DOES THE CONCEPT OF EXPANSIVE-RESTRICTIVE LEARNING FIT KNOWLEDGE WORKERS AGED OVER 50?
AN EXAMINATION OF SELECTED FEATURES AND HIGH-END KNOWLEDGE WORKERS IN A UK PUBLIC SECTOR ORGANISATION.

Thesis submitted for the degree of Doctor of Social Sciences
at the University of Leicester

by

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ABSTRACT

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Due to changing demographics, improving health in later life, removal of a retirement age and increases in state pension age, older people (50+) are a growing phenomenon in the labour market. Consequently organisations and governments increasingly need to understand how to approach the development of older workers. Previous research reveals a variety of results regarding learning undertaken and attitudes towards learning.

The ‘expansive-restrictive framework’ facilitates learning opportunities regardless of age, experience or market sector. It encourages, inter alia, formal courses and qualification acquisition. These features are challenged using a largely quantitative study of IT engineers in a UK public sector organisation.

Results showed older workers found learning and variety essential. Both participative and acquisitive learning were valued, although courses rated lower than reading or the internet. Older respondents did not shun qualifications per se, several were working towards one, but they did not consider them that important. They would not pursue extra study to obtain a qualification - unless the additional work was directly relevant to their role. Therefore encouraging courses and qualification acquisition, as recommended by the framework, runs counter to the preferences and activities of the older workers studied.

The thesis enhances understanding of the workplace learning of older workers in the high-end knowledge economy and UK public sector. It also adds to the few examples of quantitative analysis of participative learning. Finally, it shows the expansive-restrictive framework is not suitable for the older workers examined and suggests experience may be the cause rather than chronological age.

Keywords: older worker, older learner, experience, qualifications, knowledge work, age, expansive, restrictive, public sector, IT engineers
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Graham - my husband, for his unstinting support throughout
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INTRODUCTION

The expansive-restrictive framework identifies a series of workplace features which facilitate a wide and varied learning environment (Fuller and Unwin, 2003a). The framework posits that features predominantly at the ‘expansive’ end of the spectrum will afford richer learning opportunities regardless of the organisations’s market sector or age of the employees (ibid). However, some of the ‘expansive’ features appear to contradict research on older learners (eg Fenwick, 2012a). This research investigates whether there is in fact a mis-match between the two by examining part of the framework and older IT Engineers.

The framework arose after studying the work conditions which led to an apprentice emerging as a well rounded employee compared to the features which created a more narrowly focused worker (Fuller and Unwin, 2003a). The authors concede that it is not a perfect model but they do not provide any indication of a situation where it may not be appropriate. The aspect selected for examination is the recommendation that offering work based courses and qualifications are ‘expansive’ attributes. Although there may be exceptions, ‘expansive’ attributes are deemed by Fuller and Unwin (2003a) to promote ‘better’ learning opportunities. However, research (for example Smith et al, 2010; Aldridge et al 2008; Fenwick et al, 2010) does not conclusively indicate that older workers are likely to engage in these activities. Thus an organisation attempting to enhance the learning environment for its employees, may implement policies which would not provide the advantages they were expecting.

Understanding older workers is increasingly important owing to several factors. The maturing of ‘Baby Boomers’ has resulted in an ageing population who are also enjoying greater health in later life, enabling them to be fairly active. In the UK, the location of the research, the fixed retirement age has been largely removed and the state pension age has been increasing. Thus there is now the opportunity to work longer as well as, for many, the necessity to do so to finance life until reaching the new pension age (BIS, 2011a and DWP, 2013a). This has resulted in there being a greater number of older people in the labour market. It is likely that this trend will continue (ONS, 2013a). A potential corollary of the
increase in older workers is an increase in older learners in the workplace as it could be argued that subjects such as health and safety will need refreshing periodically. In addition, continuous professional development may be required.

Research on older learners provides a rather blurred picture. Firstly the age when a person is considered 'old' in research can vary considerably. In addition there are various levels of mental and physical health as well as perceptions of what constitutes 'old' (Kooij et al, 2008). Secondly, evidence regarding learning is very confusing. Compared to younger people, older learners show a lower level of enthusiasm (Ng et al, 2012), receive less training (Loretto et al, 2006) and training of a lower quality (Felstead, 2011). However, there is also research showing a similar willingness to learn (Shulz et al, 2010), and that older workers have undertaken more training (Simpson et al, 2002). In addition, particularly in the knowledge economy, some older learners are reported to be selective about their training (Fenwick et al. 2010). It is unclear whether all the above examples were considering similar occupational groups or not, but it does show that knowledge about older learners is very mixed.

This research examines IT Engineers who operate at the high-end of the knowledge economy. This sector needs to engage in almost continuous learning owing to the nature of the work which involves problem solving and creation of ideas, rather than physical products. In addition, as it is a sector which does not require great physical ability, it is more likely to retain and attract older workers than, for example, the construction industry where many jobs demand physical activity. Therefore, understanding how older workers learn within this sector is particularly important to facilitate their ongoing development. The organisation examined is part of the UK Civil Service which is also a body that is likely to encounter greater numbers of older employees. In 2014, almost 40% of the UK Civil Service was over 50 (ONS, 2015) and the primarily sedentary, office based roles are ones which existing employees may wish to retain as they age. Thus the thesis is contributing to areas where knowledge of workplace learning by older employees is particularly relevant.

The philosophy underpinning the research is post-positivist. This means
that evidence is considered to exist if it is observable via the human senses, as per positivism, but in addition, things that cannot be observed do exist and may be affecting those things that can be observed (Clark, 1998). Using this approach, a survey was designed drawing on previous quantitative research of learning (Felstead et al, 2005a and 2007a) and the requirements of the current work. A preparatory qualitative element was employed to check the wording of questions and that the general presentation of the survey was suitable for the intended audience. The quantitative data capture for the research was achieved via a bespoke online survey. This was deemed the most appropriate method to elicit responses from the organisation selected. Although the survey produced a smaller than expected return it still provided information from a wide age range and was suitable to address the research question.

To examine the potential mis-match between the theory and the practical application the research question was broken down into four themes:

Do older workers place similar importance, compared to their younger colleagues, on:

- having variety and stimulation in their work, and continually having to learn new things?
- the three ‘participatory dimensions’ that constitute the expansive-restrictive framework? (These are explained towards the beginning of the literature review which follows this introduction).
- acquisitive and participative learning approaches?
- acquisition of qualifications relating to their work?

These four themes determine whether the selected organisation contains employees engaged in learning and surrounded by plentiful opportunities to learn and how the learning of employees over 50 differs compared to those under 50. The investigation into approaches to learning, particularly ‘participative’ and ‘acquisitive’ learning (Sfard, 1998) will reveal whether courses and qualifications are considered important ways to learn or not. The fourth theme draws all the research together to address the overarching research question. For each theme, individual questions from the survey were analysed. In addition, three scales were created using SPSS, covering acquisitive and participative learning and also
qualifications, to obtain an indication of the overall importance attached to them by older workers.

The work adds to the body of knowledge on older workers and learning by adding evidence in a different sector, that of the UK Civil Service, and also a different occupation, that of the high-end knowledge worker represented by IT Engineers. In addition, there are very few examples of participative learning being examined in a quantitative manner. The analysis in this thesis provides another example of how participative learning can be successfully captured in this way. It also explores the use of scales to indicate the importance of types of learning. Therefore it takes the analysis of learning, particularly participative learning which is harder to capture, a step closer to becoming easier to include in future research.

The structure of the thesis is as follows. It begins by providing an overview of the expansive-restrictive concept. Discussion covers the concept’s creation after close study of apprentices in the UK and the features which make up the two poles of the spectrum. Having introduced the concept being examined a brief overview is provided of how the organisation of work has changed from manufacturing to the knowledge economy. A similar overview of the development of learning theories is also provided. These changes led to a greater focus on an individual’s knowledge and its application to new scenarios. Ensuring workers in the knowledge economy, regardless of age, are maintaining or increasing their knowledge is therefore an important consideration for employees in this sector. Once these contextual features have been covered, attention turns to the population which is the focus of this research: older workplace learners.

The examination of older workers begins with an overview of how to define ‘old’ and how it has been defined for this research. The reasons for the increasing number of older people in the population and also in the labour market is then covered, touching on such issues as demographics, health improvements and the rising pensions age. This is followed by a discussion of older workers and learning, in particular the mixed evidence on the subject (for example
Felstead, 2011 and Fenwick, 2012a). These factors together provide the background on older workers who are able to work, in the less physical roles at least. After providing an overview of the literature relevant to the research question covering older workers and their learning activities, the chapter returns to the expansive-restrictive concept. It takes a closer look at three particular aspects which may indicate weaknesses. These cover its origins in the world of apprentices and whether it has really left that milieu; the alignment of features with high performance work practices, which research has shown to be relatively uncommon (Ashton et al, 2002); and finally the particular issue at the centre of this research which is the promotion of formal courses and qualifications.

