Confluent learning: using a design approach to develop cognitive abilities and enhance affective capacities through change management curriculum

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Purpose
The aim of the study is to explore the role of confluent learning in supporting the development of change management knowledge, skills and attitudes and to inform the creation of a conceptual model based upon a priori and a posteriori knowledge gained from literature and the research.

Design/methodology/approach
The research adopts qualitative approach based on reflective inquiry methodology. There are two primary data sources, interviews with learners and the researchers' reflective journals on learners' opinions.

Findings
The confluent learning approach helped to stimulate affective states (e.g. interest and appreciation) to further reinforce cognitive gains (e.g. retention of knowledge) as a number of higher order thinking skills were further developed. The instructional design premised upon confluent learning enabled learners to further appreciate the complexities of change management.

Research implications/ limitations
The confluent learning approach offers another explanation to how learning takes place, contingent upon the use of a problem solving framework, instructional design and active learning in developing inter- and trans-disciplinary competencies.

Practical implications
This study not only explains how effective learning takes place but is also instructive to learning and teaching, and human resource development (HRD) professionals in curriculum design and the potential benefits of confluent learning.

Social implications
The adoption of a confluent learning approach helps to *re-naturalise* learning that appeals to learners affect.

Originality/value
This research is one of the few studies that provide an in-depth exploration of the use of confluent learning and how this approach co-develops cognitive abilities and affective capacity in the creation of a conceptual model.

Keywords: confluent learning, change management, problem solving, instructional design, cognitive ability, affective capacity, design

Introduction

The call for a confluent learning approach in education has been present for many years (Castillo, 1974), and whilst the approach has received comment in recent times e.g. Ward and Shortt (2013) it still has not gained wide spread recognition as a valuable learning approach in business education. Confluent learning is holistic, it aims to activate and engage all of the learner's senses (Misch & Peloquin, 2005). It is rooted in Dewey's (1938) notion of collateral learning and is a "philosophy and a process of reaching and learning in which the affective domain and the cognitive domain flow together, like two streams merging into one river" (G. I. Brown, 1971).

The aim of this study is to explore the role of confluent learning in supporting the development of the knowledge, skills and attitudes (KSAs) vital in change management and to subsequently create a conceptual model. Confluent learning provides an appropriate vehicle to develop change management KSAs as they are intertwined (Change Management Institute, 2012) and can be grouped under three main categories; awareness, astuteness and adaptiveness (Munduate & Bennebroek Gravenhorst, 2003). In the context of change management awareness requires the individual to demonstrate the ability to be perceptive, responsive and knowledgeable of current and foreseeable changes. Astuteness is the perspicacity to know the significance of the consequence and implications of trends and changes whilst adaptiveness refers to the individual's ability and flexibility, using hard and soft skills, to enable an organisation to change efficiently and effectively.

Confluent learning helps to shape a range of affect-based qualities such as empathy in learners (Misch & Peloquin, 2005; Stover, 2010). Whilst effective change management skills are a requisite in today's business environment, this appreciation may not always be realised by learners. Thus appealing to learners' affective states is crucial. A curriculum that is student-centred should engage learners in changing their attitude towards the subject and to recognise and appreciate its importance. The study of confluent learning has the potential to reveal how different aspects of learning complement and reinforce each domain in creating an optimum learning experience that allows flow state to ensue (Csikszentmihalyi, 1990). The exploration of confluent learning, its principles and methods may facilitate theory development in particular the recognition of the direct role of emotions in learning (Goetz, Pekrun, Hall, & Haag, 2006; Pekrun, Goetz, Titz, & Perry, 2002).

Change management is both an interdisciplinary and transdisciplinary field of study (Change Management Institute, 2013). The coherent body of knowledge draws from across the disciplinary boundaries of for example leadership, learning and systems science and organisational development (Tress, Tress, & Fry, 2005), and it is transdisciplinary as its knowledge base draws from both practitioner and academic participants (Tress et al., 2005). The interdisciplinary nature of change management suggests that the learning methods used should help learners to expand their horizons and at the same time be the bridge in integrating the different disciplines (Collin, 2009). However, it is the transdisciplinary nature of organisational change that accentuates the need to adopt a confluent learning design (Balsiger, 2004; Wilson, 2006) as the learner in higher education has to grapple with the breadth of learning required to become competent in change management.

This study explores the development and implementation of a curriculum based on a confluent learning design approach within the context of an undergraduate change management module. Specifically the research addresses the research question how well

does a confluent learning design support learners to develop KSAs in change management? The findings of this study contribute to the development of a conceptual model based on a priori knowledge from literature used to design the curriculum and a posteriori knowledge gained from the research.

Confluent Learning Approach Design

Design principles.

Learning should not only develop learners cognitively but it should do so in a way that stimulates them, through active learning, to promote deep learning (Kember, Biggs, & Leung, 2004). To do so a design ethos was adopted in the development of the module. 'Design' denotes both an activity and outcome (T. Brown & Wyatt, 2010), and is widely used in various fields such as business strategy and models (Battistella, Biotto, & De Toni, 2012; Mintzberg, 1987, 1990) and innovation (Tether, 2006). Whilst it is a discipline in its own right, the meaning of design is partly influenced by the domain to which it is applied (Kimbell, 2010; Mahdjoubi, 2003). Ontologically, the essence of design is about being holistic and having meaning and purpose (T. Brown, 2008; Verganti, 2009; Weick, 2004). The design of the module had to firstly reflect the nature of the subject matter,and KSAs in the field but also encompass other considerations such as module learning outcomes, the academic background of the learners and course specialisation of the learners on this mandatory module, the size of the cohort (213) and teaching team (5).

There are three primary domains considered to be part of learning ; cognitive, affective and psychomotor (Anderson, Krathwohl, & Bloom, 2001). The cognitive domain relates to development of intellectual operations such as analysing, synthesising and evaluating. Learning is said to have been attained when a learner is able to undertake more sophisticated intellectual tasks. The affective domain pertains to emotions related to learning. Learning in this domain is presumed to have been achieved when learners have a positive change in attitude from being insouciant to demonstrating an appreciation of the value of a subject, leading to even perhaps a reprioritisation of learning goals (Anderson et al., 2001). The psychomotor domain is the physical, movement and kinaesthetic aspect of learning. Proficiency in the psychomotor domain can be deemed to be attained when learners are able to physically respond appropriately and efficiently. In the context of the design of many change management modules, the cognitive domain generally plays a leading role; however, whilst necessary in isolation it is insufficient in developing change management capabilities. The cognitive domain has to be intently complemented by the affective domain. The importance of emotions has been consistently reported in literature as it is ubiquitous in both university life (Denovan & Macaskill, 2013) and in the workplace (Vincent & Braun, 2013). Emotions play a significant role in learning such as application of logic, intuition, intellect, feelings, ideas, meanings, and experience (Rawson, 2000; Rogers, 1994). This is not surprising, as it has been argued that emotions explain approximately 40 percent of variance in behaviour (Biggers & Rankis, 1983). Pekrun, Elliot, and Maier (2006) argue that emotions are also integral to learning in terms of memory, motivation, development (Ashby, Isen, & Turken, 1999), directing cognitive resources (Meinhardt & Pekrun, 2003), sustaining interest (Ainley, Corrigan, & Richardson, 2005), triggering different modes of problem solving and information processing (Isen, 1999), and self-regulation (Pekrun et al., 2002). The psychomotor domain largely plays a supporting role to the other two domains.

Creating manageable learning components through assessment.

Assessments are a powerful driver for learning (R. E. Bennett, Jenkins, Persky, & Weiss, 2003) as it can be at the forefront of learners' minds and influence where they direct their resources and efforts. A problem-solving framework was used to develop the assessment as problem solving is one of the defining characteristics of intelligence (Pretz & Sternberg, 2005) and the adoption of a problem solving framework in the module's assessment helped to disaggregate each part of the design into more manageable components for learners. Learners were tasked to identify an organisational situation that was problematic, either an issue that needs to be resolved or a long-term opportunity that can be addressed. The nature of the assignment was to focus on an ill-structured problem where the 'answer' was uncertain (Hew & Knapczyk, 2007) using the problem solving framework stages of problem finding, framing, formulation and solving. These steps are generic, intuitive and largely reflect the steps that a change manager may adopt in the development and implementation of solutions (Hoffman & Schraw, 2010).

Problem solving skills are vital in helping awareness and recognition of problematic situations and opportunities (Bransford & Stein, 1984; Brugman, 1991). Learners were tasked to identify the ill-structured problem (Hew & Knapczyk, 2007) and then frame it in a way that would provide the problem solver with insight to the root 'cause' and facilitate the development of an effective solution. Adopting different perspectives may help problem solvers to discover new frames that could help in solving a problem more effectively. For example Cohen, Shumate, and Gold (2007), found that framing smoking as a social problem rather than a health problem was a more effective way to stop people from smoking as people were more concerned about being a social outcast than the damage that smoking was doing to their health. Learners then moved on to formulate and articulate the problem (DeYoung, Flanders, & Peterson, 2008) in terms of what needs to be addressed (Minto, 2009) before addressing the opportunity by the development of a solution. As Einstein argued, how the problem is framed and formulated is as important as the solution (Einstein & Infeld, 1938), although it may be apocryphal, he is often quoted as saying if he had 20 days to solve a problem, he would spend 19 days defining it. The adoption of a systematic manner in solution development is crucial in enabling the solver to address the root cause of the problem and not just the 'symptoms' (D'Zurilla, Nezu, & Maydeu-Olivares, 2004; Heppner & Peterson, 1982).

