each of these are considered.

Methodological Implications

Mixed-methods research. The use of a combination of quantitative and qualitative methods to examine the effects of the Instructional Intelligence Professional Development Program was effective in addressing the multi-layered research questions in this study. The sequential mixed-method research design (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 1998) allowed for the meaningful identification of patterns at different levels of context, which provided insights into individuals’ lived experiences of change as a result of a professional development program. The identification of patterns and themes was particularly useful for developing a better understanding of how individual and contextual factors influenced behavioural and affective dispositions and responses to an educational change initiative.
Implications. As described previously, system change is a complex and multifaceted process and individual experiences of this process are diverse. What is needed to fully explore individual experiences of change within complex systems is a multi-dimensional approach, one that recognises, accounts for and measures this complexity. For example, data from the LoU interviews and SoCQ in this study provided insights into the behavioural and affective dimensions of the intended change. Whilst this information was useful, the data were limited in revealing the circumstances, experiences, and relationships that had contributed to these results. The data provided no insight into the individual processes and system interactions, which shaped individual profiles. In their analysis of the LoU instrument to measure school change, Klenke and Barrows (1980) found that using a single CBAM instrument alone did not provide sufficient depth or detail to explain their results. These findings are confirmed in subsequent studies (e.g., Anderson, 1997; Fenton 2002; Jacobus, 1997; Wesley & Franks, 1996) which all noted that whilst CBAM provided a useful and interesting insight into teacher responses to change, the use of a single instrument provided an incomplete snapshot of the adoption of an innovation. A mixed-methods approach is much better suited to examining the complexities of system change initiatives and should be considered a valid methodological approach by researchers and program evaluators.

Multiple instances of data collection. The use of narrative interviews in this study allowed participants the opportunity to share their personal stories and thus provided greater insight into the reasons for individual placements of LoU and SoCQ. Interviews also allowed participants to recall their experiences across time, something that cannot be achieved by “one-off” or “snapshot” uses of CBAM measures. The use of Clandinin and Connelly’s (2000) three dimensional narrative inquiry space framework for analysis of the narrative interviews was particularly useful in discerning patterns of emotions in relation to individual interfaces with people (interaction), past, present and future (continuity) and place (situation). With the exception of Scott and Sutton’s research (2009), few studies chart teacher emotions over time. In this respect, the results of this study are amongst the first to provide data on patterns of teacher emotions related to instructional change over time. In addition to gaining a greater understanding of the patterning of teacher emotions across time, overlaying lenses of
interaction and situation within teacher narratives revealed further information about the contexts in which teachers emote and the circumstances which gave rise to different emotions.

**Implications.** Results from this study reveal that each journey of change is idiosyncratic and that an individual’s experiences and decisions to implement change (or not) are continually mediated by his/her interactions with people in different situations. Further, these change over time. Ongoing analysis of individual teachers’ change experiences and their corresponding emotional states is needed to help (a) chart the progress of the change initiative; (b) assess individuals’ readiness for the next steps of the process; (c) identify individual teachers’ future professional development needs, (d) assist those responsible for managing and implementing change to identify facilitators and hindrances to individual and collective progress, (e) design appropriate support strategies, and (f) provide data that could be used retrospectively to evaluate the change process. Data collected from multiple sources over the life of a change initiative is valuable and if used to inform the design of targeted support strategies could increase the likelihood of individuals feeling more supported and change initiatives being more successful.

**Triangulation.** In order to strengthen the integrity of the research design, the third and fourth phases of data collection and analysis aimed to confirm some aspects of the self-reported CBAM data gathered in the first phase. The use of classroom observations allowed research participants to demonstrate application of their chosen instructional innovation in their own teaching context. Observational data gathered in this process were triangulated with LoU data collected in phase one. Findings revealed that the research participants were implementing instructional innovations at the Routine and Refined levels of use and this was consistent with the findings from their previously constructed LoU profiles.

**Implications.** The use of between-method triangulation (interviews and observations) (Denzin, 1970) in this study increased confidence in the overall findings from the study and provided valuable insight into teachers’ classroom application of instructional change. Triangulation of data sources or types therefore has several potential benefits for research into system change processes. As previously mentioned, and similar to a mixed-method approach,
triangulation can (a) work to reduce over-reliance on a single method, (b) decrease the uncertainty of interpretation of data resulting from a single method, thereby strengthening confidence in the evidence, (c) provide an additional lens through which to gather and view data on the same phenomena, thereby being more representative of the complexity of dynamic change processes and, (d) work towards addressing the need for more valid, scientific and reliable assessment of teacher professional development programs (Desimone, 2009; Guskey, 2009; Joyce & Calhoun, 2010).

**Theoretical Implications**

In light of the evidence detailed in the three papers that comprise this study, it seems very clear that change is both an individual and organisational process (Anderson, 2010; Bishop et al., 2010; Fullan, 2001; Kotter, 1995). This means that there is a need to acknowledge, understand and value both the individual teachers trying to implement change as well as the systems in which they work. The complex, interdependent and situation-specific experiences of teachers trying to implement instructional change in dynamic systems can only be fully understood if the individual and system dimensions are investigated across time and in various contexts at different social interfaces. Findings from this study inform the theoretical implications discussed below.

**Change is context dependent.** Many researchers assert that it is important to pay attention to the context of educational change (Anderson, 1997; Guskey, 2003; Joyce & Calhoun, 2010; Penuel, Fishman, Cheng & Sabelli, 2009) but all too often change initiatives are designed and implemented in a ‘one size fits all’ fashion. As the results of this study revealed, even when using research-informed best practice models of professional development, change initiatives do not always go according to plan.

**Implications.** Greater focus therefore needs to be placed on the context in which educational change is intended in the planning, implementation and evaluation stages of the change process. Guskey (2000) reminds us of the importance of “analyzing context” (p. 89) as a key step in evaluating teacher professional development and as an aspect that is all too frequently overlooked by researchers. A better understanding the complexities of organisations
and systems and how these interact with individuals would help policy makers and managers of change to plan and implement initiatives specifically designed to meet the needs of the individuals within their wider contexts. This might include identifying (a) student and teacher characteristics, (b) possible barriers and constraints, (c) curriculum, and (d) the physical and human resources needed to support the change process. Joyce and Calhoun (2010) remind us that no one model fits all situations and change managers need to draw upon a range of models and approaches and tailor them for specific contexts and systems.

**Change is behavioural and emotional.** The research design of this study incorporated measures specifically devised to gain a better understanding of the behavioural and affective dimensions of the change process and findings revealed that the two are linked. The research literature has long acknowledged that affective factors such as attitudes, beliefs, values and emotions mediate responses to change (Fullan, 2010; Hall & Hord, 2006; James, 2010). What is interesting is that little empirical research exists on the affective dimension and the design and implementation of change initiatives rarely build any mechanisms into the design of programs or assessment of their impact.