The Methods chapter describes, according to internal documents (The Organisation 2011 and 2012), where the organisation being studied sits on the expansive-restrictive spectrum. It then goes on to explain the development of the survey tool, the use of the web and attendant issues of confidentiality involved in collaborating with an employee to create and monitor the tool. The last part of the chapter is devoted to analytical methods. It describes the composition of the sample, exploring why it is still suitable for the current research. Two particular statistical techniques employed to analyse responses are outlined before moving on to the next chapter which contains the actual analysis and findings.

The Analysis chapter is structured around the four themes. Responses are taken from the survey to examine whether there are differences between the answers provided by those over and under 50 years of age. Individual questions are analysed as well as combinations of questions formed into scales. Throughout, the findings are compared to existing literature. Towards the end of the chapter the evidence from the research is collated and the overall research question addressed. The influence of worker experience is considered and deemed to play a significant role in learner behaviours of older workers.

The concluding chapter reviews the whole research project and explains the overall conclusion that the expansive-restrictive framework is not suitable for the older IT Engineers studied. It also addresses the usefulness of the knowledge created by this research to academics and employers and also governmental
initiatives aimed at increasing the productive working lives of older workers. The chapter also provides an indication of future work which could be conducted to further progress knowledge of older workers’ workplace learning and use of the expansive-restrictive concept.
LITERATURE REVIEW

The research considers the applicability of the expansive-restrictive continuum to older, high end knowledge workers. This chapter provides a review of the literature to create a basis from which to examine the potential conflict between the features of the concept being examined and the learning activities of older workers. An overview of the concept is provided first. This includes its creation, content and how it could be used. The issue of ‘older’ workers is then introduced and the decision to define the group by chronological age of 50 and over is explained. The chapter then turns to one of the key drivers behind the research: the increase in older workers. The reasons why this trend is likely to continue are explained. The economic theme continues with consideration of the rise of knowledge work and the importance of learning within the knowledge economy. The above themes are brought together to examine existing research on older learners in the workplace and learning in the high end of the knowledge economy. Attention then returns to the expansive-restrictive concept and in light of the previous discussion, three areas where it may fall short are considered. The chapter concludes by summing up the evidence that there is a potential conflict which requires attention.

Defining ‘expansive’

Before examining the features which constitute either end of the expansive-restrictive scale other concepts which used the term 'expansive learning' need to be eliminated from discussions to avoid confusion. The term 'expansive learning' has already been used in previous research (Engestrom, 2001 and Holzkamp, mentioned in Langemeyer 2006) to describe situations different to the one examined here. For example, it had been used to signify organisational learning stimulated by tensions between different elements in a process which, on resolution, could lead to organisational change (Holzkamp, mentioned in Langemeyer 2006). The term has also been used on an individual rather than organisational level where it represents learning initiated by the individual to remedy a gap they can see in their expertise, or to solve a problem. It is paired with ‘defensive’ learning which describes the narrow approach taken to learn sufficient information to pass an exam or avoid undue negative attention in class. In this thesis the term 'expansive learning' refers to the 'expansive-restrictive'
framework developed by Fuller and Unwin (2003a). Its focus is at both individual and organisational level. As explained by Unwin: ‘An expansive feature would regard workforce development as a vehicle for aligning the twin goals of developing individual and organisational capability’ (Unwin, 2008 p5). The concept considers the combined effects of three main variables: structure of the organisation; participation in learning activities and opportunities for personal development (Fuller and Unwin, 2004a). It is acknowledged that the concepts of ‘expansive learning’, at both organisational and individual level, can be intertwined: the outcome of changing individual learning behaviour may affect organisational learning and could lead to expansive learning of the variety explored by Engestrom (2001). However, the focus of this study is the applicability of the Fuller and Unwin expansive-restrictive learning concept to the individual, specifically the workplace learner aged over 50 in the high end knowledge sector.

Applying a framework that is not effective would be a nugatory exercise for a workplace and therefore bring no returns for the resources invested. Consequently, it is important to ascertain whether the expansive-restrictive concept is applicable to the growing number of older workers in the labour market (ONS, 2013a). The choice of the high end knowledge worker to examine this point is to enable the study of workers of all ages who are required to engage in continual learning to be successful in their job. The learning activities of older workers can then be compared to those of younger workers within the same work environment and broad career area. Subsequent parts of this chapter will explain the definition of an ‘older’ worker; and why their numbers are increasing in the labour market. Before that, the particular concept being challenged is introduced.

The expansive-restrictive concept

The concept of expansive-restrictive learning posits that learning environments can range from expansive conditions at one end to restrictive conditions at the other. A learner's experience lies somewhere along this continuum. The position on the scale can provide an indication of the quality of learning opportunities afforded. A position ‘... characterized by the features listed
as expansive will create a stronger and richer learning environment than one consisting of features associated with the restrictive end of the continuum' (Fuller and Unwin, 2004a, p129). The concept emerged from studies of late 20th and early 21st century apprenticeships and the ‘communities of practice’ model. A Community of Practice (CoP) is a group of people learning in a collaborative, contextual manner similar to a master and apprentice (Lave and Wenger, 1991). However, unlike the master/apprentice relationship, there is no requirement for the participants to reach a pre-defined level of expertise or for them to then leave the group to train up their own group of novices (ibid). Communities of practice were built upon traditional craft apprenticeships but did not completely fit the circumstances of the more modern form of apprenticeships (Fuller and Unwin, 2003c). Research into the learning trajectories of apprentices in the steel industry in late twentieth century England revealed that two apprentices in the same trade, but taken on by different companies, would both emerge with the same recognised qualification at the end but could have experienced very different learning environments (ibid). The difference in apprentice experience could be so marked as to make one a far more rounded, adaptable tradesman and the other a competent worker but in a more narrow aspect of the trade. By studying apprentices in different companies within the same industry, the factors present at opposing ends of this spectrum were isolated (ibid). Thus it was argued that if a combination of certain characteristics were present it was more likely that an apprenticeship there would tend towards the expansive end of the spectrum - with greater likelihood of producing a well-motivated learner with broad knowledge of the work; or alternatively the restrictive end with an enhanced likelihood of producing a narrower expert. This is a generalisation of outcomes. It could be argued that different individuals exposed to identical learning opportunities could emerge with different experiences, thus the outcomes of ‘broad’ or ‘narrow’ should be considered as poles of an ‘outcome spectrum’.

The initial criteria, reproduced in Figure 1 below, defined each end of the expansive-restrictive scale and covered the core features of an apprenticeship.

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1 The apprenticeship route in the UK is distinct from that in other European countries in that the employer is wholly responsible for the training, how it is done, whether on the job or at an educational institution, rather than following a proscribed state-agreed pathway.
For example: wide access to communities of practice both inside and outside the immediate workplace; access to a range of qualifications; organisational support for the apprentice as a learner as well as a worker, and a cultural tradition of apprenticeship (Fuller and Unwin, 2003c). For reference, the list is also reproduced in full at Appendix A ‘Initial Features of the Expansive-Restrictive Framework’.

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
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<tr>
<td>Participation in multiple communities of practice inside and outside the workplace</td>
<td>Restricted participation in multiple communities of practice</td>
</tr>
<tr>
<td>Primary community of practice has shared 'participative memory': cultural inheritance of workforce development</td>
<td>Primary community of practice has little or no 'participative memory': no or little tradition of apprenticeship</td>
</tr>
<tr>
<td>Breadth: access to learning fostered by cross-company experiences.</td>
<td>Narrows: access to learning restricted in terms of tasks conoscience/location</td>
</tr>
<tr>
<td>Access to range of qualifications including knowledge-based vocational qualifications</td>
<td>Access to competence-based qualifications only</td>
</tr>
<tr>
<td>Planned time off-the-job including for knowledge based courses and for reflection</td>
<td>Virtually all on-the-job: limited opportunities for reflection</td>
</tr>
<tr>
<td>Post apprenticeship vision: progression for career</td>
<td>Post apprenticeship vision: static for job</td>
</tr>
<tr>
<td>Explicit institutional recognition of, and support for, apprentices' status as learner</td>
<td>Ambivalent institutional recognition of, and support for, apprentices' status as learner</td>
</tr>
<tr>
<td>Named individual acts as dedicated support to apprentices</td>
<td>No dedicated individual ad-hoc support</td>
</tr>
<tr>
<td>Apprenticeship is used as a vehicle for aligning the goals of developing the individual and organisational capability</td>
<td>Apprenticeship is used to tailor individual capability to organisational need</td>
</tr>
<tr>
<td>Apprenticeship design fosters opportunities to extend identity through boundary crossing</td>
<td>Apprenticeship design limits opportunities to extend identity: little boundary crossing experienced</td>
</tr>
<tr>
<td>Reification of apprenticeship highly developed (eg through documents, symbols, language, tools) and accessible to apprentices</td>
<td>Limited reification of apprenticeship, patchy access to reificatory aspects of practice</td>
</tr>
</tbody>
</table>

Figure 1: Initial Features of the Expansive Restrictive Framework (Fuller and Unwin, 2003c p 411)

Framework’. Where particular items in the list are relevant to discussions, they will be explained in the text and quoted where appropriate.