Learning methods, tools and mechanisms for confluent learning.

The final design choice was to draw together learning methods, tools and mechanisms (LMTMs) that provide a confluent learning approach to address:

- The problem solving framework used to structure assessment
- Awareness, astuteness and adaptiveness - change management KSAs
- Academic frameworks/models that underpin change management

A summary of the confluent learning domains, problem solving stages, academic models and LMTMs is in Table 1. Learning tools and methods that promoted active learning (i.e. psychomotor domain) and could be feasibly applied in a classroom environment were selected, and used in each of problem solving stages.

Change management KSAs	**Problem solving stages**	**Academic frameworks/ models**	**Learning methods, tools and mechanisms**	**Confluent learning domains (in order of priority) (Anderson et al., 2001)**
Awareness	Problem finding: Identifying a problem situation/ opportunity (Brugman, 1991)	• PESTLE e.g. Aguilar (1967) • McKinsey's 7s (Waterman Jr, Peters, & Phillips, 1980) • Culture web (Johnson, Whittington, & Scholes, 2011)	• Multiple cause diagrams (Checkland, 1981; Ramage & Shipp, 2012)	1. Cognitive (i.e. thinking through the issues) 2. Affect (i.e. appreciating the complexity and links between the external and internal environments, stimulation due to the novelty of the learning tool) 3. Psychomotor (i.e. drawing the diagram)
Astuteness	Problem framing (Tallman & Gray, 1990)	• Multiple perspective taking and framing of problems e.g. Decisions and the Psychology of Choice by Tversky and Kahneman (1986)	• Socratic questioning (in seminars one-to-one with students or in small groups) (Elder & Paul, 1998; Yang, Newby, & Bill, 2005)	1. Cognitive (e.g. multiple perspective taking) 2. Affect (i.e. empathise with how different frames may stimulate different types of actions and feelings)
	Problem formulation (DeYoung et al., 2008)	• Situation-complication-question method (Minto, 2009)	• Critical thinking activity and assessment using the Cornell CT test, followed by bespoke CT learning and practice workbook designed and created by the authors (Ennis, Millman, & Tomko, 2005)	1. Cognitive (e.g. identifying root cause of problems/ opportunities) 2. Affect (i.e. value how a problem is formulated determines how a problem is solved)
Adaptiveness	Problem solving (Ackoff, 1993; D'Zurilla et al., 2004; Heppner, Cook, Wright, & Johnson, 1995)	What is the solution: dependent on the nature of the root cause identified- How the solution can be implemented (generic models): • Forcefield analysis (Lewin, 1951) • Kotter's 8 step for change (Kotter, 1995)	• Simulation game titled 'Change Management: Power and Influence V2' (Harvard Business Publishing, 2013). Identification and application of change levers	1. Affect (e.g. appreciate that change management is mostly subjective feelings and emotions, stimulate interest due to novelty of the use of the simulation game) 2. Cognitive (e.g. identifying change management tactics and pattern that works) 3. Psychomotor (in engaging with the simulation game)
All three	Integration of all four steps.	• as selected by student	• Poster presentation (Billington, 1997; Moneyham, Ura, Ellwood, & Bruno, 1996)	1. Cognitive (i.e. development of poster) 2. Affect (e.g. complexity of change and the advanced competencies that change management requires) 3. Psychomotor (i.e. presentation and articulation of poster)

Table 1: Confluent learning design adopted to develop a learner's KSA in change management

At stage one, problem finding; multiple cause diagrams and rich pictures (Checkland, 1981; Ramage & Shipp, 2012) were used to complement the use of the academic models such as the Political, Economic, Social, Technology, Legal and Environmental (PESTLE) framework e.g. Aguilar (1967), McKinsey's 7s (Waterman Jr et al., 1980) and the cultural web (Johnson et al., 2011). The use of diagrams targets all three domains. It solicits the psychomotor through active learning as the learners are required literally to draw the issues and explore how they interlink. Cognitive skills are developed by learners 'thinking through the issues' and seeing the 'bigger picture'. The affective domain is elicited by appreciating the complexity of organisational problems/ opportunities that are better represented as a 'chain of events' rather than isolated events.

Stage two, problem framing utilised Tversky and Kahneman's (1986) decisions and the psychology of choice theory. Effective thinking is driven by appropriate questions (Elder & Paul, 1998) and Socratic questioning was used one-to-one with students or in small groups (Yang et al., 2005) to help students identify the 'common denominator' that may link the symptoms of a problem the multiple perspectives taken and result in effective framing.

Stage three problem formation and consequentially problem statement is a crucial step in developing a change management solution. Learners cognitive skills were developed by considering the notion that how a problem is formulated determines how a problem is solved, Minto's (2009) situation-complication-question framework was used as a reference and learners were supported in this step by the use of a critical thinking activity and assessment using the Cornell Test, followed by the use of a bespoke learning and practice workbook (Appendix 1), (Ennis et al., 2005).

The final stage, problem solving refers to both what the solution is and how it may be implemented. The module teaching of how change can be enacted involved the use of a number of general models such as Lewin's (1951) forcefield analysis in addressing resistance and Kotter's (1995) 8-step change. However, the effectiveness of static models in developing change management KSAs is limited. To provide a more authentic experience of how change is enacted in organisations and to inform their problem solving design a change management simulation game, developed by a leading business school from the US was played in groups of four. The simulation game created the opportunity to build and influence an organizational change initiative in 4 scenarios allowing appreciation that managing change mostly involves subjective feelings and emotions.

In the final integrated activity learners developed and presented a poster for in-class presentation to tutors and peers. This activity targeted all three domains challenging learners cognitively when creating posters and kinesthetically and affectively in presenting to their tutors and peers (Billington, 1997; Moneyham et al., 1996). Through the process of preparing for the presentation, the learners had the opportunity to appreciate the complexity of change and the advanced competencies that change management requires.

Method

The methodological approach adopted is a qualitative research method based upon reflective inquiry. Cunliffe (2004) states that knowledge comes from surfacing "tacit practical consciousness" (p. 410). Reflective inquiry helps practitioners to be reflective and reflexive in terms of their thoughts, emotions and behaviours (Donnelly & Fitzmaurice, 2011; Leshem & Trafford, 2006) and is consistent with the researchers' implicit aims to develop both learners and their own learning (Van Manen, 1995). The reflection process enables the research question to be addressed but also enables those involved in teaching in HE to review their practice, modify present knowledge to inform learning and teaching practice and develop theory (Lyons, 2010)

The research used two approaches; semi-structured interviews and reflective journals. 55 semi-structured interviews were held with 9 female and 7 male learners, in 5 cycles over an eight week period. Each interview cycle corresponded with a stage of the problem solving framework and was conducted on completion of the specific stage. Each of the interviews lasted 15 minutes and was conducted in class. The interview protocol involved two primary themes; how effective were the LMTMs in supporting the stage of the problem solving framework and what had learners gained in terms of cognitive ability and affective capacity?

The feedback from the learners was captured, thematically analysed and reflected upon alongside the reflective journals from the module staff that captured key experiences gained throughout the interview period (Coffey & Atkinson, 1996). Consistent with evaluation being a crucial element in the reflective process (Gibbs, 1988; Zeichner & Liu, 2010) fundamental questions were asked: Did the tool stimulate the learners in terms of the cognitive or affective domains? Did the learners develop change management KSAs? Why or why not? The key reflective inquiry pertained to addressing questions such as; What were the learners' experiences? What are the key lessons for the practitioners? How does this inform and theory and general practice?

Findings

Stage 1: Problem finding.

Unsurprisingly many of the learners found the use of the academic models introduced during this stage to be useful, most likely because given the interdisciplinary nature of change management, they were familiar with the basic models from previous study. They did however take some time to familiarising themselves with the use of multiple cause diagrams and rich picture tools. As a learner commented "Doing the diagram [sic] is a lot harder than it looks. Lots of to-ing and fro-ing [in amending the diagram]".

Learners started to notice that the effects and consequences of change can cut across organisational functions in some cases be pervasive in, as a learner said "this appears relatively easy as you can look in any part of an organisation e.g. Strategy, Marketing, Finance and HR". The susceptibility of the organisation to the environment was commented on with comments such as all aspects of an organisation will be affected "somehow" by many of the trends. The volatility of the external environment was also inferred by learners who were concerned about the changes that may occur to the case that was being used "What if things change between now and the time I hand in the assignment?"

As some of the diagrams became increasingly convoluted; learners became concerned and questioned their own though processes. One commented "I am not sure if this problem can be used in the assignment. [it is too difficult to explain]". In some cases learners started to have doubts if the initial ideas that they had started with were bona fide problems; as one commented "it looks easy enough but is this 'problem', a real problem? How do I justify it?" The links between events in the diagram prompted learners to increasingly have doubts about what is a root cause and a symptom. In addition, a small number of learners noted that in some cases there can be a subtle difference between a problem and an opportunity, as one noted "some 'problems' can also be considered as an opportunity".

Reflecting on the experience of interaction with learners, many of the learners did not appear to find it difficult initially to generate ideas about potential organisations or problems/ opportunities to examine (see Appendix 2) however once an organisation had been identified the learners found that the problem finding stage was not as easy as they had thought it would be and many had trouble with working with fuzzy parameters and seemed to be dependent on precise and prescriptive criteria. Some learners acknowledged that whilst it was difficult and took time, it was helpful in facilitating them to map the 'chain of events' especially when the situation they were examining is complex, demonstrating a degree of divergent thinking. The multiple cause diagrams allowed some learners to link changes in the external environments to internal events. For some of the learners, the affect demonstrated at this stage of the task appeared to be one of anxiousness in finding the 'right' case to address in the assignment. Those that did made a genuine effort in drawing the multiple cause diagrams appeared to gain an appreciation for the complexity of real organisational issues.