**Implications.** More empirical research is required to better understand how behavioural and emotional dimensions interact and relate to the success of the change process. Focusing only on change in teacher behaviour or student outcomes provide us with a limited understanding of the change process and individuals’ experience of it. If we are to develop our understanding and subsequent theoretical models of change they need to be inclusive of individuals’ behaviour and their affect.

**The role of relationships.** The participants in this study reported that building and maintaining positive supportive relationships built on trust and mutual respect at all levels of the system (collegial, within the college, at department level and with the program consultants) played an important part in assisting them to implement change. Conversely, relationships that were perceived as non-supportive at times hindered their attempts. However, the human aspects of the educational change process seem to be frequently marginalised by researchers in favour of focusing on the mechanistic, impersonal aspects of the change process (Cross &
Hong, 2009; Evans, 1996). With the exception of a few (Hall & Hord, 2006), little explicit attention has been afforded to investigating and incorporating individual relationships within educational change frameworks or models.

**Implications.** Theories of change need to embrace the central importance of human (interpersonal) relationships in the process. More research is needed into the impact of relationships during change processes. Teachers must interact with others in order to implement change and ignoring the central importance of relationships results in an incomplete picture of the process and negates the lived day-to-day experiences of teachers. One of the key blockages to the teachers implementing change, which emerged in this study, was relations between teachers and middle managers in the colleges. Even though managers had been informed of the teachers’ involvement in the professional development program, breakdowns in communication coupled with the demands of competing priorities resulted in some teachers being refused time and resources to attend professional development related activities. There is a danger in assuming that because information has been communicated to all relevant parties it will result in action; especially in busy systems where multiple demands are placed on teacher’s time and resources. In summary, theory needs to be more attentive to acknowledging and providing guidance on building supportive relationships and engendering open communication in the context of change.

**The role of emotions.** Findings from this study support the notion that teachers’ responses to change are more complex than simple positive or negative emotional reactions followed by acceptance or rejection of change (Hargreaves, 1998; Scott & Sutton, 2009). As outlined previously, the teachers in this study reported emotional responses that tended to be cyclical in nature, and mediated by time, place and interpersonal relationships. However, is this typical or unique? Recent years have seen an increased interest in research into relationships between teachers’ emotions and teaching, but we are only just beginning to scratch the surface of this phenomenon.

**Implications.** More research is needed to better understand how emotions work to mediate and construct the educational change process and how emotions affect teachers’ work.
and development. For example, the concept of *emotional labor* (Hochschild, 1993) emerged in this study as characteristic of implementing new instructional methods. The teachers frequently reported sublimating or suppressing their emotions in response to what was perceived as ‘socially acceptable’ in educational contexts. The link between the antecedents, emotional responses and the ensuing *emotional labor* warrants additional research. What situations and circumstances give rise to certain emotions and why? Are there discernible patterns? How do teachers deal with their emotions and what is the relationship between behaviour and affect? A better understanding of teacher emotions throughout the implementation of educational reform initiatives could help teachers view emotions as a normal part of change, to be expected and embraced as part of the process.

In summary, to be truly representative of the diverse and multifaceted nature of change, a literature base is needed that encompasses multiple theoretical perspectives and methodological approaches (van Veen & Lasky, 2005; Zembylas & Schutz, 2009). The range of scientific and inquiry-based methods used to explore this area needs to be expanded in order to build a deeper and more comprehensive understanding of the processes involved. Such an expansion would facilitate findings, like those described here, being used to develop a shared language and conceptualisation of the experiences, patterns and relationships involved in professional change at the individual and system levels.

**Implications for the Design and Implementation of Teacher Professional Development.**

As described in Paper 3 the Instructional Intelligence Professional Development Program was designed and administered in accordance with core features of research–informed (research-led) professional development. As described above, the overall features of the program design and implementation did indeed facilitate positive teacher change and its effects were consistent with findings from the research literature. However, the findings of this study also indicated that there were program features that did not work as effectively as planned, or that required additional investigation. The implications of these findings for the design and implementation of teacher professional development are discussed below.
Teacher collaboration. Much has been written in the professional development research literature about the importance and need for teachers to collaborate (Birman et al., 2000; Darling-Hammond & McLaughlin, 1995; Fullan & Hargreaves, 2002; Guskey, 2003; Joyce & Calhoun, 2010; Joyce & Showers, 1995). Many professional development activities include structured opportunities for collegial activity among teachers, wherein peers support one another in understanding new ideas, planning, using and contextualising new resources and materials, reviewing student progress and observing each other’s classrooms. Fullan (2010) acknowledges that this type of peer collaboration often provides a major catalyst to change because engaged teachers working collaboratively have the potential to generate positive pressure and momentum, which can work to support implementation.

Simply providing opportunities for teachers to work collegially doesn’t necessary equate to success, however. Guskey (2009) argues that collaborative activities are just as likely to hinder teacher development, as they are to assist it. Guskey and Yoon (2009) also call for stronger “valid and scientifically defensible evidence” (p. 496) on the role of peer coaching in professional development programs and Little (1993) claimed that peer coaching only suits specific types of content and contexts. Although the findings of this study concurred with those of the majority of studies on the importance of teacher collaboration during professional development, the process was not without issue, with teachers reporting conflict and communication breakdowns within the peer learning teams as significant obstacles to their progress.

Archinstein (2002) suggests that when teachers are required to work collaboratively in professional communities, conflict over power, values, beliefs and autonomy is inevitable. In her investigation of the micro politics of teacher professional learning communities Archinstein encourages us to view conflict in these circumstances positively, to avoid the “group think” (p. 450) identified by Janis (1972) in which teachers uncritically accept group beliefs, values and norms. Archinstein suggests conflict can provide opportunities for “deep change” (p. 450) as teachers explore different ideologies and perspectives. Asking teachers to negotiate and manage this process without providing support and guidance can create unanticipated negative
consequences, which could in turn impede individual teacher change. That is, a design feature initially created to provide support can potentially also hinder progress.

**Implications.** Findings from this study revealed that simply assuming that teachers working in collaborative groups will cooperate successfully is naive. Long-term professional development programs which require teachers to work in structured groups should ideally include the explicit provision of conflict management, negotiation and team building skills, to support teachers to operate effectively and maximise the potential of peer collaborative processes. Whilst this may appear idealistic, the impact of conflict and communication breakdowns emerged as a hindrance to teachers attempting to implement change in this study. Investment in building teachers’ skills in these areas during the initiation stage of the change process may have reduced or possibly eliminated such barriers.

In addition to providing support for teachers in managing their peer relationships, the findings of this study support those of others in that teachers experience a range of emotions as they negotiate and assimilate new learning into their teaching practice. It is important therefore to inform those who make the journey of change that the feelings they encounter are a natural part of the process (Schmidt & Datnow, 2005).

Collaborative time and space need to be built into professional development processes for dialogue that allows teachers to discuss feelings such as fear, anxiety and worry and to share enjoyment and confidence. The teachers in this study reported that supportive relationships with others involved in the program helped reduce feelings of isolation and helped support them on their journey.