As explained above, the list provides the qualities that contribute to the learning environment of an apprentice and are therefore worded for that scenario.
They include features that enhance learning from a low starting point and build familiarity with the organisation and the trade/profession they are apprenticed to. It could be viewed as an induction to both the organisation and the work.

The wider relevance and the potential usage of the continuum for workplace learning for those not in apprentice positions was raised by the authors in the same year as initial publication: 'We have called this an expansive approach to apprenticeship and we further argue that it is applicable to the creation of productive workplace learning environments more generally...' (emphasis in Fuller and Unwin original, 2003b p42). The criteria were subsequently amended to reflect this by adding an additional set specifically to address the wider applicability (Fuller and Unwin, 2003b). The main new features posited on the 'expansive' end of the continuum were: team working; opportunities to gain formal qualifications; opportunities to learn new skills/jobs and ability to progress via an internal labour market. Several other features were amended to fit the lexicon of the non-apprentice worker – although they could also imply an organisational change too - for example 'named individual acts as dedicated support to apprentices' became 'manager /supervisor as enabler'. These features, although still providing induction aspects, provide scope for bedding down and subsequent roles within the same organisation or trade/profession. This second list is reproduced in full in Appendix B ‘Features of the Expansive-Restrictive Framework’. In subsequent discussions of the expansive-restrictive concept (for example, Fuller and Unwin 2003c and 2004a), these additional features are incorporated. This created a model which brought together ‘...the factors (pedagogic, organizational and cultural) that contribute to approaches to workforce development and the creation of learning environments, into a single conceptual framework' (Fuller and Unwin 2004a p129). However, in subsequent work the expansive-restrictive features relevant to workforce development and the learning environment were presented in separate tables (Fuller and Unwin 2006a and 2006b). Whether presented separately or as a composite list, the expansive-restrictive concept emerged from the study of apprentices and, with some additions, was generalised to be applicable to the whole workforce as the following extracts demonstrate: 'The model can be applied regardless of the size or nature of the organisation and by those in both the public and private sectors
and the voluntary sector’ (Fuller and Unwin, 2003a pp17-18), and ‘...the usefulness of the continuum is not confined to approaches to apprenticeship; it can also be applied more widely to analyse the learning opportunities available to older and more experienced workers and to different organisational contexts’ (Fuller and Unwin, 2003b p51). Although there are allusions to the varied and non-homogenous nature of a ‘workforce’, no variations have been provided in the lists of expansive-restrictive features to cater for different types of work organisation or workforce profile. This research attempts to initiate discussion about such provisos by investigating the framework’s applicability to older workers.

Throughout the refinement of the list of expansive-restrictive features the authors stress they were not an exhaustive list, rather pointers to the key indicators of the presence (or absence) of 'opportunities to learn broadly as well as deeply' (Fuller and Unwin, 2003b, p43). Fuller and Unwin divided the ways that learning could be facilitated into three main types of participation. Each one addressing a different facet of work that could enhance learning opportunities. They were termed ‘participative dimensions’. They are:

'...(1) opportunities for engaging in multiple (and overlapping) communities of practice at and beyond the workplace; (2) access to a multidimensional approach to the acquisition of expertise though the organisation of work and design; and (3) the opportunity to pursue knowledge-based courses and qualifications relating to work' (Fuller and Unwin, 2004a, p126).

Examining the features in the framework shows the three dimensions above to be a reasonable summary of the whole concept: a quarter of the features relate to the first point of gaining greater exposure to life outside the immediate job with features such as encouraging communication across disciplinary/company boundaries and participation in multiple communities of practice both inside and outside the immediate area. Half relate to the second point covering organisational characteristics such as the manager acting as an enabler, team work being valued; skills widely distributed and support for workers as learners. The final quarter
relate directly to the third point: ongoing improvement in knowledge and skills of the workforce; examples being opportunities to obtain qualifications and to learn new skills for a new/subsequent job. A detailed breakdown of the features in each of the three categories can be found in Appendix C ‘The Three Participatory Dimensions’.

The thesis will address one of the three 'participatory dimensions' that Fuller and Unwin devised to succinctly sum up the main ways that learning can be achieved in an expansive environment. To thoroughly examine all three ‘participatory dimensions’, although necessary to fully understand how to apply the expansive-restrictive concept to a mixed age workforce, would require extensive research of each feature, which would be too large an undertaking for the constraints of this thesis. Thus attention is focused on the dimension which appears to be most contrary to existing research: the third participatory dimension regarding acquisition of qualifications. The other two dimensions are not ignored. It is important to identify their presence to determine whether respondents inhabit a primarily expansive or restrictive learning environment as this affects their learning opportunities. Discussion of the third participatory dimension can then take place within the context of a primarily expansive or restrictive learning environment as determined by the features of the other two dimensions.

It is important to note that the features of the expansive-restrictive framework included in various works by Fuller and Unwin are not always the same. For example the features listed in a relatively recent publication (Fuller and Unwin, 2013) do not include the third participatory dimension which is the focus of this research. It could be argued from this evidence that the contentious nature of qualifications had been recognised and removed from the concept. However, this does not appear to be the case, as explained below. The table in the 2013 work is entitled ‘Characteristics of workplaces as learning environments’ (Fuller and Unwin, 2013 p52). It is therefore centred around the second participatory dimension, the organisation of work. This is supported by the vast majority of the features in the 2013 publication pertaining to that dimension. It also appears to focus almost entirely on participative learning, however, the table omits teamwork – a key participative learning feature – and also another
important feature of the second participatory dimension: valuing technical skills. This could suggest that the 2013 table is not intended to represent the whole concept but just the specific elements pertinent to the chapter it accompanies. To add further support to the assumption that qualifications have remained in the framework, evidence is taken from some of the authors’ most recent publications (Fuller and Unwin, 2014 and Fuller et al, 2015). These two publications both address apprenticeships. Both contain a similar table of expansive-restrictive features (Fuller and Unwin, 2014, p5 and Fuller et al, 2015, p72). Although the tables are not identical – treating an apprentice as a member of the occupational community was omitted from the 2015 publication – both included the criteria referring to qualification acquisition. This was clearly intentional as qualifications were discussed elsewhere in the larger, 2015 publication (eg Fuller et al, 2015, p59 and p74). Therefore, although published lists of expansive-restrictive features are not identical - and some differences may be due to the context of the writing - qualification acquisition remains part of the framework.

Using the expansive-restrictive concept

To use the expansive-restrictive continuum a five stage process has been suggested (Hodkinson and Rainbird, 2006). Firstly the features relevant to the organisation need to be identified and secondly plotted on the continuum to determine where the organisation sits. Once the position is known, the third stage of identifying areas for improvement can be begin. To do this they ‘…examine the dimensions that are most restrictive and (…) work at what can be done to move them further toward expansion’ (Hodkinson and Rainbird, 2006, p170). At the fourth stage it is decided which improvements are most appropriate for the organisation, bearing in mind the impact on other organisational priorities and cost benefit issues. In the fifth and final stage, that of implementing the changes and monitoring the outcome, the success or otherwise of changes may not be apparent as ‘…much of the improved learning that follows may not be directly measurable or identifiable as immediate outcomes’ (ibid p72). An organisation could make changes, for example, to encourage all workers to move towards the more expansive pole regarding acquisition of qualifications and learning for future roles, but be unaware that it may not be well received by some
groups, such as older workers. Even if conducting continuous evaluation of learning, an organisation not expecting instant returns would eventually realise that returns were not forthcoming. It would take time before this became apparent and the nugatory spend plus the lack of expected employee development could be detrimental to the employer. Thus it is important to identify and understand how different groups may respond to features of the expansive-restrictive framework so that resources are not expended on changes to increase expansive opportunities for workers for whom there are likely to be few beneficial outcomes, either immediately or in the future.