Stage 2: Problem framing.

The learners' experience in the second stage mirrored that of the first, specifically in terms of understanding the concept; however, the challenge was in the application. This was underscored by a learner who stated "I get the concept but I am not sure if I am doing it right". The learner's apprehension and doubts are completely expected as there was a chasm between the learner's prior experience and the use of new methods of learning. In addition, learners recognised that for some organisation issues, there is quite a lot of variability in the perspectives that one could adopt, and that the subsequent factors that are analysed and the 'solution' may also differ depending on how a problem is framed. The discussions through Socratic questioning resulted in learners revising their diagrams in stage one, as they attempted to identify the common denominator in the diagrams, in exemplifying some degree of convergent thinking, as a learner astutely said, "This is like 80/20 isn't it, sounds easy enough…". The learners had to attempt the problem framing exercise outside of class, though some found it subsequently much easier to do with the tutor's help "the discussions [with the tutors] are helpful and its easier when you have someone to talk to….working it out your own is tougher".

Overall, this step was a challenge for a number of learners. The concept of problem framing appears to be an easy concept to 'get' although learners have found it much more difficult to apply. A few weeks later, some of the learners, after revising their diagrams, were able to frame the problems/ opportunities in an effective manner. Some learners realised that they had started to 'really' understand how framing can be helpful though still had difficulty expressing it "I can see why…how this works….the issue of the retrenchment, losing clients, different strategy are all interlinked…[tries to explain but stops]…so what the problem is

depends…everything is a possibility…so how do I know my frame [or perspective] is correct". A reason for the difficulty may be due to the inexperience of the learners as work experience inevitably exposes learners to different perspectives other than those experienced in the classroom. Another reason may be due to the requirement in justifying the frame/ perspective adopted, as learners were asked not only find a problem or opportunity but to also provide a reason on why they think what they have found is a bona fide problem/ opportunity and why it should be solved (e.g. why is it a leadership issue and not an operational matter, and how would you justify this?). Many appeared to face difficulties in this latter aspect of this task. Learners who had been on placement appreciated the practical purpose of framing as it helps to make change initiatives more 'do-able', and keeps the change initiative focussed.

Stage 3: Problem formulation.

The problem formulation step required a final evaluation of what the problems is and what is the root cause. At this stage, many of the learners were still attempting to frame the problem, and some learners conflated framing and formulation. The learners found the formulation stage was more 'technical' in that they had to actually write the problem statement. "When you first mentioned this part in class, I thought it was going to be easy but it's not really…there's more to it [in reference to reflecting the key findings in step one and two]". Another learner observed that linking the different factors at play in the diagrams was easy, but putting the relationship between the 'factors' in words was more difficult. This articulation is essentially learners' endeavour in deciding between the different modes of reasoning i.e. deductive, inductive or abductive reasoning in filling the gaps where there is no evidence from their research to indicate the type of relationship. Some learners had also started to detect a pattern specifically in terms of the role of people's behaviours, attitudes and mental models in playing a significant role in the problems identified or as part of the solution in addressing opportunities.

Stage 4: Problem solving.

The simulation game appeared to be popular with learners. It was cited as 'fun' or 'engaging', though this may have been due to the novelty of it. Nonetheless, the 'success' in the use of the simulation game involved some learners 'figuring out' the pattern in the application of the change levers. Thus learners who were successful in this may be said to possess reasonable critical thinking skills. The simulation game, that had a balance of 'hard' and 'soft' levers, and in emphasising the human element of change, appeared to make an impression on a few learners as they further appreciated how change "starts and ends with people", as one learner put it.

Some learners, in playing the role of the change agent, commented that those in this role had to know how to 'get around' effectively, which meant having effective interpersonal skills and being savvy. Furthermore, three of the learners interviewed also mentioned that this lesson was evident in the debates that they had with their teammates in deciding the next steps whilst playing the game. Some learners remarked that stage four was easy as one said, "I think this is the most straightforward part of the assignment". Such comments were potentially in regards to models such as Kotter's 8-steps change model, which are quite prescriptive but suits some learners' as lying safely within their comfort zone. Thus, many learners adopted these models for the assignment task instead of developing their own change programme based upon the lessons learned from the simulation game and a range of change

models. Whilst the academic change models provided some scaffolding for the learners, some learners expressed concerns about whether their solution would go 'far enough', demonstrating some levels of critical thinking as they evaluated the sufficiency of the solution (Natale & Ricci, 2006).

Stage 5: Integration.

The final step was an integrated activity in the form of a poster presentation, to help learners merge all the problem solving stages together as a coherent 'story'. Some of the learners found this to be a challenge as they were clear that adopting a holistic view is important but nonetheless had trouble in presenting it in such a manner. The level of difficulty of this task is perhaps based upon how well the learners had completed the individual prior steps. The learners interviewed found the exercise helpful as one who presented her poster said that "talking through this really helped to clarify things in my head" (see Appendix 3). In some cases, learners also demonstrated *critico-creative thinking* in using creativity in structuring arguments in light of available evidence (Fisher, 2001). The learners that expressed their satisfaction in their work generally agreed that change management skills were varied and complex.

Change management KSAs	Problem Solving Steps	Cognitive abilities	Affective capacity	Confluent learning domains (in order of priority) (Anderson et al., 2001)
Awareness	Problem finding: Identifying a problem situation/ opportunity (Brugman, 1991)	Divergent thinking (creativity) (Guilford, Christensen, Merrifield, & Wilson, 1978) in recognising the links and the chain of events (across time and space) that are usually present in organisational change.	• Recognise the challenges of the external environment is volatile, uncertain, complex ambiguous (VUCA) (N. Bennett & Lemoine, 2014) • Appreciate organisations' susceptibility to the external environment, and the links between the external and internal environments.	1. Cognitive (i.e. thinking through the issues) 2. Affect (i.e. appreciating the complexity and links between the external and internal environments, stimulation due to the novelty of the learning tool) 3. Psychomotor (i.e. drawing the diagram)
Astuteness	Problem framing (Tallman & Gray, 1990)	Convergent thinking (e.g. insight) (Dow & Mayer, 2004) in identifying the common denominator for some of the issues identified in their case, supported by the multiple perspective taking.	• Further realisation that organisational issues may be more multifaceted than it appears • Internalising the ideals of multiple perspectives taking to problems and that each perspective may educe different reactions and solutions (Armenakis & Harris, 2009)	1. Cognitive (e.g. multiple perspective taking) 2. Affect (i.e. empathise with how different frames may stimulate different types of actions and feelings)
	Problem formulation (DeYoung et al., 2008)	Evaluation in identifying 'the' problem (Patton, 2002) and some degree of critical thinking (Ennis, 2001; Facione, 2006) in terms of what is the solution and how the solution may be implemented • Deduction • Induction • Meaning • Observation/ inference • Assumptions • Credibility	• Value that framing and formulation is crucial for effective problem solving and change management in identifying the root cause (that is usually related to people's behaviour and mental models (Senge, 1992).	1. Cognitive (e.g. identifying root cause of problems/ opportunities) 2. Affect (i.e. value how a problem is formulated determines how a problem is solved)
Adaptiveness	Problem solving (Ackoff, 1993; D'Zurilla et al., 2004; Heppner et al., 1995)		• Appreciate the perception for need for change and process of change are subjective, in terms of the change targets and the change agents themselves (e.g. being able to relate sense of urgency). This is achieved in playing the simulation game and also through working in teams whilst playing the simulation game). • Value the conceptual and interpersonal skills that change management requires that is crucial for career progression (Mohrman, Tenkasi, & Mohrman, 2003)	1. Affect (e.g. appreciate that change management is mostly subjective feelings and emotions, stimulate interest due to novelty of the use of the simulation game) 2. Cognitive (e.g. identifying change management tactics and pattern that works) 3. Psychomotor (in engaging with the simulation game)
All three competencies	Integration of all four steps.	• Creativity and critical thinking (Fisher, 2001) in developing a coherent 'story', tend to be more prominent when the case concerns addressing an opportunity.	• Felt Gestalt that a holistic view is necessary for effective change to take place (Cameron & Green, 2012; Freeman, 1999) • Appreciate a key competency in change management is the ability to articulate a coherent 'story' (e.g. what is included) and in delimitating (e.g. what is excluded) a change management initiative	1. Cognitive (i.e. development of poster) 2. Affect (e.g. complexity of change and the advanced competencies that change management requires) 3. Psychomotor (i.e. presentation and articulation of poster)

Table 2: The development of cognitive abilities and affective capacity through confluent learning methods

Discussion

While the findings were mixed in terms of the gains made by the learners, there is some evidence to suggest that the confluent learning approach was successful in developing the KSAs required to be competent in change management. The summary of the findings in Table 2 illustrates the gains made by the learners however, the table does not suggest that there was a complete mastery of these skills nor all the learners shared these experiences. Thus, in addressing the research question, there is evidence to suggest that a confluent learning design does support some learners in developing change management competencies. The evidence from this research indicates that there is merit in using the findings as a basis for theory-building. In developing the analytical generalisation, we use Weber's (2003) guidelines for theory development as a reference in articulating the principles to guide future investigations. Weber (2003) argued that there are four main steps in developing the theory involving articulating the constructs of the theory, the laws of interaction (i.e. the relationship) that exist among the constructs, lawful state space and the lawful event space of the theory.