**Evaluation of teacher professional development.** This study provides one approach to assessing the impact of one instance of teacher professional development and as such, it is not without its limitations. More broadly, however, there is agreement amongst researchers that more valid, scientific, reliable and robust measurement of teacher professional development outcomes, both for teachers, and most importantly, for students, needs to occur (Borko,
As outlined previously, the context in which professional development takes place plays a significant role in its outcomes. Additionally, there is no one best way to assess the impact of professional development, as this largely depends on the goals of the initiative and the questions that need to be answered. All of these, in turn, influence research design and ultimately methodological approaches. Notwithstanding these factors, findings from this study confirm some general principles of effective professional development evaluation suggested by the literature. Implications for the evaluation of teacher professional development programs are outlined below.

**Implications.** First, the specific goals of the professional development must be identified at the beginning of the initiative (Earley & Porritt, 2014; Guskey, 2000, 2001, 2009; King, 2014). What is the purpose of the professional development, what outcomes are intended, for/with whom and how? This results-orientated approach requires “beginning with the end in mind” (Guskey, 2000, p. 89) and seeks to establish clear criteria that can be used to guide the alignment of the evaluation process (Sparks, 1995). For example, in this study the aim of the program was to refine and extend the instructional practices of teachers. Instructional change takes time and involves changes to teacher beliefs and behaviours. Recognising that professional development occurs within wider systems, the design of this study focused on examining teacher beliefs (affect) and practices (behaviours) *in context* and aimed to gain a better understanding of factors, which mediated the implementation process.

Second, sources of evidence for the effectiveness of the professional development need to be selected and assessed for their alignment with the goals and specific research questions. Consideration also needs to be afforded to how this evidence can be gathered in a reliable and robust manner (Desimone, 2009; Earley & Porritt, 2014). As discussed earlier, claims that much evaluation of professional development is impressionistic and anecdotal (Early & Porrit, 2013; Fishman, Marx, Best & Tal, 2003; Guskey, 2010) frequently stem from an overreliance on single measures that focus predominantly on the reactions or satisfaction of teachers in
response to professional development, and often occur only at the end of initiative (King, 2014). The majority of researchers therefore support the use of multiple methods of data collection and analysis (Desimone, 2009; Borko, 2004; Piggot Irvine, 2007). Collecting data from multiple sources (as in this study) provides a more holistic view of the process from several perspectives. This strengthens findings, allowing for cross checking and triangulation, and has the potential to make the findings more robust. Desimone (2009) provides a detailed analysis of the conceptualisations and measures for evaluating professional development and explores the application of different research designs and accompanying measures. She concludes that there is no one best approach or single method more appropriate than another but instead urges researchers to focus on alignment between methods and research aims and questions and the reliability and validity of the instruments used.

Third, baseline assessments should be taken at the beginning of the professional development to serve as a benchmark for assessing what change has occurred during and at the end of initiative (Bubb & Earley, 2010; Early & Porritt, 2014; Guskey, 2002a, 2002b; Porritt, 2005, 2009). Establishing baseline data on teacher and/or student skills and knowledge provides a critical reference point, which can be used to examine the effects of the program overall. The collection of data at multiple points over the life of a professional development program can also assist in the longitudinal tracking of progress and can be used to inform the design of any support interventions. In this way professional development becomes more focused and responsive to the needs of teachers (Guskey, 2000). Whilst this is a simple and seemingly obvious process to undertake, it is one that is often overlooked for a range of reasons, including a lack of time, planning and experience on behalf of change agents involved. If we are to strengthen the integrity and robustness of the evaluation of teacher professional development the collection of baseline data does have an important part to play and should be taken into account in the early stages of project planning and design.

Finally, many researchers call for evaluations to acknowledge and incorporate the systems, structures and contexts of teacher professional development (Cohen, 2010; Moss, 2010; Smylie, 2014). Darling-Hammond (2013) reminds us that evaluation of teacher professional development needs to be part of the “teaching and learning system” (p. 99).
Evaluations need to be designed to reflect not only the work that teachers do in classrooms but also how teachers interact with the wider system in which they work. Darling-Hammond calls for the evaluation processes to be “job embedded” (p. 99) and for the results to be used for teacher feedback, goal setting, coaching and continuous improvement within a wider system context.

Suggestions For Further Research

This study presents a mixed-method approach to better understanding the effects of a systemic change professional development initiative. Whilst a number of new insights were gained, and others confirmed the findings and assertions of others, there is still much to learn about the behavioural, emotional, and interpersonal experiences of teachers who attempt to implement change in complex educational systems. The following recommendations for further research are suggested.

1. Further investigation into the relationship between teacher beliefs, values, identity and emotions in the context of change.
   This relationship was explored in Paper 2 of this study and it was clear from the findings that this complex interface provides a dynamic space which gave rise to teachers’ emotional responses at different times, in different contexts with different people. A better understanding of how and why these dynamics play out and the extent to which professional and personal identity influences teachers’ emotive reactions and in turn their behaviours would provide a more robust understanding of the affective dimensions of the change process.

2. Further investigation of teacher emotions in the context of change using a range of different measures and methods (quantitative, qualitative and mixed). Change is a complex and multi-faceted process. Examining this process, the people and the systems involved from multiple perspectives employing different lenses, research designs and methods would provide a broader more holistic understanding of the change experience and process.
3. Further investigation into the role of relationships in supporting or hindering the implementation of instructional change.

Findings from this study concurred with those of others in identifying the importance of personal relationships in facilitating or hindering the implementation of change. Whilst relationships are often referred to in the research literature there is little empirical research in this area. Additional research is needed to better understand the dynamics of relationships and to what extent these impact individual teacher’s behaviours and affect during the change process.

4. Further investigation into the use and application of CBAM in different educational change contexts.

Anderson (1997) argues that there has been a tendency within education circles to apply research-based models of change uncritically. Whilst CBAM remains one of the most “robust and empirically grounded” (Anderson, 1997, p. 331) models of change there is a need to apply the model in different contexts with a much wider range of innovations, to assess its full potential. Paper 1 specifically set out to examine the use of the CBAM model in the Australian VET sector and the findings revealed its usefulness in a number of ways. However, there is considerable potential to expand CBAM’s application and refine its use in a broader range of situations and systems.

Whilst some attempt was made Paper 2 to identify a relationship between the stages of concern and teachers’ emotional states this link could be further developed. A better understanding of the emotions that typically arise at different stages of concern would help identify any patterns and provide a deeper comprehension of the affective components of the stages of concern construct.