Fuller and Unwin did not imply all organisations would demonstrate all features or that the expansive end was always preferable. Despite claims of universality, they acknowledge that '...there will be occasions when, for various reasons, organisations have to move more towards the restrictive end of the continuum' (Fuller and Unwin, 2003a p19). They provided no examples to indicate what the 'various reasons' might be or whether they had specific organisations in mind. The concept was viewed as '...a basis from which to identify context-specific criteria' (Fuller and Unwin, 2006a p39). However, there was no guidance as to which features might be more (in)appropriate in certain contexts, although it was appreciated that selection and context were important considerations: '...some concepts can have ambiguous implications depending very much on the context in which they are introduced' (Fuller and Unwin, 2006b p60). This indicates that work on determining suitability of contexts is warranted. The thesis will initiate the debate by arguing that the concept as a list of continua is too simplistic to be universally relevant and it requires some indication of which features may be beneficial in certain contexts.

The discussion is initiated by examining the expansive-restrictive concept in the context of a workforce containing older members. Research on older workers and workplace learning suggests that it may not be appropriate to consider older and younger people as an homogeneous group when examining their workplace learning. Many differences have been identified ranging from the way that older workers and younger workers are viewed by management, their colleagues and even themselves (Billett et al, 2008; Busch et al, 2008) to the
quantity and quality of learning opportunities (Fenwick et al, 2010; Loretto et al, 2006; McNair, 2006; Felstead, 2011) and also attitudes towards learning (Billett et al, 2008). The next section will address the definition of ‘older worker’ before explaining why they are a growing phenomenon. After providing background context the focus returns to workplace learning and expands on the points touched upon above.

What is an ‘older’ worker?

This research examines the ‘older worker’ yet this term does not clearly identify the group being studied. The following paragraphs explore the issues surrounding the definition of ‘older worker’. The section concludes by explaining the definition used in this research and why it was chosen. Not all research uses the same age to identify ‘older’. Some have used over 45, for example Australian research by Lundberg et al (2007), Billett et al (2011) and Dymock et al, (2012); others have used over 50, for example UK research by DWP (2013a) and Canadian research by Fenwick (2012b) and yet others have used over 55 such as Niessen et al, (2010) and OECD (2013). The reason for this difference is not indicated by the authors but it does show that there is a lack of consensus regarding the definition of an ‘older worker’.

Looking more closely at the UK example, as this research is based in the UK, the author of the DWP paper (2013a) was asked why 50 had been selected and they stated that: ‘The age of 50 is a relatively arbitrary point […]. Occasionally we are flexible about the definition depending on what we are analysing’ (DWP, 2014c personal correspondence). Referring to the particular document - DWP, 2013a - they continued: ‘…we adopt this starting age of 50 from ONS…’ (DWP, 2014c personal correspondence). This was a misconception, confirmed by the author of the ONS publication referenced by DWP - ONS, 2013b - as the author of the ONS paper stated ‘…as a statistical organisation, it is our job to report data as it is and not produce a view of what the data says. We simply report the data as it stands so we would not take a view on what is considered the older category’ (ONS, 2013d personal correspondence). This exchange demonstrates that a chronological age for ‘old’ has not been explicitly agreed and established for UK government documents and therefore an age needs
to be determined for this research.

As shown above, ‘old’ can be interpreted in several ways. Chronological age has been selected by many researchers as a proxy for the various medical, workforce participation and personal issues that may arise as life advances. These include the fact that changes to physical and mental ability may become apparent, knowledge may become obsolete and/or needs refreshing and thoughts may be turning towards end of career planning (Kooij et al, 2008). In addition the personal lives, particularly of women, may include additional caring responsibilities for both young and old family members (ibid). It is acknowledged that the above is a very broad generalisation. There are myriad permutations of health, work intentions and personal circumstances represented in the over 50 community. This makes the use of chronological age problematic. Different facets of ageing have been separated out and analysed individually by some researchers. For example, functional work ability; health; seniority and tenure at work; life stage and also personal perception of age (Kooij et al, 2008, Rioux and Mokounkolo, 2013, Pool et al, 2012, Pool et al, 2013b). This approach has proved useful in isolating age effects on, for example, work motivation, organisational commitment and retirement intentions (Kooij et al, 2008). It has also been argued that ‘perceived age at work’ is a more accurate measure than chronological age as younger people perceive themselves as older, and many older people perceive themselves as younger than they actually are (Rioux and Mokounkolo, 2013).

‘Old’ also needs to be defined in conjunction with the industry being considered. What is ‘old’ in one workplace may not be viewed like that in another: the physical demands of construction work means that this type of work has a high rate of early retirement on health grounds (Gibb et al, 2013). Thus the ‘expiry date’ for someone working in construction is likely to occur sooner than for someone in a sedate office environment. Workers in a less physical profession have been selected for this research: an IT engineering section of a large UK public sector organisation. The organisation has requested total anonymity and therefore is referred to as ‘The Organisation’. Although IT jobs are not physical, they do require good mental acuity - something which may
decline with age too (Kanfer et al, 2004). There is evidence that age plays a large part in determining the type of work undertaken in IT (Brooke, 2009). As explained by Brooke:

‘...both ‘older’ workers aged in their forties and fifties and ‘younger’ IT workers aged in their twenties and thirties shared an understanding of the age-grading of different occupations in the industry: most of those employed for their technical skills and creativity were aged in their twenties and thirties; most project managers were aged in their thirties, and those responsible for generic management were generally aged in the forties’ (Brooke, 2009, p 244).

These findings may in part be due to the argument that crystallised intelligence (absorption and organising of information) develops with age, rather than fluid intelligence (processing of information, reasoning) which can diminish with age (Horn and Cattell, 1967; Kanfer et al, 2004). The above changes in crystallised and fluid intelligence in older individuals has been contradicted by Brough at al, (2011). However, the research underlying the contrary evidence took ‘older worker’ to be 45 and over. Therefore it is unclear whether including more ‘younger’ people in the ‘old' category may have influenced the resultant findings. Regardless of the underlying cause, a change in abilities, as illustrated above, is clearly perceived by some in the IT industry. As there are usually, for example, fewer management roles in an IT organisation compared to the more creative roles, this can mean that smaller organisations are often unable to offer the type of work that older IT workers feel better suits their changing abilities (Brooke, 2009). In order to examine older workers in the IT industry, who are working in roles commensurate with their perceived abilities, an organisation large enough to allow movement between coding, design, project management and general management has been selected. Defining ‘age’ and ‘older’ is clearly complex and examining these terms in great depth is outside the scope of this research. However, a definition is required to pursue the research. The definition selected and the justification for the choice is outlined below.
The creators of the expansive-restrictive framework stated that: '...the usefulness of the [expansive-restrictive] continuum is not confined to approaches to apprenticeship; it can also be applied more widely to analyse the learning opportunities available to older and more experienced workers...' (Fuller and Unwin, 2003b p51). No specific age is stated for ‘older’ but it is assumed that it is used in its most common form to refer to chronological age: ‘having lived or existed longer’ (OED online, 1st definition). Therefore, it could be argued that chronological age is the definition that should be used to investigate this statement. Research using various alternative definitions of age (eg Kooij et al, 2008 and Rioux and Mokounkolo, 2013) does not suggest a more preferable one for investigating learning. The paucity of research into this is also lamented by the author of a recent meta-analysis (Pool et al, 2013a). Therefore an age had to be selected reasonably arbitrarily. The age taken is chronological, 50 years and over. This will facilitate comparing and contrasting findings with previous research into knowledge workers and learning (Fenwick 2012a, 2012b; Fenwick et al, 2010; Atkinson, 2007) and current figures on ageing populations and workforce profiles. It also provides a means of relating findings to statutory regulations regarding retirement and pension availability which are determined using chronological age. A final consideration is that employee age is information readily available to employers and researchers and thus makes the resultant findings of this study more easily applicable to real life situations, even if the comparison may be rather crude.

With so many variables, all of which have merit in examining workers closer to the end of their working life than the start, it could be argued that there is not one best way to define ‘age’ or indeed ‘old’. Conducting an examination of such a wide ranging and relatively under-researched concept is beyond the scope of this piece of work. Therefore, although chronological age is used in this study, the other effects of ageing will be considered and raised where they may add to the discussions. Should this research demonstrate a variation in expansive-restrictive learning criteria by chronological age, future research could examine which specific facets of ageing present the greatest explanatory powers.
The increasing importance of older workers

Having explained how this research defines ‘older workers’ the next section will address the reasons why they are an important issue at present and may continue to be so into the future. In the UK, the absolute number of people with a high chronological age is increasing as well as the proportion of the population in this category (ONS, 2012a). The increase is largely due to the ageing of the baby boomers, born between 1946 and 1964, and the decline in the birth rate post baby boom years (Eurostat, 2011). This has implications for the labour market. It has been calculated that in several European countries, between 2020 and 2050, the population of 20-64 year olds will have shrunk considerably. For example it will shrink by 7% in the UK (Leibold et al, 2006 p40). Thus if the labour force is required to remain largely the same size, more older workers will be required. As the following paragraphs explain, it is likely that a greater quantity of older workers will be seeking to enter or remain in employment. This phenomenon may have already begun (see below). Thus understanding how a concept of determining workplace learning environments applies to this group is a valid pursuit.