Constructs are the variables in a theory, whilst the laws of interaction includes main, moderating (interaction) and mediating effects that the independent variable may have on the dependent variable and/ or one another. The lawful state of space concerns the boundary conditions of the theory e.g. the applicability of the theory within the range of values, and the lawful event space concerns time and the applicability of the theory when change occurs. In addition to these criteria Weber (2003) adds that parsimony is also crucial. A conceptual model that contains five principles has been developed based upon both a priori and a posteriori knowledge, as illustrated in Figure 1. Each principle is discussed below and justified based on Weber's criteria.

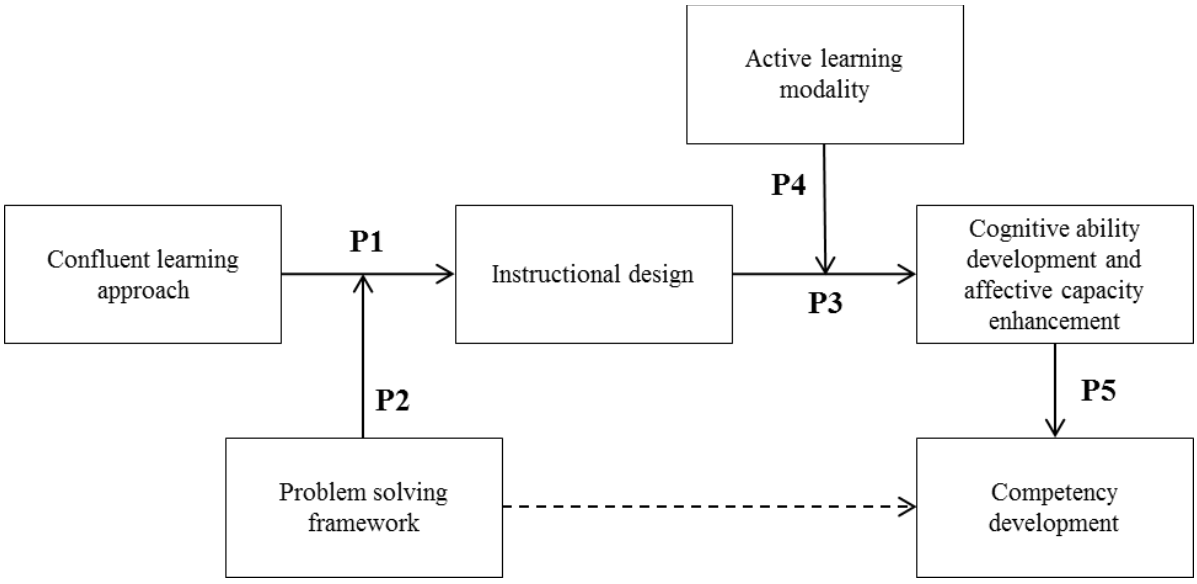


Figure 1: Using a confluent learning approach for a change management curriculum in developing competencies

Principle 1: A confluent learning approach that is premised upon developing learners as an embodiment and the philosophy of design will result in the appropriate selection and application of complementary learning LMTMs as part of the instructional design.

Confluent learning approach and instructional design are the constructs in this principle. Confluent learning is conjectured to directly shape instructional design through the selection of complementary learning LMTMs as it directs educators to create a balanced set of learning LMTMs that stimulate learners' cognition, affect and psychomotor domains. However, this principle requires a design ethos that reflects the embodiment of the confluent learning principles in developing learning holistically (Hackbarth, 1997), which invariably means that the complementary learning LMTMs must be suitably varied in supporting and/ or reinforcing the development of each domain in light of one another (Gagné, 1985). The instructional design and learning LMTMs should however meet the needs of learners at particular points of development. The role of affect and the psychomotor domain may play a lesser role for learners that have substantial real experiences. This principle, as with the following four, is bounded within the undergraduate level.

Principle 2: The relationship between a confluent learning approach and instructional design is enhanced by the use of a problem solving framework that helps to integrate the learning LMTMs into a cohesive and effective set of instructions.

Principle 2 involves the previous two construct, however, it specifies a third construct in the form of a problem solving framework that includes the problem solving steps that is rational and systematic. The problem solving framework is more instructive as helps to 'ground' the confluent learning approach. Whilst the confluent learning approach results in the selection of learning LMTMs that are complementary to one another in terms of cognitive, affective and psychomotor domains, the problem solving framework helps to integrate the learning LMTMs as a more cogent set of instructions. The problem solving framework is also fitting as many business management professionals cite problem solving as a key area of competency (Merrill, 1994). In addition to providing learners with a schema in approaching problems, the problem solving framework helps to develop self-efficacy as it helps to increase the success of finding effective solutions to problems. This principle should be explicit in the recognition of the four problem solving stages as part of the framework, and excludes coping behaviours and actual solution implementation, which takes places after the 'solutions development' stage.

Principle 3: An effective instructional design set of complementary and integrated learning LMTMs, premised upon confluent learning, develops cognitive ability and enhances affective capacity.

Based upon the evidence from the interviews, it is conjectured that the instructional design of complementary and integrated learning LMTMs directly develops cognitive ability and enhances affective capacity of learners. Cognitive ability refers to higher order thinking skills such as critical thinking and convergent thinking. In the context of learning, emotions play an equally important role relative to cognition as R. B. Brown (2000) argues that learning is inherently emotional. For example, interest is essential to learning (Mazer, 2013). Furthermore, whilst the discrete enhancement of both cognition and affect is important, the coalescence between the two as a unified construct is crucial as it helps to change learners' attitudes and potentially their dispositions (over the long term). Ackerman (2003) argued that the singular view of ability based on intellect does not show the 'real picture' of human behaviour. He argued that developing peoples' capacity and willingness to do something is as important as developing their capability. Developing capacity and capability results in the improvement of people's typical performance (Chamorro-Premuzic, Furnham, & Ackerman, 2006). In addition to demonstrating reasoning skills, some of the learners also exhibited

argumentation (Toulmin, 1969) and antilogos (Glassner & Schwarz, 2005, 2007) skills that are more representative of 'real-life' in reflecting human values and subjective views e.g. representative and warranted by contemporary social values. The instructional design has to be effective in terms of synergistically blending the learning LMTMs to develop both cognitive ability and affective capacity (Mayer, 1992). Similar to Principle 2, this principle is dependent on the learners' situation and the context of curriculum.

Principle 4: The relationship between the use of a cohesive instructional design set of complementary learning LMTM, and the development and enhancement of cognitive ability and affective capacity, is enhanced by an active learning modality that leverages upon learners' psychomotor skills.

Principle 4 involves the previous two construct, however, in addition it proposes that the presence of a third construct, active learning modality, interacts with complementary learning LMTM in changing its effects on the development and enhancement of cognitive ability and affective capacity. An active learning modality refers to the activities that require learners to take action in a literal sense. This may also involve giving control to learners in their learning, which is reflected in the control-value theory. This theory involves the perceived value of the learning experience and the control over the learning activity that predicts the affective states of learners (Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). The activities involved in this research are generally more classroom-based and not the more physically demanding activities that are may involve the outdoor, which may then necessitate other theories such as Kolb's (1984) experiential learning. Learners, naturally, must possess the psychomotor skills that are called upon e.g. using presentation equipment.

Principle 5: The development and enhancement of learners' of cognitive ability and affective capacity, respectively promotes development in fields that are inter and transdisciplinary. The use of the problem solving framework helps to guide the effectiveness of the development.

Principle 5 suggests that the co-development of cognition and affect is crucial for KSAs and professional competencies especially those that inter and trans-disciplinary. Competency development is the development of specific knowledge, skills and attitudes that are crucial for a profession or role (e.g. leadership) to a threshold standard (Muratbekova-Touron, 2009). Many 'standard' professional competencies involve not only effective cognitive abilities but also draw upon the affective aspect of the individual such as in valuing ethical behaviour, empathy in relating others and self-regulation. The development and enhancement of learners' cognitive ability and affective capacity as the primary aim confluent learning (Heron, 2012) contributes to the development of change management KSAs.

This principle is bounded by competency development of professionals in fields that are inter and trans-disciplinary. The co-development of cognitive ability and affective capacity appeals to the attitudinal and motivational aspects of the learner who may need to be persuaded on the other aspects of a discipline that may not resonate with them (e.g. engagement with people from different levels in an organisation in change management). Trans-disciplinary fields may also require the learners to deal with a variety of stakeholders and thus the role of affective capacity becomes crucial as a facilitator of dialogue and relationships. In addition the conjoining of different fields may necessitate a complete change in perspective and way of doing, thus may result in transformational learning (King, 2009; Mezirow, 1997). As learners radically change their mental models, attitudes and behaviours work can be more effectively undertaken if both cognitive and affect domains are addressed as part of their re-

learning. The problem solving framework also helps to shape future professional competency development as professional competencies are ultimately about being able to solve problems effectively (Patria, 2011).

Practice

In terms of practice, a confluent learning approach helps to drive a design ethos in curriculum development in creating a more effective and fulfilling learning experience for the learners. In addition, the adoption of a confluent learning approach may help to encourage a more unified view of curriculum and facilitates the effective development of synoptic assessments (Hartley & Whitfield, 2011).