In addition, the potential also exists to analyse the relationships between the LoU and SoCQ profile placements. Is there a relationship between different levels of use and stages of concern? What are the patterns and how do these change over time, and what can these tell us about the relationships between affect and behaviour? With the majority of studies focusing on the single use of LoU or SoCQ little research has been done to explore the interactions between the two constructs.
5. On a final note, findings from this study revealed that middle management in colleges frequently acted as a hindrance to teachers implementing change. Studies conducted by Anderson (1997), Hall, Rutherford, Hord, and Huling-Austin (1984), and Hall and Hord (1987) all found correlations between the management styles of administrators and the levels of use of innovations that teachers achieved. Teachers who worked for managers who had a preference for short, small-scale professional development activities and were committed to the initiative rarely moved beyond Orientation (I) and Preparation (II) levels of use, with few reaching Mechanical (III) use. For teachers who worked with managers who had styles that were open and collaborative and where professional development was embedded and aligned with the goals of both the organisation and individual teachers, there was a higher frequency of teachers reaching Mechanical (III), Routine (IV) and Refined (IVA) levels of use. Better understanding relationships between management styles and teacher levels of implementation would help design suitable systemic support for managers to better help those they work with, thereby increasing the likelihood of change being institutionalised within the organisation.
References


Australian Committee on Technical and Further Education (ACOTAFE), (1974). *TAFE in Australia: Report on the needs of technical and further education*. Canberra: AGPS.


Wesley, M. and Franks, M. (1996), Advanced adoption of computer technology in the classroom and teachers' participation in voluntary innovation adoption activities, Mid-South Educational Research Association, Tuscaloosa, USA.


Appendix 1: CBAM Stages of Concern Questionnaire (SoCQ)

Thank you for volunteering to take part in this on-line questionnaire.

It is very important for the continuity in the processing of data that we have a unique number to identify you and one that you can easily remember.

Please enter the last four digits of your home phone number: ____   ____   ____   ____
This number will be your unique identifier for this research study, so please retain it.

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. An innovation is a research term that refers to a new skill, tactic or strategy that a teacher/trainer is putting into practice.

The items on the questionnaire were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years experience in using them. Therefore, a good part of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please select “0” on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale, according to the explanation at the top of each of the following pages.

For example:

This statement is very true of me at this time. 0 1 2 3 4 5 6 7
This statement is somewhat true of me now. 0 1 2 3 4 5 6 7
This statement is not at all true of me at this time. 0 1 2 3 4 5 6 7
This statement is irrelevant to me. 0 1 2 3 4 5 6 7

Please respond to the items in terms of your present concerns, or how you feel about your involvement or your potential involvement. All of the following innovations have been taught on the TAFEWA Instructional Professional Development Program:

Jigsaw  Placemat
Framing Questions/Techniques  Concept Attainment
Mind Maps  Fishbone Diagrams
Concept Maps  Graffiti

We do not hold to any one definition of this program, so please think in terms of your own perceptions of what it involves. Since this questionnaire is used for a variety of innovations, phrases such as “the innovation”, “this approach”, and “the new system” all refer to the innovation you have selected to report on. Remember to respond to each item in terms of
your present concerns about your involvement or potential involvement with your selected innovation.

Thank you for taking the time to complete this questionnaire.

Which innovation do you wish to report on ______________________________
1. I am concerned about students’ attitudes towards this innovation. 0 1 2 3 4 5 6 7

2. I now know of some other approaches that might work better. 0 1 2 3 4 5 6 7

3. I don’t even know what the innovation is. 0 1 2 3 4 5 6 7

4. I am concerned about not having enough time to organise myself each day. 0 1 2 3 4 5 6 7

5. I would like to help other portfolio areas in their use of the innovation. 0 1 2 3 4 5 6 7

6. I have a very limited knowledge of the innovation. 0 1 2 3 4 5 6 7

7. I would like to know the effect of this reorganisation on my professional status. 0 1 2 3 4 5 6 7

8. I am concerned about conflict between my interests and my responsibilities. 0 1 2 3 4 5 6 7

9. I am concerned about revising my use of the innovation. 0 1 2 3 4 5 6 7

10. I would like to develop working relationships with both our portfolio area and other portfolio areas using this innovation. 0 1 2 3 4 5 6 7

11. I am concerned about how the innovation affects students. 0 1 2 3 4 5 6 7

12. I am not concerned about this innovation. 0 1 2 3 4 5 6 7

13. I would like to know who will make the decisions in the new system. 0 1 2 3 4 5 6 7

14. I would like to discuss the possibility of using the innovation. 0 1 2 3 4 5 6 7

15. I would like to know what resources are available if we decide to adopt this innovation. 0 1 2 3 4 5 6 7
<table>
<thead>
<tr>
<th></th>
<th>Irrelevant</th>
<th>Not true of me now</th>
<th>Somewhat true of me now</th>
<th>Very true of me now</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>I am concerned about my inability to manage all the innovation requires.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17.</td>
<td>I would like to know how my teaching or administration is supposed to change.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18.</td>
<td>I would like to familiarise other departments or persons with the progress of this new approach.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19.</td>
<td>I am concerned about evaluating my impact on students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20.</td>
<td>I would like to revise the innovation’s instructional approach.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21.</td>
<td>I am completely occupied with other things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22.</td>
<td>I would like to modify our use of the innovation based on the experiences of our students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23.</td>
<td>Although I don’t know about this innovation, I am concerned about other things in this area.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24.</td>
<td>I would like to excite my students about their part in this approach.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25.</td>
<td>I am concerned about my time spent working with non-academic problems related to this innovation.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>26.</td>
<td>I would like to know what the use of the innovation will require in the immediate future.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>27.</td>
<td>I would like to coordinate my efforts with others to maximise the innovation’s effects.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>28.</td>
<td>I would like to have more information on time and energy commitments required by this innovation.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>29.</td>
<td>I would like to know what other portfolios are doing in this area.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>30.</td>
<td>At this time, I am not interested in learning about the innovation.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
31. I would like to determine how to supplement, enhance, or replace the innovation.
   0 1 2 3 4 5 6 7

32. I would like to use feedback from students to change the program.
   0 1 2 3 4 5 6 7

33. I would like to know how my role will change when I am using the innovation.
   0 1 2 3 4 5 6 7

34. Coordination of tasks and people is taking too much of my time.
   0 1 2 3 4 5 6 7

35. I would like to know how this innovation is better than what we have now.
   0 1 2 3 4 5 6 7

**PLEASE COMPLETE THE FOLLOWING:**

36. What other concerns, if any, do you have at this time? (Please describe them using complete sentences).

37. Briefly describe your job function.
Appendix 2: CBAM Levels of Use (LoU) Interview Protocol

Thank you for volunteering to take part in this interview.

What are the last four digits of your home phone number: ____  ____  ____  ____

This number must be the same four digit number you entered on the first on-line Stages of Concern Questionnaire.

The purpose of this interview is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process and how they are using innovations in their teaching practice. An innovation is a research term that refers to a new skill, tactic or strategy that a teacher/trainer is putting into practice. You were asked to select from a list on the Stages of Concern On-line Questionnaire from a list of innovations that have been taught on the TAFEWA Instructional Professional Development Program:

Please indicate your chosen innovation:

<table>
<thead>
<tr>
<th>Placemat</th>
<th>Jigsaw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graffiti</td>
<td>Concept Maps</td>
</tr>
<tr>
<td>Framing Questions/Techniques</td>
<td>Mind Maps</td>
</tr>
<tr>
<td>Concept Attainment</td>
<td>Fishbone Diagrams</td>
</tr>
</tbody>
</table>

Please answer all questions in this interview based on you experiences with this innovation.