The issue of older workers has risen in prominence not only due to the reduced number of younger workers to take the place of older ones as outlined above. There is already a growing proportion of older people in the labour market (ONS, 2013a). In the 10 years between 2001 and 2010 the percentage of 65-74 year old that were economically active almost doubled from 8.7% to 16% (ONS, 2013a) and between 2004 and 2010 the age at which people left work increased by around 1 year (ONS, 2013c). This was due to several main factors which are succinctly summed up by ONS thus: ‘… increased life expectancy, the removal of compulsory retirement age, the increase in flexible working patterns, and economic pressures leading to rising living costs’ (ONS, 2013c p13). These points are expanded below.

In the UK, there has been an increase in life expectancy and also the number of years of good health that can be expected post-65 (ONS, 2012b). There are still a number of people who have left the labour market due to poor
health, disability or caring responsibilities (ONS, 2013b). Nonetheless, people are more able to continue working - in the less physically demanding industries at least. Those previously involved in physically demanding work may seek something less physical if their body is less able to meet the demands of the job. However, office work is not always suitable for someone who may not have any prior experience of it and prefers to be outside (Beck, 2009). A further subset may wish to remain with their current employer and continue with their career job. It is predominantly this group that is examined in this research.

The physical ability to continue work is just one factor leading to more older workers. An additional lever encouraging greater participation is the removal of a compulsory retirement age (BIS, 2011a). In many industries, the retirement age was the same as the State Pension Age (SPA). With the removal of a set retirement age, workers are now free to work up to the higher SPA or longer. (See below for details of changes to SPA). The removal of a compulsory exit date places a greater onus on the employer to monitor the performance of workers. Previously employers could direct resources towards employees with potentially longer to serve, knowing that a poor performing worker nearing retirement would soon be leaving anyway without additional HR intervention. It does, however, put additional pressure on those in the more physical industries outlined previously and also those in poorer health who are faced with a longer period to finance their lives prior to SPA.

The increase in availability of part time working does appear to have enabled an increasing number to be economically active post SPA. Over two thirds (67.2%) of post SPA workers are part time yet only a quarter (25.5%) pre-SPA work part time (ONS, 2013b) with women greatly outnumbering men in both categories. However it remains a moot point whether these individuals choose to work part time to supplement pension income or are only able to obtain part time work. The question of whether the work is of the type preferred is also a salient question. In the UK, around two thirds of men working after state pension age (SPA) are in professional, managerial and high skill jobs whereas although some women are in professions, around two thirds working after SPA are in low skill jobs such as administration and cleaning (ONS, 2013b). Commenting
on Australian data, it was noted that: ‘…amongst workers who felt they would never retire, the major reasons for continuing in employment were financial followed by being valued and challenged’ (Brooke, 2009 p240). Therefore, the numerous part time jobs, often in the low skilled sector, may not be providing the stimulation sought by older workers and may be under-utilising their skills and experience. However, this scenario may provide the ‘work-family’ balance more frequently sought by women (Brooke, 2009). The type of work available to older workers is not part of this research although it is an important aspect of the overall debate on the changing demographic profile of the labour market.

The above has explained some factors that have enabled people to work longer. There is also an increasing necessity to work longer due to economic factors. A principal one being changes in pensions. In the UK (the location of this research) where the state pension is funded by taxes paid by those currently working, the age at which the state pension will be paid to women is gradually rising. In 2010 it was age 60 and will rise to age 65 by 2020 when it reaches the same age that men currently qualify. Further increases will take the age for both men and women up to 68 by 2046 (DWP, 2013a). More changes have been mooted as it becomes evident that the old age dependency ratio which is ‘...the number of people of State Pension Age (SPA) and over for every 1,000 people of working age…’ (ONS, 2013b p3) may still rise too high to fund pensions even with the above changes in SPA. In addition, with the economic downturn, many pensions are not providing the returns initially expected and changes made to public sector pensions continue to affect their value (Civil Service, 2014). The financial aspect was also confirmed in Australian research as a key driver to continue employment (Brooke, 2009). This mis-match between the need and/or desire of many older individuals to remain in the labour force and the apparent paucity of suitable opportunities could be seen as a result of government policies not being coordinated. Regardless of the cause, the impact will be felt by older workers who cannot meet their requirement to participate in the labour market. Being able to remain in work therefore becomes an important issue for many older workers.

Work aspirations of ‘older workers’ could vary considerably. This is not
just due to the various ways of interpreting age and ‘older worker’ but also due to the varying levels of interest in remaining at work and the capacity to ‘…maintain competence in the workplace and effectively engage in changing workplace circumstances’ (Billett et al, 2008 p 334). It is therefore important to understand whether existing theories hold true for this growing segment of the population. The current research will add to the understanding of how part of Fuller and Unwin’s (2003b) expansive-restrictive concept of workplace learning environments relates to the needs and preferences of older workers currently engaged in the high end knowledge economy. Some context about the emergence of the part of the economy being examined, the knowledge economy, will be provided next. It will be followed by an overview of how learning theories have also developed over time and how the expansive-restrictive framework is an extension of this development. Once the background has been explained, attention will return to older workers. In particular, current knowledge about older workplace learners will be discussed including how this research contributes to what is already known.

Changes in the organisation of work and learning theories

Workplace learning has evolved with the changing organisation of work. Below is a brief outline of how the organisation of work has developed over time from craft workers to the knowledge economy, which is being examined in this research. This section will provide some context for subsequent discussion of older workers and workplace learning. Attention will then return later on to knowledge work and the importance of learning for organisational success in the knowledge economy.

In the mid-late 20th century Taylorist manufacturing principles were in evidence (Mullins, 1995). Tasks were broken down and the most efficient method to complete each one was determined. Workers were then allotted to, and trained specifically for, one task which was performed repeatedly to create a physical product. As each predetermined task fitted perfectly into the tasks either side there was no scope for worker autonomy or decision making. Continuous production (Fordism) was then introduced using, where possible, dedicated machinery functioning at a set pace. Workers again had no scope for
individual thought regarding the work as they had to function at the speed of the machinery (Brinkley, 2006). As consumers demanded more variety, the need to produce similar but not identical products evolved. Smaller production runs were required and swift adoption of newer requirements provided workers with some autonomy and the opportunity to input into their work in order to achieve the swift introduction of a new item before competitors (Ohmae, 1990). Such 'post-Fordism' method of production developed in some quarters into a scenario where workers were encouraged to contribute their thoughts for improvement and product design (Boreham, 1992). The advent of different processes led Toyota to develop the 'lean' system of examining each step in a process and the steps before and after it to eradicate any excess resource expenditure (Roos et al, 1990). Workers in this form of work organisation had a less hierarchical relationship with management and were more respected for their knowledge and skills than their position within the organisation. However, they did not have a large degree of autonomy due to the 'lean' process regime maintaining an overview on any new activities. Greater worker autonomy developed in the late 20th century as IT became more important and skilled manufacturing declined in the UK, placing greater emphasis on the creation of ideas rather than physical products. A new form of working emerged: the knowledge economy (Drucker, 1993) which required flatter management structures and pooling of ideas to address problems. The knowledge economy has been described as '...what you get when firms bring together powerful computers and well educated minds to create wealth' (Brinkley, 2006 p3). The role of the individual had therefore become more prominent and use of knowledge was central to the newer organisation of work.

The change in work was reflected in the development of learning theories. The next section provides an overview of this and how the expansive-restrictive concept forms part of it. The 'traditional' form of learning or 'standard paradigm of learning' (Hager, 2004), posits that knowledge is accumulated in an individual's mind as a series of facts and propositions by a process of 'acquisition' (Sfard, 1998). 'Acquisition' is aligned with the more formal, easily quantifiable learning which, for example, takes place during pre-planned sessions with a defined 'teacher' imparting information. The mind is viewed as a 'container' to be filled with information. It is this form of learning that is usually gathered in surveys
which count, for example, courses attended. Teaching methods in 20th century schools followed the acquisition metaphor, influenced by behaviourist theories such as Piaget (Phillips, 1969), Watson (Watson and Rayner, 1920) and Skinner (1954) based on the premise that an individual would react in a pre-determined way if the correct stimulus were applied. Learning theories evolved to explain the internal mental processes taking place in the learner’s mind as new problems were encountered and resolved, for example, the ‘cognitive’ theories of Köhler (1925) and Koffka (1935). However, both behaviourist and cognitive theorists saw the learner as a single entity and only considered how an individual learned alone. They did not take into account learning in and from a 'social' setting which is prevalent in the modern knowledge economy. As explained in the previous section, with a change in working methods post Fordism, employees in the knowledge economy were more likely to require team working and problem-solving skills. Learning in this environment became less formal, occurring with little planning and in social situations requiring application of prior knowledge to completely new scenarios (Ashton et al, 2002). Social learning theorists such as Vygotsky (1978) did address this aspect and 'participative' (Sfard, 1998) activities formed an 'emerging paradigm of learning' (Hager, 2004). 'Participative' learning is more complex than acquisitive learning; it cannot stand alone in the same way as a formal course as it is inextricably connected to the context in which it took place. The social nature of learning is a key factor in the expansive-restrictive framework and the emergence of the framework is explained next.