Whilst the research focuses on the positive elements of confluent learning reflecting on the interviews and diary entries some other lessons for educational practitioners that reflect the nature of learner experience in HE were identified. Learners appeared to be obsessed with the use of academic models (e.g. PESTLE) rather than addressing the assignment questions. They were more concerned on how to include academic models in their assignment than using the learning LMTMs to address the assignment question. They appeared to be more confident of the problem solving stage, rather than the problem finding, framing and formulation stages, which may be a reflection of former learning experiences based around solving structured problems (e.g. case study) that have clear boundaries and rules. The design of the module could have provided more space in between activities to give learners the space and time to reflect.

It appears that many of the learners were not able to put aside concerns about their immediate job (e.g. as an accountant) and adopt a more long term view of their careers in business management and their need to understand change management. The overemphasis on employability and first job may be counterproductive as it is considered as an extrinsic motivator in the context of higher education, shown in studies to encourage surface learning (Kember et al., 2004). Learners, alternatively, should be inspired to want to learn for its intrinsic merits of self-development. In addition, the principle that underscores the message of employability could be subconsciously transferred to work settings, where learners will do a job not because of the satisfaction that the job brings but because of material aspects, such monetary rewards, for example, which can be detrimental to the long term prospects of learners with such calculus-based dispositions that inherently negates the engagement of organisational citizenship behaviour.

Conclusion

Confluent learning brings together a range of pedagogic methods to meet the various needs of learners e.g. cognitive, affective and psychomotor domains (Castillo, 1974; Ward & Shortt, 2013). This study has found that there is evidence to suggest that confluent learning design does support learners in developing change management competencies by developing cognitive ability and affective capacity. The role of affect should not be underestimated as R. B. Brown (2000), in a study of MBA students, found that emotions impacted learners' memory, reflection and evaluation. Pekrun et al. (2002) assert that learners' overall university performance is largely dependent upon their ability to self-regulate and self-motivate. In addition, some scholars have claimed that effective application may lead to transformative learning (Desmond & Jowitt, 2012; Rusch & Brunner, 2013), and whilst this was not the object of the research there is evidence to suggest that this is a possibility.

Adopting a confluent learning design approach compels educators in HRD to explicitly create a framework of 'think outside the box' activities and methods to target each area of skill. It challenges whether higher order thinking skills can be achieved within the confines of the traditional time restricted conventional module. HRD practitioners should consider the merits of a confluent learning design as it cultivates deep learning by eliciting positive emotions that help with retention. In addition, active learning enables learners to 'practise' and learn from the experience of 'doing'.

Like all research, this study also has a number of limitations. Firstly, a broader sample of participants, using stratified sampling could be used to ensure that learners from different backgrounds are included for the interviews. In addition, the interviewer role could have been undertaken by others who are not part of the teaching team as learners may have been more reflexive in the interviews. The sources of information in the evaluation of the effectiveness of the confluent learning design could have been more varied e.g. other teaching professionals. Nonetheless, we believe these limitations do not detract from the findings. There are, however areas that future research may address specifically in studying the role of confluent learning with respect to other theories such as action learning and research (Argyris, 1995), experiential learning (Kolb, 1984), and communities of practice (Lave & Wenger, 1991). Other studies have shown the importance of metacognition in transfer of learning (Georghiades, 2000), and thus future research may investigate the role of confluent learning in developing metacognition. In addition, a longitudinal perspective may be adopted as the impact of affect may require more time for it to be embedded. Finally future research may involve operationalising the constructs and testing the hypotheses based upon the principles outlined in this study.

References:

Ackerman, P. L. (2003). Cognitive ability and non-ability trait determinants of expertise. *Educational Researcher, 32*(8), 15-20.

Ackoff, R. L. (1993). The art and sciences of mess management. In C. Mabey & B. mayon-White (Eds.), *Managing Change*. London: PCP.

Aguilar, F. J. (1967). *Scanning the Business Environment*. New York: Macmillan.

Ainley, M., Corrigan, M., & Richardson, N. (2005). Students, tasks, and emotions: Identifying the contribution of emotions to students' reading of popular culture and popular science texts. *Learning and Instruction, 15*, 433–447.

Anderson, L. W., Krathwohl, D. R., & Bloom, B. S. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. USA: Longman.

Argyris, C. (1995). Action science and organizational learning. *Journal of Managerial Psychology, 10*(6), 20–26.

Armenakis, A. A., & Harris, S. G. (2009). Reflections: Our journey in organizational change research and practice. *Journal of Change Management, 9*(2), 127-142.

Ashby, F. G., Isen, A. M., & Turken, A. U. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review, 106*, 529–550.

Balsiger, P. W. (2004). Supradisciplinary research practices: history, objectives and rationale. *Futures, 36*(4), 497-421.

Battistella, C., Biotto, G., & De Toni, A. F. (2012). From design driven innovation to meaning strategy. *Management Decision, 50*(4), 718-743.

Bennett, N., & Lemoine, J. (2014). What VUCA really means for you. *Harvard Business Review, 92*(1/2), 27-42.

Bennett, R. E., Jenkins, F., Persky, H., & Weiss, A. (2003). Assessing complex problem solving performances. *Assessment in Education: Principles, Policy & Practice, 10*(3), 347-359.

Biggers, T., & Rankis, O. F. (1983). Dominance–submissiveness as an effective response to situations and as a predictor of approach–avoidance. *Social Behavior and Personality, 11*, 61–69. doi: http://dx.doi.org/10.2224/sbp.1983.11.2.61

Billington, H. L. (1997). Poster presentations and peer assessment: Novel forms of evaluation and assessment. *Journal of Biological Education, 31*(3), 218-220.

Bransford, J. D., & Stein, B. S. (1984). *The Ideal Problem Solver: A Guide for Improving Thinking, Learning, and Creativity*. New York: Freeman.

Brown, G. I. (1971). *Human Teaching or Human Learning*. New York: Viking.

Brown, R. B. (2000). Contemplating the emotional component of learning: The emotions and feelings involved when undertaking an MBA. *Management Learning, 31*(3), 275–293.

Brown, T. (2008). Design thinking. *Harvard Business Review, 86*(6), 84-95.

Brown, T., & Wyatt, J. (2010). Design thinking for social innovation. *Stanford Social Innovation Review, 8*(1), 30-35.

Brugman, G. M. (1991). Problem finding: Discovering and formulating problems. *European Journal of High Ability, 2*(2), 212-227.

Cameron, E., & Green, M. (2012). *Making Sense of Change Management: A Complete Guide to the Models, Tools and Techniques of Organizational Change* (2nd ed.). London: Kogan Page Publishers.

Castillo, G. A. (1974). *Left-Handed Teaching: Lessons in Affective Education*. New York, NY: Praeger.

Chamorro-Premuzic, T., Furnham, A., & Ackerman, P. L. (2006). Incremental validity of the typical intellectual engagement scale as predictor of different academic performance measures. *Journal of Personality Assessment, 87*(3), 261-268.

Change Management Institute. (2012). The Change Management Practitioner Competency Model. Retrieved 25 February 2015, from https://www.change-management-institute.com/sites/default/files/cmi_accreditation_cmpcompetencymodel.pdf

Change Management Institute. (2013). The Effective Change Manager: The Change Management Body of Knowledge. 1st. Retrieved 25 February 2015, from https://www.change-management-institute.com/sites/default/files/CMBoK_Sample.pdf

Checkland, P. (1981). *Systems Thinking, Systems Practice*. Chichester: Wiley.

Coffey, A., & Atkinson, P. (1996). *Making Sense of Qualitative Data: Complementary Research Strategies*. London: Sage Publications.

Cohen, E. L., Shumate, M. D., & Gold, A. (2007). Anti-smoking media campaign messages: Theory and practice. *Health Communication, 22*(2), 91-102.

Collin, A. (2009). Multidisciplinary, interdisciplinary, and transdisciplinary collaboration: Implications for vocational psychology. *International Journal for Educational and Vocational Guidance, 9*(2), 101-110.

Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York, NY: Harper and Row.

Cunliffe, A. L. (2004). On becoming a critically reflexive practitioner. *Journal of Management Education, 28*(4), 407-426.

D'Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (2004). Social problem solving: Theory and assessment. In E. Chang, T. J. D'Zurilla, & L. J. Sanna (Eds.), *Social Problem Solving: Theory, Research, and Training*. Washington DC: American Psychological Association.

Denovan, A., & Macaskill, A. (2013). An interpretative phenomenological analysis of stress and coping in first year undergraduates. *British Educational Research Journal, 39*(6), 1002-1024.

Desmond, B., & Jowitt, A. (2012). Stepping into the unknown: Dialogical experiential learning. *Journal of Management Development, 31*(3), 221-230.

DeYoung, C. G., Flanders, J. L., & Peterson, J. B. (2008). Cognitive abilities involved in insight problem solving: An individual differences model. *Creativity Research Journal, 20*(3), 278-290.

Donnelly, R., & Fitzmaurice, M. (2011). Towards productive reflective practice in microteaching. *Innovations in Education and Teaching International, 48*(3), 335-346.

Dow, G. T., & Mayer, R. E. (2004). Teaching students to solve insight problems: Evidence for domain specificity in creativity training. *Creativity Research Journal, 16*(4), 389–402.

Einstein, A., & Infeld, L. (1938). *The Evolution of Physics*. New York, NY.: Simon & Schuster.

Elder, L., & Paul, R. (1998). The role of Socratic questioning in thinking, teaching, and learning. *The Clearing House, 71*(5), 297-301.