Thank you for taking the time to complete this task.
Section 1: Demographic Information

Q1. How many years have you been teaching in VET?

1-4
5-10
11-15
16-20
20+

Q2. What qualification level do you currently teach? (Please tick all that apply)

Pre – Certificate Level
Certificate I
Certificate II
Certificate III
Certificate IV
Diploma
Advanced Diploma
Other – please list

Q3. Indicate the context and mode of your delivery. (Please tick all that apply)

Face to Face
On-line
Blended
External
Workplace
Apprenticeship/Traineeship
Institutionalised

Q3. Are you currently teaching VET in School students?

Yes
No

Q4. Please tick each year you have participated in Instructional Intelligence (II) workshops.

2005
2006
2007
2008

Q5. Have you delivered II PD at your college?

Yes
No
### Section 2: LOU Interview

<table>
<thead>
<tr>
<th>Question</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you using the innovation?</td>
<td>To distinguish between users and nonusers; to break LoU 0-II from LoU III-VI.</td>
</tr>
<tr>
<td></td>
<td><strong>IF YES</strong></td>
</tr>
<tr>
<td>What do you see as the strengths and weaknesses of the innovation in your situation?</td>
<td>To probe Assessing and Knowledge Categories.</td>
</tr>
<tr>
<td>Have you made any attempts to do anything about the weaknesses?</td>
<td></td>
</tr>
<tr>
<td>Are you currently looking for any information about the innovation?</td>
<td>To probe Acquiring Information Category.</td>
</tr>
<tr>
<td>What kind? For what purpose?</td>
<td></td>
</tr>
<tr>
<td>Do you ever talk with others about the innovation?</td>
<td>To probe Sharing Category and check Decision Point E.</td>
</tr>
<tr>
<td>What do you see as being the effects of the innovation?</td>
<td>To probe Assessing Category.</td>
</tr>
<tr>
<td>In what way have you determined this?</td>
<td></td>
</tr>
<tr>
<td>Are you doing any evaluating, either formally or informally, of your use of the innovation?</td>
<td></td>
</tr>
<tr>
<td>Have you received any feedback from students? What have you done with the information you get?</td>
<td>To distinguish between LoU III (user-orientated changes), LoU IVB (impact-orientated changes), and LoU IVA (no or routine changes); to probe Status Reporting and Performing Categories</td>
</tr>
<tr>
<td>Have you made any changes recently in how you use the innovation?</td>
<td>To separate LoU from III, IVA, and IVB. If a positive response is given, LoU V Probes (below) are used.</td>
</tr>
<tr>
<td>What? Why? How recently? Are you considering making and changes?</td>
<td></td>
</tr>
<tr>
<td>As you look ahead to later this year, what plans do you have in relation to your use of the innovation?</td>
<td>To probe Planning and Status Reporting Categories.</td>
</tr>
<tr>
<td>Are you working with others (outside of anyone you may have worked with from the beginning) in your use of the innovation?</td>
<td>To separate LoU VI from III, IVB, and V.</td>
</tr>
<tr>
<td>Have you made any changes in your use of the innovation based on this coordination?</td>
<td></td>
</tr>
<tr>
<td>Are you considering making or planning to make major modifications or to replace the innovation this time?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Purpose</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>How do you work together? How frequently?</td>
<td>To verify Decision Point E; to probe Performing Category.</td>
</tr>
<tr>
<td>What are the strengths and weaknesses of this collaboration for you?</td>
<td>To probe Knowledge Category.</td>
</tr>
<tr>
<td>Are you looking for any particular kind of information in relation to this collaboration?</td>
<td>To probe Acquiring Information Category.</td>
</tr>
<tr>
<td>When you talk to others about your collaboration, what do you share with them?</td>
<td>To probe Sharing Category.</td>
</tr>
<tr>
<td>Have you done any formal or informal evaluation of how your collaboration is working?</td>
<td>To probe Assessing Category.</td>
</tr>
<tr>
<td>What plans do you have for this collaborative effort in the future?</td>
<td>To probe Planning Category.</td>
</tr>
<tr>
<td>Can you summarise for me where you see yourself right now in relation to the use of the innovation? (Optional Question).</td>
<td>To get a concise picture of the user’s perception of his/her use or nonuse.</td>
</tr>
</tbody>
</table>

**IF NO**

<table>
<thead>
<tr>
<th>Question</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you made a decision to use the innovation in the future? If so, when?</td>
<td>To separate LoU 0 from I; to probe Status Reporting, Planning, and Performing Categories; to separate LoU I from II.</td>
</tr>
<tr>
<td>Can you describe the innovation for me as you see it?</td>
<td>To probe Knowledge Category.</td>
</tr>
<tr>
<td>Question</td>
<td>Category</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>What are the strengths and weaknesses of the innovation in your situation?</td>
<td>To probe Assessing Category.</td>
</tr>
<tr>
<td>At this point in time, what kinds of questions are you asking about the innovation? Give examples if possible.</td>
<td>To probe Assessing, Sharing, and Status Reporting Categories.</td>
</tr>
<tr>
<td>Do you ever talk with others and share information about the innovation? What do you share?</td>
<td>To probe Sharing Category.</td>
</tr>
<tr>
<td>What are you planning with respect to the innovation? Can you tell me about any preparation or plans you have been making for the use of the innovation?</td>
<td>To probe Planning Category.</td>
</tr>
<tr>
<td>Can you summarise for me where you see yourself right now in relation to the use of the innovation? (Optional Question).</td>
<td>To get a concise picture of the user’s perception of his/her use or nonuse.</td>
</tr>
</tbody>
</table>

Adapted from (Hall, Dirksen & George, 2006)
**Levels of Use Rating Sheet**

<table>
<thead>
<tr>
<th>Date:</th>
<th>I.D. #:</th>
<th>Interviewer:</th>
<th>Rater:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Knowledge</td>
<td>Acquiring Information</td>
<td>Sharing</td>
</tr>
<tr>
<td>Nonuse</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Decision Point A</td>
<td>Orientation</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Decision Point B</td>
<td>Preparation</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>Decision Point C</td>
<td>Mechanical Use</td>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>Decision Point D-1</td>
<td>Routine</td>
<td>IVA</td>
<td>IVA</td>
</tr>
<tr>
<td>Decision Point D-2</td>
<td>Refinement</td>
<td>IVB</td>
<td>IVB</td>
</tr>
<tr>
<td>Decision Point E</td>
<td>Integration</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>Decision Point F</td>
<td>Renewal</td>
<td>VI</td>
<td>VI</td>
</tr>
<tr>
<td>User is not doing:</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>No information in interview</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
</tr>
<tr>
<td>Is the individual a past user?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>How much difficulty did you have in assessing this person to a specific LoU?</td>
<td>None</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Very much</td>
<td>Comments about the interviewer:</td>
<td>General Comments:</td>
<td>Adapted from (Hall, Dirksen &amp; George, 2006)</td>
</tr>
</tbody>
</table>
Appendix 3: In-depth, Semi-structured open-ended interview questions

I am interested in hearing about your stories of participating in the Instructional Intelligence professional Development Program.