The social interaction of craft apprentices where novices learned by working with the more experienced craftsmen is an example of social learning. The exchange of views and observation of others' expertise enhanced knowledge transfer from master to apprentice. From this developed the concept of Communities of Practice (CoP) which was briefly mentioned earlier. A CoP has three key features: people interested in a similar subject; at least one expert and people with less expertise working towards a similar goal; and finally a shared bond that joins them together. The less expert participants begin on the edge of the group and engage in 'legitimate peripheral participation', gradually building on their knowledge from working alongside the more experienced members until
they eventually participate fully as experts and are themselves capable of assisting a newcomer (Lave and Wenger, 1991).

The original concept of a CoP only acknowledged learning by those less skilled whereas it can occur at all levels of interaction such as similarly skilled participants and also those with very high skill levels (Fuller and Unwin, 2004b). Furthermore the quality and opportunity for social learning can be enhanced by the way an entity is organised and learners are exposed to situations outside the immediate work area (Fuller and Unwin, 2003c). The concept which attempts to determine the activities and opportunities which facilitate a positive learning environment is the expansive-restrictive continuum, which the current research is examining. A significant problem in attempting to examine this type of learning – regardless of worker age - is that participants do not always notice they are actually learning (Boud and Solomon, 2003) and therefore do not report it to researchers or in surveys. Furthermore, some studies on learning do not include participative learning. The methodology for this research has been constructed with reference to work on surveys which attempt to capture the more elusive 'participative' elements of learning (for example Felstead et al, 2005a and 2005b). Thus it attempts to minimise difficulties that respondents may have in identifying all forms of learning relevant to this research.

**Older workers and workplace learning**

Having explained the rising importance of older workers and outlined some basic elements of learning theory, these two subjects will be brought together to consider the issue of older workers and workplace learning. As older workers seem likely to become a larger feature in the labour market, as explained earlier, it becomes increasingly important to understand how they function within it. There is growing research concerning the learning which older people themselves prefer, such as the annual National Institute of Adult Continuing Education (NIACE) survey on adult participation in learning, which covers all adults not just those in employment (Aldridge et al, 2008 and 2011). However, when examining what training older workers have undertaken there is little examination of whether it is 'right' that the quantity for older workers should be the same, more or even less, compared to younger workers. Research into older
worker preferences (see for example Fenwick, 2012a, 2012b) indicates there may be distinct differences in requirements and attitudes and therefore it may not always be helpful to compare older workers’ activities with other age groups. This research will therefore add to the emerging body of knowledge on older workplace learners by examining the high end IT sector and focusing on specific elements of workplace learning by older employees which may conflict with features of the established concept of expansive-restrictive learning environments. The next section will begin this discussion by examining the existing research on the workplace learning of older employees.

As explained earlier, the term ‘older worker’ embraces a large amount of different variables. It is perhaps partly due to this that there is mixed evidence about the ability, enthusiasm and engagement of older workers with regard to learning (for example, Aldridge et al 2008 and 2011; Billett et al, 2008; Simpson et al, 2002 and Smith et al, 2010). People in work are more likely to participate in learning (Aldridge et al, 2011) and older adults as a group appear to participate less in learning than younger people (ibid). In the 2011 annual NIACE survey on adult participation in learning over 50% of respondents under 25 years of age considered themselves to be learners whereas fewer than 30% of those aged 55-64 did. Learning in Aldridge et al’s (2011) research was defined very broadly to encompass more than just ‘formal’ courses but it may not have captured the everyday, collaborative problem-solving type of learning. Recent meta-analysis of several pieces of research found there was little to support negative stereotypes of older workers regarding motivation and resistance to change (Ng et al, 2012). However, despite the lack of evidence, the existence of stereotypes may influence older workers’ self-belief and lead to fulfilling the negative behaviours and thus reinforcing the stereotype (Billett et al, 2008). The meta-analysis did find that older workers were not as eager as younger colleagues to engage in training and development opportunities (Ng et al, 2012). Additionally, several studies have shown older workers receive less on- and off-the-job training (Loretto et al, 2006 and McNair, 2006) and also receive training of shorter duration and lower quality (Felstead, 2011). This demonstrates that learning is not distributed equally across all ages of the workforce and suggests that the expansive-restrictive concept cannot therefore be applied in the same way to the whole age spectrum.
and result in learning opportunities being taken up equally by all ages.

One of the reasons that fewer learning opportunities are given to older workers may be a reliance on human capital theory (HCT). According to human capital theory, investment in older workers may not assist the organisation to succeed as there would be a smaller rate of return on a worker unlikely to remain in employ for very long\(^2\). However, HCT is not able to incorporate the less quantifiable learning which arises, for example, from participative learning and from older workers passing on their expertise to younger colleagues. It relies on calculating the return from identifiable learning events and their outcomes. Therefore it could be argued that statements such as ‘Employers are indeed reluctant to hire an older worker because of the pay-productivity gap…’ (Picchio and Van Ours, 2011 p18) are not considering the full range of learning, or the sharing of expertise and knowledge, that an older worker may be engaged in. Neither would it be accounting for the experience already possessed by the older worker which is a recognised feature: ‘…managers consistently rate older workers as being more reliable, more experienced and having better attitudes […] they rate younger workers as easier to train, more flexible about new assignments, and having lower health and safety costs’ (Heywood, 2010 p 599). It is acknowledged that an ‘older’ worker also brings greater degree of life experience to a job. However, an older worker is not necessarily more experienced at their job than someone younger. This research is examining ‘older’ workers regardless of their experience in the job. However, their experience was captured and considered when reaching conclusions regarding the applicability of the expansive-restrictive framework.

It is not evident from the studies cited above whether the issue is one of older workers not being offered similar opportunities, not requiring as much training as they may, perhaps, be more experienced or whether older workers are turning down learning opportunities - or perhaps there are elements of all three. Thus it remains a moot point whether older workers do in fact have similar opportunities to their younger colleagues, but do not take advantage of them.

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\(^2\) See Conrad et al, 2008, p56, for a formula to determine the return on human capital investment taking into consideration improvement in skills and time remaining in the labour force.
(Chiva et al, 2009). This presents a discouraging scenario if the quantity of older workers is expected to increase as it would indicate, at least in the high technology sector where constant learning is essential to maintain currency, that productivity would drop and organisations not be able to maintain or improve their position in the market. However, the above is contested by evidence that shows older workers are just as willing to learn (Schulz et al, 2010) and one study even concluded that older workers learned more quickly than younger ones, probably linked to their more focused attitude and support for organisational change (Smith et al 2010). Research on professional accountants in Canada also found an eagerness to learn (Fenwick et al, 2010 and Fenwick 2012a and 2012b) and another study found evidence of far more training being undertaken by older workers (Simpson et al, 2002). There are three significant reasons which may account for such contrasting findings, apart from each study examining a different sector of the labour market, each of which might have slight variations in requirements for learning and be functioning under dissimilar economic conditions depending on the country and timing of the research. One is that older workers appear to favour participative over acquisitive learning. The second reason is that older workers appear to be more discriminating in what they learn. Finally, they may have grown up with a different experience of learning. These points are expanded below.