Ennis, R. H. (2001). An outline of goals for a critical thinking curriculum and its assessment. Retrieved 2 August 2014, 2014, from http://faculty.ed.uiuc.edu/rhennis/outlinegoalsctcurassess3.html

Ennis, R. H., Millman, J., & Tomko, T. N. (2005). *Cornell Critical Test Level X and Level Z Manual* (5th ed.). USA: The Critical Thinking Co.

Facione, P. A. (2006). Critical Thinking: What It Is and Why it Counts. Millbrae, CA: Insight Assessment.

Fisher, A. (2001). *Critical Thinking: An Introduction*. Cambridge: Cambridge University Press.
Freeman, S. J. (1999). The gestalt of organizational downsizing: Downsizing strategies as packages of change. *Human Relations, 52*(12), 1505-1541.
Gagné, R. M. (1985). *The Conditions of Learning and Theory of Instruction* (4th ed.). New York: Holt, Rinehart and Winston.
Georghiades, P. (2000). Beyond conceptual change learning in science education: focusing on transfer, durability and metacognition. *Educational Research, 42*(2), 119-139.
Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. Oxford: Oxford Further Education Unit.
Glassner, A., & Schwarz, B. B. (2005). The antilogos ability to evaluate information supporting moral arguments. *Learning and Instruction, 15*, 353–375.
Glassner, A., & Schwarz, B. B. (2007). What stands and develops between creative and critical thinking? Argumentation? *Thinking Skills and Creativity, 2*, 10-18.
Goetz, T., Pekrun, R., Hall, N., & Haag, L. (2006). Academic emotions from a social-cognitive perspective: Antecedents and domain specificity of students' affect in the context of Latin instruction. *British Journal of Educational Psychology, 76*, 289–308.
Guilford, J. P., Christensen, P. R., Merrifield, P. R., & Wilson, R. C. (1978). *Alternate Uses*. Orange, CA: Sheridan Psychological Services.
Hackbarth, S. (1997). *Reflections on confluent education as discipline-dased inquiry*. Paper presented at the Annual Meeting of the American Educational Research Association Chicago, IL.
Hartley, P., & Whitfield, R. (2011). The case for programme-focused assessment. *Educational Development, 12*.
Harvard Business Publishing. (2013). Online Simulations. Retrieved 16 December 2013, from http://hbsp.harvard.edu/list/simulations
Heppner, P. P., Cook, S. W., Wright, D. M., & Johnson, W. C. J. (1995). Progress in resolving problems: A problem focused style of coping. *Journal of Counseling Psychology, 42*, 279–293.
Heppner, P. P., & Peterson, C. H. (1982). The development and implication of a personal problem-solving inventory. *Journal of Counseling Psychology, 29*(1), 10.
Heron, J. (2012). An overview of radical education in action. *E-Learning and Digital Media, 9*(3), 304-316.
Hew, K. F., & Knapczyk, D. (2007). Analysis of ill-structured problem solving, mentoring functions, and perceptions of practicum teachers and mentors toward online mentoring in a field-based practicum. *Instructional Science, 35*(1), 1-40.
Hoffman, B., & Schraw, G. (2010). Conceptions of efficiency: Applications in learning and problem solving. *Educational Psychologist, 45*(1), 1-14.
Isen, A. M. (1999). Positive affect. In T. Dalgleish & M. Power (Eds.), *Handbook of Cognition and Emotion* (pp. 521–539). New York: Wiley.
Johnson, G., Whittington, R., & Scholes, K. (2011). *Exploring Strategy: Text and Cases* (9th ed.). Harlow, Essex: Financial Times Prentice Hall.
Kember, D., Biggs, J., & Leung, D. Y. (2004). Examining the multidimensionality of approaches to learning through the development of a revised version of the Learning Process Questionnaire. *British Journal of Educational Psychology, 74*(2), 261-279.
Kimbell, L. (2010). *Design Practices in Design Thinking*. Oxford: Said Business School.
King, K. P. (2009). *Handbook of Evolving Research of Transformative Learning: Based on the Learning Activities Survey*. Charlotte, NC: Information Age Publishing.
Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.

Kotter, J. P. (1995). Leading change: Why transformation efforts fail. *Harvard Business Review, 73*(2), 59-67.
Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press.
Leshem, S., & Trafford, V. N. (2006). Stories as mirrors: reflective practice in teaching and learning. *Reflective Practice, 7*(1), 9-27.
Lewin, K. (1951). *Field Theory in Social Science*. New York: Harper and Row.
Lyons, N. (2010). Reflection and reflective inquiry: Critical issues, evolving conceptualizations, contemporary claims and future possibilities. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry* (pp. 3-22). USA: Springer.
Mahdjoubi, D. (2003). *Epistemology of design.* Paper presented at the Seventh World Conference on Integrated Design and Process Technology, Austin, Texas.
Mayer, R. E. (1992). Cognition and instruction: Their historic meeting within educational psychology. *Journal of Educational Psychology,, 84*(4), 405-412.
Mazer, J. P. (2013). Student emotional and cognitive interest as mediators of teacher communication behaviors and student engagement: An examination of direct and interaction effects. *Communication Education, 62*(3), 253-277.
Meinhardt, J., & Pekrun, R. (2003). Attentional resource allocation to emotional events: An ERP study. *Cognition and Emotion, 17*, 477–500.
Merrill, M. D. (1994). *Instructional Design Theory*. Englewood Cliffs, NJ: Educational Technology Publications.
Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education, 74*, 5-12.
Minto, B. (2009). *The Pyramid Principle: Logic in Writing and Thinking* (3 ed.). Harlow, Essex: FT Prentice Hall.
Mintzberg, H. (1987). Crafting Strategy. *Harvard Business Review, July*, 66-75.
Mintzberg, H. (1990). The design school: reconsidering the basic premises of strategic management. *Strategic Management Journal, 11*(3), 171-195.
Misch, D. A., & Peloquin, S. M. (2005). Developing empathy through confluent education. *Journal of Physical Therapy Education, 19*(3), 41-51.
Mohrman, S. A., Tenkasi, R. V., & Mohrman, A. M. (2003). The role of networks in fundamental organizational change: A grounded analysis. *The Journal of Applied Behavioral Science, 39*(3), 301-323.
Moneyham, L., Ura, D., Ellwood, S., & Bruno, B. (1996). The poster presentation as an educational tool. *Nurse Educator, 21*(4), 45-47.
Munduate, L., & Bennebroek Gravenhorst, K. M. (2003). Power dynamics and organisational change: An introduction. *Applied Psychology, 52*(1), 1-13.
Muratbekova-Touron, M. (2009). Why a multinational company introduces a competency-based leadership model: A two-theory approach. . *The International Journal of Human Resource Management, 20*(3), 606-632.
Natale, S., & Ricci, F. (2006). Critical thinking in organizations. *Team Performance Management, 12*(7/8), 272-277.
Patria, B. (2011). Problem-based learning, graduates' competencies and career success In B. M. Kehm & U. Teichler (Eds.), *Higher Education Studies in a Global Environment* (Vol. 1, pp. 135-143). Kassel, Germany: International Centre for Higher Education Research Kassel INCHER-Kassel.
Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods* (3 ed.). United States of America: Sage.

Pekrun, R., Elliot, A. J., & Maier, M. A. (2006). Achievement goals and discrete achievement emotions: A theoretical model and prospective test. *Journal of educational psychology, 98(3),, 98*(3), 583-597.

Pekrun, R., Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. H. (2010). Boredom in achievement settings: Exploring control–value antecedentsand performance outcomes of a neglected emotion. *Journal of Educational Psychology, 102*, 531–549.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37*(2), 91–105.

Pretz, J. E., & Sternberg, R. J. (2005). Unifying the field: Cognition and intelligence. In R. J. Sternberg & J. E. Pretz (Eds.), *Cognition and Intelligence: Identifying the Mechanisms of the Mind* (pp. 306-318). Cambridge: Cambridge University Press.

Ramage, C., & Shipp, K. (2012). Expanding the concept of model: The transfer from technological to human domains within systems thinking. In C. Bissell & C. Dillon (Eds.), *Ways of Thinking, Ways of Seeing: Mathematical and other Modelling in Engineering and Technology* (pp. 121-144). India: Springer.

Rawson, M. (2000). Learning to learn: More than a skill set. *Studies in Higher Education, 25*(2), 225-238.

Rogers, C. R. (1994). *Freedom to Learn*. New York: Merrill.

Rusch, E. A., & Brunner, C. C. (2013). Transforming leadership identity in a virtual environment learning about the leading self. *Journal of Transformative Education, 11*(1), 45-69.

Senge, P. (1992). *The Fifth Discipline: The Art and Practice of the Learning Organization*. Sydney: Random House.

Stover, C. M. (2010). Use of a confluent education strategy to develop empathy in nursing students. *The Journal of Nursing Education, 49*(12), 719-720.

Tallman, I., & Gray, L. N. (1990). Choices, decisions, and problem-solving. *Annual Review of Sociology, 16*(1), 405-433.

Tether, B. S. (2006). Design in Innovation: Coming out from the Shadow of R&D. An Analysis of the UK Innovation Survey 2005. London: Department for Innovation, Universities and Skills.

Toulmin, S. (1969). *The Uses of Argument*. Cambridge: Cambridge University Press.

Tress, B., Tress, G., & Fry, G. (2005). Defining concepts and the process of knowledge production in integrative research In B. Tress, G. Tress, G. Fry, & P. Opdam (Eds.), *From Landscape Research to Landscape Planning: Aspects of Integration, Education and Application* (pp. 13-26). Heidelberg, Germany: Springer.

Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business, 59*(4), S251-S278.