1. How did you feel about joining the Instructional Intelligence Professional Development Program when it first began? Did your feelings change over time, if so, in what way?

2. How did you feel initially about taking part in the face-to-face professional development workshop sessions? Did your feelings change over time, if so, in what way?

3. Can you share any stories with me about implementing instructional change in your classroom in the early stages? What emotions came up for you in this process? Did these change over time, if so, how and in what way?

4. Can you share any stories with me about working with your professional learning team in the college? What worked well, where there any challenges?

5. Can you share a story which describes a high point for you in the program? Who or what do you attribute this to?

6. Can you share a story that describes a low moment for you in the program? Who or what do you attribute this to?

7. Who or what has helped you to make change in your instructional practice? What emotions arose for you in this circumstance?

8. Who or what has hindered your attempts to make change in your instructional practice? What emotions arose for you in this circumstance?

9. How do you feel now about your instructional practice, as a result of the program?
## Appendix 4: Classroom Observation Rubrics

### Concept Maps – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent to which a need exists to explain how to do a Concept Map.</td>
<td>Teacher spends a lot of time explaining or reviewing Concept Maps. Students need a list of linking words. Teacher needs to explain how to classify and the meaning of hierarchical analysis.</td>
<td>Teacher reminds students of the key components of Concept Maps. Students are reminded to colour code the linking lines. Some students still need the list of linking words.</td>
<td>Students complete the Concept Map – they are skilled at using a Concept Map and need no explanation; nor do they need a list of linking words.</td>
</tr>
<tr>
<td>The number of times the teacher and students have applied the innovation</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>The connection to other graphic organisers and/or other instructional innovations</td>
<td>The teacher may be making connections to other instructional methods or graphic organisers – but the application of Concept Maps will be simple with a lack of precision re the students’ ability to create hierarchical structures and to accurately apply linking words.</td>
<td>Teacher may be making connections to other instructional methods or graphic organisers – the application of Concept Mapping will be smooth. Students may still need more work regarding their use of linking words.</td>
<td>When appropriate, the teacher and students will make connections to other instructional methods such as 3 Step Interview or the Johnsons’ 5 Basic Elements or graphic organisers such as Mind Maps, Venn Diagrams, Fish Bone – the application will be appropriate and thoughtful. Wise use of dynamic and descriptive linking words.</td>
</tr>
<tr>
<td>Student product as a result of the lesson</td>
<td>Students produce a Concept Map, which displays some of the critical attributes of the innovation. Arrangement of concepts demonstrates a basic understanding of conceptual relationships. Linking words display basic relationships between concepts, they are simple and repetitive.</td>
<td>Students produce a Concept Map, which displays the majority of the critical attributes of the innovation. Arrangement of concepts demonstrates a developing understanding of conceptual relationships. Linking words show relationships between concepts.</td>
<td>Students produce a Concept Map, which displays all of the critical attributes of the innovation. Arrangement of concepts demonstrates complete understanding of subordinate conceptual relationships. Linking words are expressive and purposeful displaying understanding of complex relationships between concepts.</td>
</tr>
</tbody>
</table>

**Indicate Level of Use for each critical attribute.**

**Circle overall Level of Use observed:** 2 Mechanical | 3 Routine | 4 Refined
# Mind Maps – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two – Mechanical</th>
<th>Level Three – Routine</th>
<th>Level Four – Refined/Integrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent to which a need exists to explain how to do a Mind Map.</td>
<td>Teacher explains or reviews Mind Maps and begins teaching students what is meant by classifying/analysing and the role these levels of thinking play in the design of the Mind Map. Teacher needs to remind students about the critical attributes of a Mind Map.</td>
<td>Teacher asks students to complete a Mind Map—quickly reviews the process and the critical attributes. May still have to do some work reminding students about how to analyse their information to get the appropriate hierarchical structure.</td>
<td>No explanation from teacher; students complete the Mind Map— they are skilled at using a Mind Map and need no support. The only explanation would be related to having them consider integrating other graphic organisers into the process.</td>
</tr>
<tr>
<td>The number of times the teacher and student have applied the innovation.</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>The connection to other graphic organisers and/or other instructional innovations.</td>
<td>The teacher may be making connections to other instructional methods or graphic organisers – but the application of Mind Maps will be less sophisticated. Hierarchical structure will be a problem.</td>
<td>Teacher may be making connection to other instructional methods or graphic organisers – if so only one or perhaps two. The application of Mind Maps will be appropriate.</td>
<td>When appropriate, the teacher and students will be making connections to other instructional methods such as the 3-Step Interview or Gallery Tour or graphic organisers (such as Concept Maps, Venn Diagrams, and Flow Charts). The application will be appropriate and thoughtful.</td>
</tr>
<tr>
<td>Student product as a result of the lesson</td>
<td>Students produce a Mind Map, which displays some of the critical attributes of the innovation.</td>
<td>Students produce a Mind Map, which displays the majority of the critical attributes of the innovation.</td>
<td>Students produce a Mind Map, which displays all of the critical attributes of the innovation and displays the integration of additional graphic organisers.</td>
</tr>
</tbody>
</table>

**Indicate Level of Use for each critical attribute.**  
**Circle overall Level of Use observed:  2 Mechanical | 3 Routine | 4 Refined/Integrative**
# Fish Bone – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined/Integrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent to which a need exists to explain how to do a Fish Bone.</td>
<td>Teacher explains or reviews the Fish Bone and checks to make sure students can classify the information prior to creating the Fish Bone. Students’ analysis will be basic.</td>
<td>Teacher asks students to complete a Fish Bone – quickly reviews the process. May need to remind a few students how to collect and analyse data.</td>
<td>Students complete the Fish Bone – they are skilled at using it and need little to no explanation. They are also skilled at analysis and have a solid understanding of a taxonomy of thinking such as Bloom’s Taxonomy.</td>
</tr>
<tr>
<td>The number of times the teacher and students have applied the innovation.</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>The connection to other graphic organisers and/or other instructional innovations.</td>
<td>The teacher may be making connections to other instructional methods or graphic organisers – but the application of Fish Bone will be less complex.</td>
<td>Teacher may be making connections to other instructional methods or graphic organisers – for the most part, the application will be smooth.</td>
<td>When appropriate, the teacher and students will be making connections to other instructional methods or graphic organisers – the application will be smooth, appropriate, thoughtful and aligned.</td>
</tr>
<tr>
<td>Student product as a result of the lesson</td>
<td>Students produce a Fish Bone, which displays some of the critical attributes of the innovation. Some key ideas selected with a minimum number of appropriate number of ideas. Information for the part classified and precisely placed but may contain errors.</td>
<td>Students produce a Fish Bone, which displays the majority of the critical attributes of the innovation. Most key ideas selected and most have an appropriate number of ideas. Information is for the most part classified and precisely placed.</td>
<td>Students produce a Fish Bone, which displays all of the critical attributes of the innovation. All key ideas selected and have an appropriate number of ideas. Information is accurately classified and precisely placed.</td>
</tr>
</tbody>
</table>