Older workers appear to favour practical training in the workplace to the more formal acquisitive approach of a classroom (Smith et al 2010, Pool et al 2013b). It has been suggested that the preference could be due to ‘…informal learning […] offer[ing] more opportunities to compensate for cognitive ageing effects so that negative age differences might disappear…’ (Schulz et al, 2010 p 395). Development activities based around competencies were seen to be too routine and delivery methods '…banal or tedious, teaching the obvious…' (Fenwick et al, 2010 p14). Research of adult learning in the UK repeatedly found over several years that '...activities associated with the workplace were of more help in raising performance than learning by acquisition (typified by training courses and qualification)' (Aldridge et al, 2008 p9). The preference for the less formal type of training was also echoed in empirical work on retention factors of UK long term employees of around 20 years' tenure (Atkinson, 2007). It
revealed, inter alia, that a very large proportion of respondents rated 'furthering skills' very highly as a retention factor. On-the-job training was rated as important by 88% of respondents and formal training was somewhat lower at 64%. Although some of these respondents were just below the 'older worker' age threshold used in this research of 50 years, many were already in this bracket. The fact that respondents valued learning so highly, contrasts quite sharply with the view that they were not eager to engage in learning. This in part could be due, as mentioned previously, to few studies considering training other than the more easy to quantify acquisitive learning. If older workers prefer participative learning, this may mean the data on older workers learning may not be complete and thus contribute to the apparent lack of eagerness for, and take up of, learning. However, although some research may not be capturing all instances of learning, one example where both acquisitive and participative learning were included, found that older workers were still experiencing lower levels than younger respondents (Felstead, 2011). Thus the evidence regarding older worker learning remains mixed. To provide some clarity, this research will explore the importance given to each learning type by the over 50s, compared to the younger age groups. The results can be found in the Analysis chapter.

A further point which may explain the apparent disinterest in learning is that older workers are more likely to take up training when it is specifically related to their job rather than being more general or potentially useful in a future role. Proximity to leaving the workforce was identified as one reason for this as well as having a better appreciation of their own knowledge gaps (Simpson et al, 2002 and Fenwick et al, 2010 and Fenwick 2012a and 2012b). This suggests that older workers do have the desire to engage in continuous learning, but are selective about the subject matter: they have a more 'discriminating' attitude regarding what they learn and how. Therefore, older workers may indeed be less keen than younger colleagues to participate in training and development, but this is partly predicated on the perceived usefulness of the content. When the learning will enhance existing skills relevant to their job, rather than being something abstract and theoretical that might be useful later on, similar enthusiasm appears to be present (Friedberg, 2003, Armstrong-Strassen and Ursel, 2009). This suggests that part of the expansive-restrictive concept, that of learning
skills for a subsequent role, may not be as enthusiastically embraced by older workers as their younger counterparts. Some workers over 50 may not wish to acquire additional skills in readiness for a future job if they have found their preferred role and wish to stay in it (Atkinson, 2007). However, the recent change to retirement legislation and pensions has meant that some of this group may now seek to remain in work longer due to personal or financial reasons. Thus learning new skills which are not related to the current role but would be useful in the future is more likely to occur. As the changes to retirement and pensions occurred very recently, older workers may still be considering their future employment trajectory and it may be too early to determine whether this part of the concept is applicable or not. To explore this, a series of questions were originally included in the research but were removed before the survey tool was used because respondents could not accurately recall whether they had been offered such opportunities. Consequently the research does not address this particular aspect.

A third source of the different learning activities of older workers may be related to their previous learning experiences. Each learner possesses a unique combination of learning experiences which influence their subsequent engagement in learning situations: their 'learner territory' (Fuller and Unwin, 2004a). For older workers they mostly have a considerably different experience compared to their younger colleagues. For example, qualification acquisition was not so widespread when older workers were growing up and far fewer students continued studying to degree level compared to today. In 2011, in England and Wales 40.3% of 25 to 34 year olds had a degree whereas 27.7% of those aged 50-64 had one (ONS, 2014). Leaving education relatively early may have an effect on later learning. For example, looking at UK adults both in and out of work shows that learning of some sort was being undertaken by half of those who were in education to at least 21 (Aldridge et al, 2011). For those who left at 16 or earlier - the school leaving age in England and Wales rose to 16 in 1972 - it was less than a quarter (ibid). It could therefore be argued that some older workers may be keen to learn, but not very confident as it has been a long while since school and they do not possess myriad qualifications like many of their younger colleagues (Smith et al, 2010). The personal aspect of learning is
also emphasised in the concept of ‘personal epistemologies’ (Billett et al, 2008) which is the way that an individual sees and approaches life. For an older worker their personal epistemology is used to ‘…maintain their sense of self in face of the brute fact of ageing and a societal sentiment that privileges youth’ (Billett et al, 2008 p334) and is ‘…central to how they negotiate their participation in and learning through working life’ (ibid). With myriad individual epistemologies, it could be argued that there is value in conducting a detailed analysis as recommended by Hodkinson and Rainbird, (2006) to identify the features of the concept applicable to each worker and then plot them on the continuum to determine the starting point for work to increase expansive opportunities. This may bring to light the potential of a mis-match between the expansive pole of some features and the preferences of older workers. Although Fuller and Unwin recognised the important of individual agency and stated that ‘…(e)ven within the same workplace, workers in the same occupation will have different experiences of the learning opportunities it affords’ (Hodkinson and Rainbird, 2006, p169), age was not mentioned as an issue which may affect the selection of various features or their position on the continuum. The focus of this research is not how age may affect the initial placement but that some features at the expansive pole may not be suitable objectives for older workers and so are less likely to produce the same beneficial outcome that they potentially could where a younger worker is concerned. To address the issue of previous learning, the prior qualification acquisition of all respondents is considered and whether this appears to have any bearing on their attitude to subsequent workplace learning.

The above outlined some of the key factors that may account for conflicting research findings regarding older workers' engagement in workplace learning. Alongside negative aspects such as less enthusiasm (Ng et al, 2012) there is also evidence that in professional occupations (eg accountancy) learning is embraced by older workers, however, a more focused approach and non-formal methods are preferred (Fenwick et al, 2010 Smith et al, 2010). Bearing the above issues in mind, this research will consider the applicability to older workers of a specific aspect of the expansive-restrictive concept: the pursuit of formal qualifications. How this was done and what it revealed is discussed in the Methods and the Analysis chapters.
It is acknowledged that there is concern regarding the re-employment of older workers, who may be more likely than their younger counterparts to be faced with low-skilled job opportunities; part time work; home working or self-employment (Felstead, 2011). This thesis cannot cover all aspects of older worker employment and so it will focus on a specific subset of older workers: those in a career profession in the high-end knowledge sector within one organisation. All ages in this sector need to maintain currency with new ideas and constantly address new problems and situations and therefore constantly engage in learning to do their job. The examination of a single employer therefore offers what could be argued to be relatively consistent job requirements across the age spectrum: similar work undertaken by older workers and their younger counterparts plus all employees working in the same culture and expected to meet similar standards. This reduces the variables which arise when taking samples from multiple sectors/organisations and offers the opportunity to examine differences in workplace learning which may be related to age within the high tech sector rather than differences in organisational culture.

The increasing importance of older workers in the economy, introduced above, is one of the major elements that forms the background to this research. Another major element is the importance of learning at work in the knowledge economy. The knowledge economy was mentioned earlier when outlining the changes in the organisation of work. Below, it is addressed in more detail. This is followed by a look at why learning is an important factor and the structure of a successful organisation within the knowledge economy.

Knowledge economy

To introduce the knowledge economy, the term ‘knowledge’ will be explained first, using the example of creating a new IT product. This is an example of the type of work done by the IT section involved in this research. The decision to create the product may begin with feedback from a customer. The raw feedback is ‘data’. It has not been analysed and is a source rather than a ready-to-use item. When it has been analysed and put into context, and therefore given some meaning, it becomes ‘information’ (Davenport and Prusak, 1998). It
is now a piece of a jigsaw that can be placed in a picture of customer reaction to the existing product. To become ‘knowledge’ the information needs to be used in action. For example, weighing up all customer feedback and deciding to revise the product. It is the use of ‘...understanding in action...’ that leads to ‘knowledge’ (Barnett, 2000 p28). Creating knowledge may also involve many associated factors such as the context, worker intuition and experience (Davenport et al, 1998), demonstrating that it is not something that happens in isolation.

The worker is particularly important in a knowledge environment due to the knowledge that is stored in their brain along with the specific context and antecedents to the event which created the knowledge. This will be different for each person as each has a distinct ‘learner territory’, created by their previous experiences, knowledge and skills (Fuller and Unwin, 2004a). Unspoken or unwritten knowledge stored in the brain has been termed ‘tacit’ (Tsoukas, 2009) which can be articulated and become ‘explicit’ for sharing with others (Nonaka and Takeuchi, 1995). However, this may be too simple an explanation as it ignores the thoughts and decisions which are used during the process of carrying out a task. These are not described when explaining how to do something: only the mechanistic steps of the task are voiced. Thus ‘...skilled knowing contains an ineffable element; it is based on an act of personal insight that is essentially inarticulable’ (Tsoukas, 2009 p424). Knowledge could therefore be un-shared personal knowledge (Eraut, 2004) or a shared entity (Wenger, 2008). The definition of knowledge is complex: it could exist in a person’s head, or perhaps have left some parts of it in the action that created it. Or it may only exist at the point of creation, becoming ‘information’ once created. The difficulty in separating knowledge from the person makes the worker a central part of an organisation which is based on intellectual rather than physical products. Continuous learning and the use and creation of knowledge are essential elements of an organisation in the knowledge sector. It is for this reason that a heavily knowledge-based organisation has been selected for this research: learning will be an important feature for all ages.