Van Manen, M. (1995). On the epistemology of reflective practice. *Teachers and Teaching: Theory and Practice, 1*(1), 33-50.

Verganti, R. (2009). *Design Driven Innovation: Changing the Rules of Competition by Radically Innovating What Things Mean*. Cambridge, MA: Harvard Business School Press.

Vincent, C., & Braun, A. (2013). Being 'fun'at work: Emotional labour, class, gender and childcare. *British Educational Research Journal, 39*(4), 751-768.

Ward, J., & Shortt, H. (2013). Evaluation in management education: A visual approach to drawing out emotion in student learning. *Management Learning, 44*(5), 435-452.

Waterman Jr, R. H., Peters, T. J., & Phillips, J. R. (1980). Structure is not organization. *Business Horizons, 23*(3), 14-26.

Weber, R. (2003). Theoretically speaking. *MIS Quarterly, 27*(iii-xii).

Weick, K. E. (2004). Designing for throwness. In R. J. B. Jr. & F. Collopy (Eds.), *Managing as Designing*. Stanford, CA: Stanford University Press.

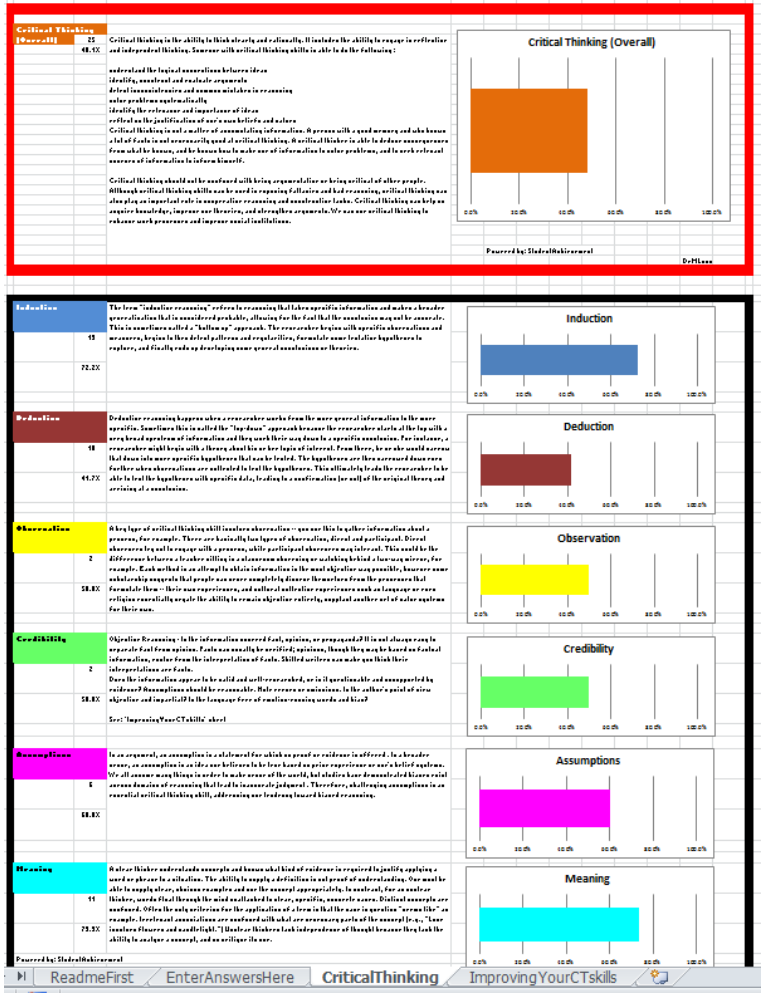
Wilson, S. M. (2006). Finding a canon and core meditations on the preparation of teacher educator-researchers. *Journal of Teacher Education, 57*(3), 315-325.

Yang, Y. T. C., Newby, T. J., & Bill, R. L. (2005). Using Socratic questioning to promote critical thinking skills through asynchronous discussion forums in distance learning environments. *The American Journal of Distance Education, 19*(3), 163-181.

Zeichner, K., & Liu, K. Y. (2010). A critical analysis of reflection as a goal for teacher education. In N. Lyons (Ed.), *Handbook of Reflection and Reflective Inquiry* (pp. 67-84). USA: Springer.

Appendices

Appendix 1: Critical thinking workbook created for students



Critical thinking in Relation to Assignment 1:

- Assumptions: Clear and explicit about assumptions.
  - Have you been clear/ explicit about the link of the problem/ opportunity to the *organisational aspects* of the case?
  - Have you been clear/ explicit of the 'cost' of not solving the problem today and the potential future benefits of addressing the
  - Have you been clear/ explicit about the rationale/ reason behind your claims/ assertion?
  - Assumptions in critical thinking: http://www.youtube.com/watch?v=tfM5-pY5YXs
- Credibility: Excellent treatment of information/ evidence that is proportionate to its credibility.
  - Use credible sources e.g. academia, government, credible newspapers such as the BBC (be mindful that some newspapers ar
  - Do not over-generalise. Avoid sweeping statements. Qualify your claims/ assertions. Words/ terms that may help include: sor
  - The more sources that 'say' the same thing, the more credible the information e.g. what employees say corroborates with wha
  - Assessing credibility: http://vimeo.com/65737478
- Deduction: Effective and valid arguments based on sound premises.
- Induction: Highly accurate inference based on evidence.
  - https://www.youtube.com/watch?feature=player_embedded&v=GEld0GonOZM
  - http://www.youtube.com/watch?v=BwtCScUoL_w
  - http://ocw.usu.edu/English/introduction-to-writing-academic-prose/inductive-and-deductive-reasoning.html
  - Inductive reasoning diagrams: http://www.shldirect.com/en/assessment-advice/example-questions/inductive-reasoning
- Meaning: Highly appropriate interpretation and applications of definitions and concepts.
  - Make sure you completely the concepts before you apply/ use them. Some concepts have different meanings. Make sure the
  - Breakdown definitions. Itemise the character/ attributes of a concept. What is it and what is it not. What are its boundaries? Wh
- Observation: Highly accurate observation of information/ evidence (does not make inferences unnecessarily).
  - Be mindful of biases, and the phenomenon of apophenia and pareidolia (and filling in the blanks) - it skews the observation.

Avoid heuristics. The approach adopted for the assessments should be research and evidence-based.

Critical thinking (further explained in General and for Assignment 2):

- http://www.youtube.com/watch?v=A7zbEiNnY5M
- http://www.criticalthinking.org/pages/college-and-university-students/739 (leads to other pages)
- http://www.sussex.ac.uk/s3/?id=87
- http://lifehacker.com/how-to-train-your-mind-to-think-critically-and-form-you-1516998286
- http://sydney.edu.au/stuserv/documents/learning_centre/critical.pdf

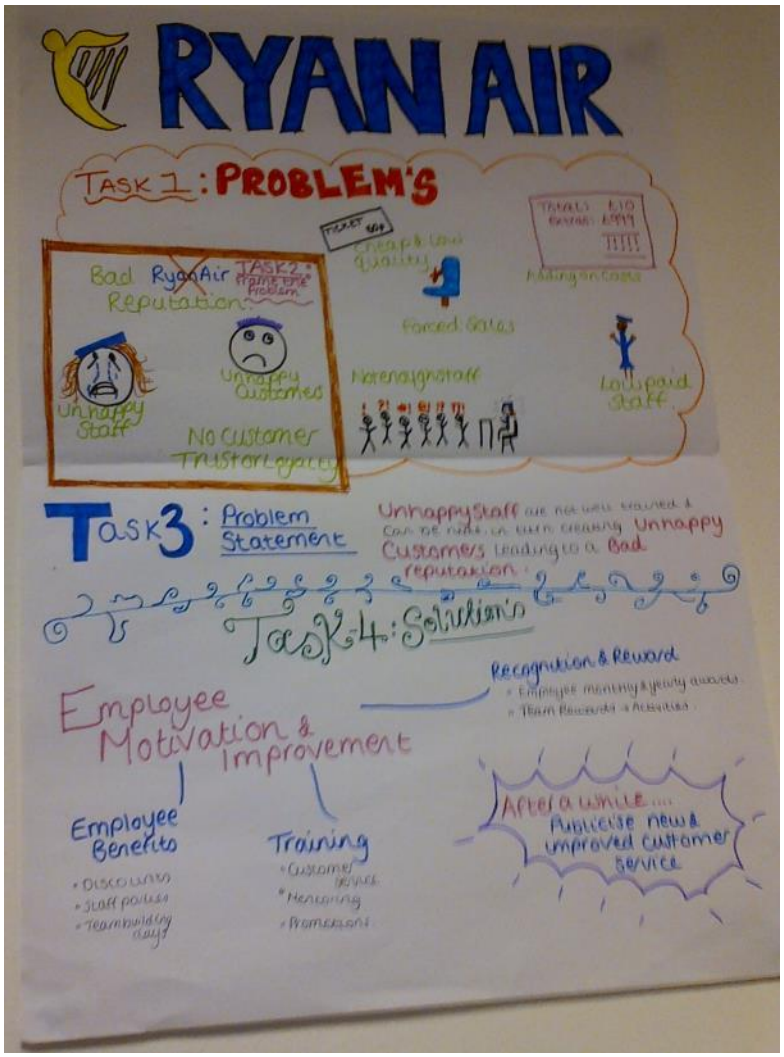
Fallacies:

- http://www.stets.ac.uk/wp-content/uploads/2010/02/Appendix-2-Fallacies-in-arguments.pdf
- Be careful of the straw man! http://www.youtube.com/watch?v=v5vzCmUBh7o