Indicate Level of Use for each critical attribute.
Circle overall Level of Use observed:  2 Mechanical | 3 Routine | 4 Refined/Integrative
Placemat – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent to which a need exists to explain how to do a Placemat.</td>
<td>Teacher explains or reviews the Placemat and checks to make sure students are aware of the steps involved and the process. May provide visual cues (written steps) to remind students.</td>
<td>Teacher asks students to complete a Placemat – quickly reviews the process. May need to remind a few students of some of the steps.</td>
<td>Students complete the Placemat – they are skilled at using Placemat and need little to no explanation.</td>
</tr>
<tr>
<td>The number of times the teacher and students have applied the innovation.</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>Teacher frames a question for Placemat</td>
<td>Teacher frames a question for the Placemat. Some attention is given to the uses taxonomy of thinking such as Bloom’s Taxonomy. Question relates somewhat to the topic, may need refinement. Prompts and support are required to foster student engagement and discussion.</td>
<td>Teacher frames a question for the Placemat. Teacher uses a taxonomy of thinking such as Bloom’s Taxonomy to frame the question. Question relates to the topic and somewhat engages students. Prompts and support may be required to foster student engagement and discussion.</td>
<td>Teacher frames an effective question for the Placemat. Teacher uses taxonomy of thinking such as Bloom’s Taxonomy to frame the question at correct level. Question directly relates to the topic engages students and fosters high levels of engagement and discussion.</td>
</tr>
<tr>
<td>Teacher accounts for individual accountability and equal voice</td>
<td>Teacher integrates some aspects of accountability and/or equal voice. Teacher fails to distribute group responses and/or respond appropriately to students.</td>
<td>Teacher integrates aspects of accountability and equal voice. Some attempt to distribute group responses across the whole class. On the whole, responds appropriately to students.</td>
<td>Teacher integrates accountability and equal voice tactics. Teacher distributes group responses across the whole class and responds appropriately to students.</td>
</tr>
<tr>
<td>Student product as a result of the lesson</td>
<td>Students produce a Placemat, which displays student engagement with the task. May lack evidence of equal participation and/or group consensus.</td>
<td>Students produce a Placemat, which demonstrates student participation and group consensus.</td>
<td>Students produce a Placemat, which demonstrates equal participation of all group members and group consensus.</td>
</tr>
</tbody>
</table>

Indicate Level of Use for each critical attribute.
Circle overall Level of Use observed: 2 Mechanical | 3 Routine | 4 Refined
## Graffiti – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The extent to which a need exists to explain how to do Graffiti.</strong></td>
<td>Teacher explains or reviews the Graffiti and checks to make sure students are aware of the steps involved and the process. May provide visual cues (written steps) to remind students.</td>
<td>Teacher asks students to complete Graffiti – quickly reviews the process. May need to remind a few students of some of the steps.</td>
<td>Students complete the Graffiti – they are skilled at using the Graffiti and need little to no explanation.</td>
</tr>
<tr>
<td><strong>The number of times the teacher and students have applied the innovation.</strong></td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td><strong>Teacher frames a question for Graffiti</strong></td>
<td>Teacher frames a question for the Graffiti. Some attention is given to the uses taxonomy of thinking such as Bloom’s Taxonomy. Question relates somewhat to the topic, may need refinement.</td>
<td>Teacher frames a question for the Graffiti. Teacher uses taxonomy of thinking such as Bloom’s Taxonomy to frame the question. Question relates to the topic and somewhat engages students.</td>
<td>Teacher frames an effective question for the Graffiti. Teacher uses taxonomy of thinking such as Bloom’s Taxonomy to frame the question at correct level. Question relates directly to the topic and fully engages students.</td>
</tr>
<tr>
<td><strong>Teacher accounts for individual accountability</strong></td>
<td>Teacher allocates groups and integrates some aspects of accountability. Teacher fails to distribute group responses and/or respond appropriately to students.</td>
<td>Teacher allocates groups and integrates aspects of accountability. Some attempt to distribute group responses across the whole class. On the whole teacher, responds appropriately to students.</td>
<td>Teacher structures groups appropriately and integrates accountability tactics. Teacher distributes group responses across the whole class and responds appropriately to students.</td>
</tr>
<tr>
<td><strong>Teacher manages transitions</strong></td>
<td>Teacher manages transitions between Graffiti sheets. Refinement may be needed to keep students on task.</td>
<td>Teacher times and manages transitions between Graffiti sheets. Refinement may be needed to keep students on task.</td>
<td>Teacher times and manages smooth rotational transitions between Graffiti sheets. Students remain on-task throughout the process.</td>
</tr>
<tr>
<td><strong>Student product as a result of the lesson</strong></td>
<td>Students produce a Graffiti sheet. Sheet may have insufficient number of ideas and/or ideas may be indirectly related or incorrect.</td>
<td>Students produce a Graffiti sheet, which displays evidence of student engagement relations to the brainstorming question/topic. May be incomplete and/or ideas may be indirectly related.</td>
<td>Students produce a Graffiti sheet, which displays evidence of student engagement relations to the brainstorming question/topic. Sufficient number of ideas and all directly relevant.</td>
</tr>
</tbody>
</table>

---

**Indicate Level of Use for each critical attribute.**

**Circle overall Level of Use observed:**  2 Mechanical | 3 Routine | 4 Refined
## Framing Questions – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of times the teacher and students have applied the innovation.</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>Teacher considers the correct level of thinking</td>
<td>Some attention is given to the uses taxonomy of thinking such as Bloom’s Taxonomy. Question relates somewhat to the topic, may need refinement.</td>
<td>Teacher uses a taxonomy of thinking such as Bloom’s Taxonomy to frame the question. Question relates to the topic and somewhat engages students.</td>
<td>Teacher uses taxonomy of thinking such as Bloom’s Taxonomy to frame the question at correct level. Question directly relates to the topic and engages students.</td>
</tr>
<tr>
<td>Teacher uses individual accountability</td>
<td>Teacher uses individual accountability tactics, such as numbered or lettered heads and paired share time sporadically or not at all.</td>
<td>Teacher generally uses an individual accountability tactic such as numbered or lettered heads and paired share time.</td>
<td>Teacher consistently uses an individual accountability tactic such as numbered or lettered heads and paired share time.</td>
</tr>
<tr>
<td>Teacher considers emotional safety</td>
<td>Teacher provides students with little or no thinking time and/or the opportunity to move from covert to overt.</td>
<td>Teacher generally provides students with thinking time and the opportunity to move from covert to overt.</td>
<td>Teacher consistently provides students with thinking time and the opportunity to move from covert to overt.</td>
</tr>
<tr>
<td>Teacher uses wait time</td>
<td>Teacher inconsistently uses a wait time, or fails to provide sufficient time.</td>
<td>Teacher generally uses a wait time of between 2-7 seconds.</td>
<td>Teacher consistently uses a wait time of between 2-7 seconds.</td>
</tr>
<tr>
<td>Teacher distributes responses</td>
<td>Teacher provides opportunities for students to respond. Unequal distribution across the class.</td>
<td>Teacher generally provides opportunities for students to respond – some students may be left out.</td>
<td>Teacher consistently ensures the equal distribution of student responses across the classroom.</td>
</tr>
<tr>
<td>Teacher responds appropriately to students</td>
<td>Teacher responds to student answers but may be inconsistent in clarifying correct understanding, encouraging motivation and maintaining emotional safety.</td>
<td>Teacher on the whole responds to student answers appropriately; clarifying correct understanding, encouraging motivation and maintaining emotional safety.</td>
<td>Teacher consistently responds to a range of student answers appropriately; clarifying correct understanding, encouraging motivation and maintaining emotional safety.</td>
</tr>
</tbody>
</table>

**Indicate Level of Use for each critical attribute.**

Circle overall Level of Use observed: 2 Mechanical | 3 Routine | 4 Refined
### Jigsaw – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td>The extent to which a need exists to explain how to use Jigsaw.</td>
<td>Teacher explains or reviews Jigsaw and checks to make sure students are aware of the steps involved and the process. May provide visual cues (written steps) to remind students.</td>
<td>Teacher asks students to complete Jigsaw – quickly reviews the process. May need to remind a few students of some of the steps.</td>
<td>Students complete Jigsaw – they are skilled at using the Jigsaw and need little to no explanation.</td>
</tr>
<tr>
<td>The number of times the teacher and students have applied the innovation.</td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td>Teacher assigns home and expert groups</td>
<td>The teacher assigns groups without planning – may be confusing for students initially. Size and mix of groups needs refinement for optimal effect.</td>
<td>The teacher assigns groups randomly. Groups size and mix acceptable to complete task.</td>
<td>The teacher uses appropriate group formation processes to assign groups. Teacher pays attention to optimum group size and mix of students.</td>
</tr>
<tr>
<td>Teacher provides resources</td>
<td>Teacher has supplied materials and resources. May not be directly aligned with task or create some confusion for students. Students may need additional clarification of task.</td>
<td>Teacher has identified and provided resources and materials for expert groups. Some direction on the task is needed.</td>
<td>Teacher has identified and provided suitable resources and materials for expert groups. Clear and unambiguous directions are provided on task.</td>
</tr>
<tr>
<td>Teacher manages transitions</td>
<td>Teacher manages transitions between home and expert groups. Refinement may be needed to keep students on task and/or to avoid confusion.</td>
<td>Teacher times and manages transitions between home and expert groups. Minimal refinement may be needed to keep students on task and/or to avoid confusion.</td>
<td>Teacher times and manages transitions between home and expert groups. Students remain on-task throughout the process. No confusion is evident.</td>
</tr>
<tr>
<td>Student outcome as a result of Jigsaw</td>
<td>Each individual student can re-tell their expert information to their home group, may miss parts of the information or be confused. Each individual student has completed the Jigsaw task and an awareness of their home group information.</td>
<td>Each individual student can re-tell their expert information to their home group, demonstrating good understanding. Each individual student has completed the Jigsaw task and a good understanding of their home group information.</td>
<td>Each individual student can explain and describe their expert information to their home group; demonstrating full understanding. Each individual student has completed the Jigsaw task and has developed a summary of their home group information.</td>
</tr>
</tbody>
</table>

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**Indicate Level of Use for each critical attribute.**

**Circle overall Level of Use observed:** 2 Mechanical | 3 Routine | 4 Refined
## Concept Attainment – Levels of Use Rubric

<table>
<thead>
<tr>
<th>Critical Attributes</th>
<th>Level Two Mechanical</th>
<th>Level Three Routine</th>
<th>Level Four Refined</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The extent to which a need exists to explain how to do a Concept Attainment.</strong></td>
<td>Teacher explains or reviews Concept Attainment and checks to make sure students are aware of the steps involved and the process. May provide visual cues (written steps) to remind students.</td>
<td>Teacher asks students to complete Concept Attainment – quickly reviews the process. May need to remind a few students of some of the steps.</td>
<td>Students complete the Concept Attainment – they are skilled at using Concept Attainment and need little to no explanation.</td>
</tr>
<tr>
<td><strong>The number of times the teacher and student have applied the innovation.</strong></td>
<td>1 to 5 times</td>
<td>6 to 10 times</td>
<td>11 or more times</td>
</tr>
<tr>
<td><strong>Teacher has designed appropriate data sets</strong></td>
<td>Teacher has used data sets, which on whole aid student learning. May be some confusion and data sets may need refinement.</td>
<td>Teacher has researched the concept and designed clear data sets, which on the whole aid student learning with minimal confusion.</td>
<td>Teacher has researched the concept thoroughly and designed accurate and clear data sets, which are unambiguous and aid student learning.</td>
</tr>
<tr>
<td><strong>The teacher follows the Concept Attainment process</strong></td>
<td>Teacher reveals the data set using either focused gambling or simultaneous scanning. There may be some confusion or steps may be missed. Students are provided some time to think and share their hypotheses, but there may be some confusion. Teacher invites students to share their ideas.</td>
<td>Teacher reveals the data set using either focused gambling or simultaneous scanning in a planned way. Students are provided some time to think and share their hypotheses. Teacher invites students to share their ideas.</td>
<td>Teacher reveals the data set using either focused gambling or simultaneous scanning in a planned, sequential and effective manner. Students are provided sufficient time to think and share their hypotheses. Teacher invites students to share their ideas. Responds appropriately to students.</td>
</tr>
</tbody>
</table>

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**Indicate Level of Use for each critical attribute.**

Circle overall Level of Use observed:  2 Mechanical | 3 Routine | 4 Refined
Appendix 5: Post classroom observation interview questions

I would like to take a few minutes to talk about your reflections on your use of [insert innovation] in the classroom observation on [insert date].

1. Share with me your thoughts and feelings about how you think the use of [insert innovation] went in your lesson? (Probe: feelings, emotional and behavioural responses).

2. Would you say your use of [insert innovation] in the lesson was ‘typical’ of your use at the moment? (Why/why not?)

3. What aspects of your use of [insert innovation] do you think worked well in the lesson? (What and why?)

4. Where there any aspects of the use of [insert innovation] that didn’t go well in the lesson? (What and why?)

5. Would you do anything differently if you had the chance to do it again? (What and why?)

6. Will you continue to use this innovation in your teaching (Why/why not?)

7. Is there anything else you would like to share with me about the lesson?