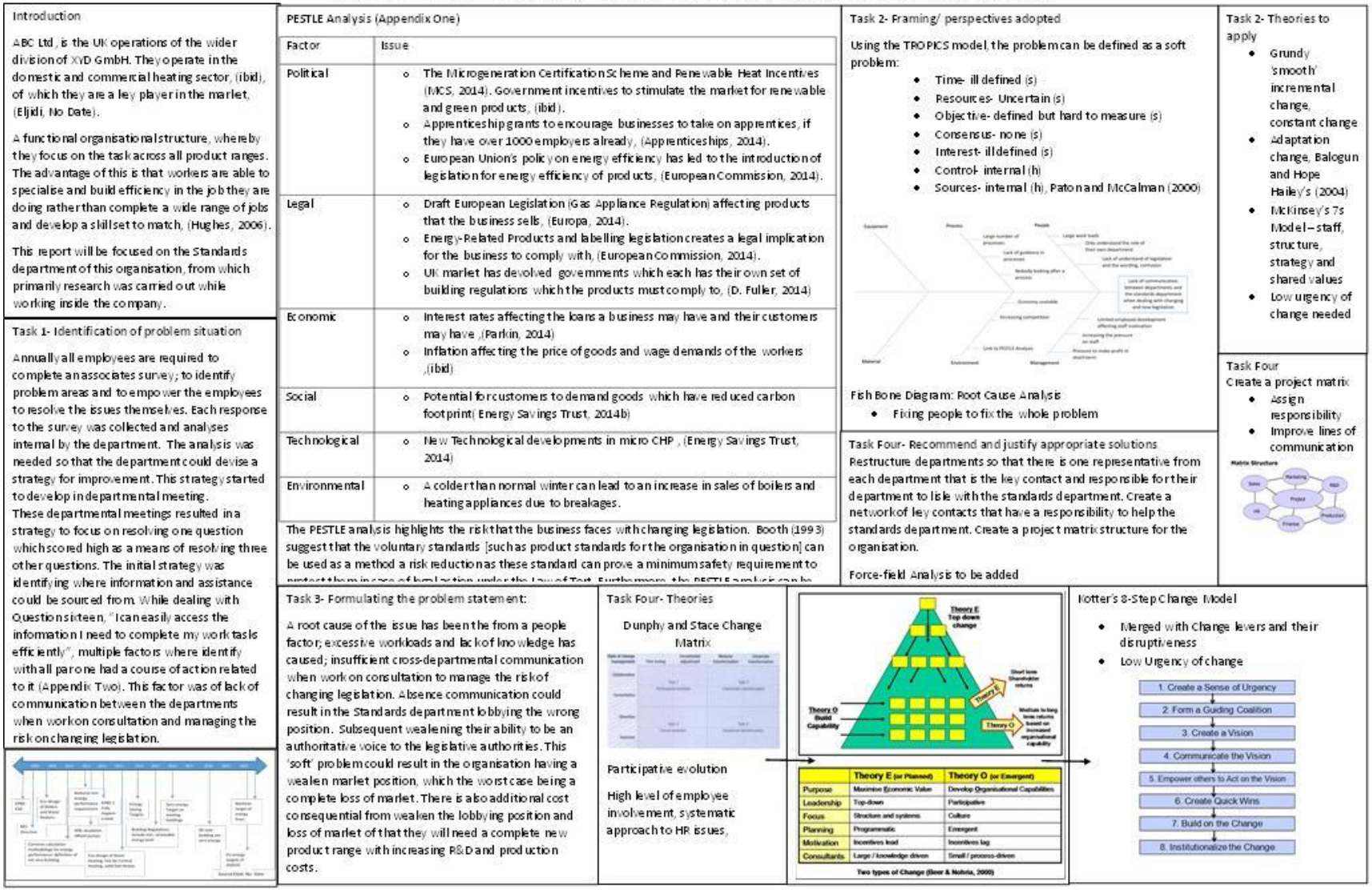
Developing arguments:

- http://web.cn.edu/kwheeler/documents/toulmin.pdf
- http://www.youtube.com/watch?v=ZEIHCxpKSTM
- http://austhink.com/reason/tutorials/index.htm

Appendix 2: Example of rich picture developed by a student



Appendix 3: Example of a poster created by a student



Insufficient Communication between Departments When Work On Consultation to Manage the Risk of Changing Legislation

Introduction

ABC Ltd, is the UK operations of the wider division of XYD GmbH. They operate in the domestic and commercial heating sector, (ibid), of which they are a key player in the market, (Eljidi, No Date).

A functional organisational structure, whereby they focus on the task across all product ranges. The advantage of this is that workers are able to specialise and build efficiency in the job they are doing rather than complete a wide range of jobs and develop a skillset to match, (Hughes, 2006).

This report will be focused on the Standards department of this organisation, from which primarily research was carried out while working inside the company.

Task 1- Identification of problem situation

Annually all employees are required to complete an associates survey; to identify problem areas and to empower the employees to resolve the issues themselves. Each response to the survey was collected and analyses internal by the department. The analysis was needed so that the department could devise a strategy for improvement. This strategy started to develop in departmental meeting. These departmental meetings resulted in a strategy to focus on resolving one question which scored high as a means of resolving three other questions. The initial strategy was identifying where information and assistance could be sourced from. While dealing with Question sixteen, "I can easily access the information I need to complete my work tasks efficiently", multiple factors where identify with all par one had a course of action related to it (Appendix Two). This factor was of lack of communication between the departments when work on consultation and managing the risk on changing legislation.

PESTLE Analysis (Appendix One)

Factor	Issue
Political	○ The Microgeneration Certification Scheme and Renewable Heat Incentives (MCS, 2014). Government incentives to stimulate the market for renewable and green products, (ibid). ○ Apprenticeship grants to encourage businesses to take on apprentices, if they have over 1000 employers already, (Apprenticeships, 2014). ○ European Union's policy on energy efficiency has led to the introduction of legislation for energy efficiency of products, (European Commission, 2014).
Legal	○ Draft European Legislation (Gas Appliance Regulation) affecting products that the business sells, (Europa, 2014). ○ Energy-Related Products and labelling legislation creates a legal implication for the business to comply with, (European Commission, 2014). ○ UK market has devolved governments which each has their own set of building regulations which the products must comply to, (D. Fuller, 2014)
Economic	○ Interest rates affecting the loans a business may have and their customers may have ,(Parkin, 2014) ○ Inflation affecting the price of goods and wage demands of the workers ,(ibid)
Social	○ Potential for customers to demand goods which have reduced carbon footprint(Energy Savings Trust, 2014b)
Technological	○ New Technological developments in micro CHP , (Energy Savings Trust, 2014)
Environmental	○ A colder than normal winter can lead to an increase in sales of boilers and heating appliances due to breakages.

The PESTLE analysis highlights the risk that the business faces with changing legislation. Booth (1993) suggest that the voluntary standards [such as product standards for the organisation in question] can be used as a method a risk reduction as these standard can prove a minimum safety requirement to

Task 2- Framing/ perspectives adopted

Using the TROPICS model, the problem can be defined as a soft problem:

- Time- ill defined (s)
- Resources- Uncertain (s)
- Objective- defined but hard to measure (s)
- Consensus- none (s)
- Interest- ill defined (s)
- Control- internal (h)
- Sources- internal (h), Paton and McCalman (2000)

Fish Bone Diagram: Root Cause Analysis

- Fixing people to fix the whole problem

Task 2- Theories to apply

- Grundy 'smooth' incremental change, constant change
- Adaptation change, Balogun and Hope Hailey's (2004)
- McKinsey's 7s Model – staff, structure, strategy and shared values
- Low urgency of change needed

Task Four

Create a project matrix

- Assign responsibility
- Improve lines of communication

Task Four- Recommend and justify appropriate solutions

Restructure departments so that there is one representative from each department that is the key contact and responsible for their department to lisle with the standards department. Create a network of key contacts that have a responsibility to help the standards department. Create a project matrix structure for the organisation.

Force-field Analysis to be added

Task 3- Formulating the problem statement:

A root cause of the issue has been the from a people factor; excessive workloads and lack of knowledge has caused; insufficient cross-departmental communication when work on consultation to manage the risk of changing legislation. Absence communication could result in the Standards department lobbying the wrong position. Subsequent wealening their ability to be an authoritative voice to the legislative authorities. This 'soft' problem could result in the organisation having a wealen market position, which the worst case being a complete loss of market. There is also additional cost consequential from wealken the lobbying position and loss of market of that they will need a complete new product range with increasing R&D and production costs.

Task Four- Theories

Dunphy and Stace Change Matrix

Participative evolution

High level of employee involvement, systematic approach to HR issues,

	Theory E (or Planned)	Theory O (or Emergent)
Purpose	Maximise Economic Value	Develop Organisational Capabilities
Leadership	Top-down	Participative
Focus	Structure and systems	Culture
Planning	Programmatic	Emergent
Motivation	Incentives lead	Incentives lag
Consultants	Large / knowledge driven	Small / process-driven

Two types of Change (Beer & Nohria, 2000)

Kotter's 8-Step Change Model

- Merged with Change levers and their disruptiveness
- Low Urgency of change

1. Create a Sense of Urgency
2. Form a Guiding Coalition
3. Create a Vision
4. Communicate the Vision
5. Empower others to Act on the Vision
6. Create Quick Wins
7. Build on the Change
8. Institutionalize the Change