Knowledge work is an expanding sector in the UK: in 2004 it was 41%, and expected to rise to 45% by 2014 (Brinkley, 2006 p 19). However, not all
reside at the high end. In the IT sphere, the term 'knowledge work' can include workers creating knowledge such as IT Engineers (the focus of this study) as well as those in 'help desk' type roles which are not creating knowledge but deal more strictly with 'information' (as described previously) as they frequently use pre-prepared flow charts to solve customer problems rather than creating new knowledge from complex information in the same way as an IT Engineer. Notwithstanding this point - which appears to arise due to the myriad definitions of knowledge as outlined earlier - it could be argued that the more knowledge-based the work becomes, the higher the potential benefit of continuing to develop the knowledge creation capacity of the workforce. This is because it is the individual worker who creates the ideas and solves problems to improve products that in turn generate income and contribute to the success of the employing organisation. This demonstrates the importance of concepts such as the expansive-restrictive framework which assists organisations to create favourable environments for workplace learning. It is therefore imperative that such concepts are examined to understand whether they are likely to deliver the expected returns to the whole organisation as stated by the creators.

Organisational success

The expansive-restrictive concept lists the features that contribute towards an organisational culture conducive to workplace learning. However, ‘...learning is not the primary goal of the marketplace but a by-product of engagement in the activities and relationships involved in the production of goods or services’ (Fuller and Unwin, 2005, p24). Success in the marketplace can be achieved by juggling several factors. Three main factors are: the position in the market; the restructuring of the business model to increase efficiency and finally the structure of employment within the business (Fuller, Munro and Rainbird, 2004). Although the first two may involve adaptation by many employees, it is the third point – the structure of employment within the business - where workplace learning is predominantly employed. Learning at work is important to maintain and improve productivity of existing employees and enable new employees to apply their previous learning to the new organisation (Adams et al, 2008). It is also used to provide the specific knowledge and skills required for that particular organisation (ibid). It is especially valuable in sectors where
innovation and frequent changes are necessary. This is because knowledge-intensive work, such as IT engineering, relies heavily on workers having up-to-date knowledge and being able to apply it to new scenarios. The ability to deal with unforeseen events provides the flexibility to exist in an ever-changing world. Importantly, in the context of this research, the need to constantly learn in the high end IT sector applies to all ages of worker if they are to remain productive. As explained earlier, the ‘knowledge’ segment of the labour market is growing and so is the quantity of older workers, therefore, understanding better how older workers learn is essential for organisations to at least maintain their position in the economy, especially if working in the high-end knowledge sector like the one used in this research.

Culture and structure of an organisation

Creating an organisation where learning is considered a routine part of working life requires a certain culture and structure. The key features are openness, flatter hierarchy, teamwork/social interaction and continuous learning and productive use of the knowledge gained (Snell, 2002). Participative decision making and transformational leadership have been found to be two of the most influential cultural factors in a learning organisation (Flores et al, 2012). These are areas where older workers in particular may add value due to their greater experience of life and often work. The following comment by a manager in a small to medium sized enterprise in the IT industry summed this up succinctly: ‘your skill sets actually start waning in terms of your pure coding, but they increase in terms of your value to the organisation…’ (Brooke, 2009, p244). Members of a learning organisation are encouraged to constantly learn and use their new knowledge to change the organisation to meet current and future needs. A flatter hierarchical structure where managers respect the knowledge and skills of their employees and give them autonomy to use their own initiative is required for this to work well. The manager-subordinate relationships should therefore be flexible enough for feedback to be sent up the chain as well as down. All levels need to be able to suspend their place in the hierarchy and respect colleagues for the knowledge and experience they possess, so that the problem is the focus of effort not hierarchical correctness. There is conflicting evidence regarding inter-generational working relationships. Not only are there potentially different
preferences for work and management style but also some evidence that older managers may favour older workers (Chi et al, 2013). This could hinder the optimum operation of an organisational structure such as the one just outlined.

Although a flatter structure was mentioned above, the role of management is not absent: senior management need to promote the culture of learning and establish the mechanisms to promote learning. An optimum management structure has been termed ‘middle-up-down’ (Nonaka and Takeuchi, 1995). This requires middle managers to take on a more central role in taking the seniors’ vision and facilitating the front line workers to realise the vision. This contrasts sharply with the typical ‘top down’ approach where ‘orders’ are passed down; the lowest level are given proscribed tasks and progress against the tasks is passed back up. To reorganise a company from ‘top down’ to ‘middle-up-down’ would require a large amount of organisational and cultural change. This is one of the factors that may mitigate against features of a learning organisation being successfully ‘imposed’ on an existing organisational structure rather than being built into a new structure. This may also impede the application of expansive-restrictive features if the requisite workplace changes need to be introduced into an already established structure.

Management is not the only source of ‘power’ within an organisation. Knowledge itself could become a tool of power and hinder knowledge creation and sharing activities. Operating at the high end of the knowledge economy requires workers to demonstrate a high degree of altruism to share their knowledge (Alvesson et al, 2001). An organisational reward scheme can be used to encourage this behaviour by incorporating knowledge sharing into performance standards and/or linking it to a performance payment (Popper and Lipshitz, 2000). This approach is supported by evidence that employees in Danish service firms considered a supportive reward mechanism ‘…a powerful tool when developing a learning organisation’ (Thomsen and Hoest, 2001 p487). This would seem to be at odds with the need for a degree of altruism. However, it could be argued that the requirement for reward may demonstrate that most employees have the same goals as the organisation and will strive to meet them as long as there is some form of encouragement to do so. For a learning organisation to meet the demands of the high end knowledge economy it needs to provide the environment
for individuals to learn from one another free from close management interference and to generate knowledge collectively and thus push the organisation forward.

Continuous learning in the workplace as described above, which is essential in the high end knowledge economy, is not beneficial for all organisations and can be viewed negatively in some sectors. The environment which may enhance workplace learning is influenced by a number of factors: '...each learning environment comprises a dynamic interplay between processes generated within workplaces and those emanating from wider structures and stages of the production system' (Felstead et al, 2009 p 190). All these can influence the likelihood of the environment being suitable for widespread workplace learning. For example, one reason for residing at the restrictive end of the expansive-restrictive spectrum could be that in some workplaces, often those with low-skill Taylorist work organisation, management may restrict the knowledge acquired to firm-specific topics only (Owenby, 2002). Organisations need to control costs to maintain market position. If a worker is not required to perform anything except their given task – and is not expected to take decisions outside that task – investing time and resources in them would not result in additional output and therefore would not improve the success of the organisation. An example of this could be a road toll booth attendant who needs to take money and press a button to raise a barrier. Knowing about the road itself or meeting toll booth attendants from other roads may be interesting for the individual but the time spent would not provide additional returns to the company. Therefore, the attendant’s learning environment would be considered restrictive. A business decision to limit learning can have other, more negative, implications. There is evidence that improving skills per se is a significant factor in job satisfaction and engagement (Van Dick et al, 2004) which can also lead to lower turnover rates and thus lower costs for the organisation (McFarlane Shore and Martin, 1989). However it could be argued that sometimes the apparently negative effect of not developing the employee and restricting learning to that just sufficient to achieve the job is what some organisations intend. Thus provision of expansive learning opportunities may be detrimental to organisational success in cases such as the toll booth operator above. In others, notably in knowledge-intensive, high-skilled sector, expansive learning opportunities are imperative for the continued success
of the organisation. The organisation examined in this research sits within the knowledge-intensive, high-skilled sector. Evidence that it is suitable to study the applicability of selected expansive-restrictive features to older workers is provided in the Methods chapter.

**Maturity of the expansive-restrictive framework**

The previous section explained the major background elements pertinent to the research: the expansive restrictive framework; older workers; learning and the knowledge economy. For the final section of this chapter the focus returns to the expansive-restrictive framework. It considers three particular areas which suggest the framework is not mature. The first critiques the close alignment with high performance working practices, a concept which is not widespread (Ashton et al, 2002) and can be detrimental to worker satisfaction (Sparham and Sung, 2007). The second looks at the link to apprentices and questions whether the concept has moved beyond apprentice-like situations. The third point considers the importance of qualifications and whether they are commensurate with the learning practices of older learners discussed earlier in this chapter.

**High performance work practices**

A certain combination of HR practices appropriate for achieving the qualities of a learning organisation have been termed High Performance Work Practices (HPWP). They require workers to participate in their work and not just perform it. The collections of HR practices – termed bundles - enable '...employee autonomy and involvement in decision-making, support for employee performance, reward for performance, and the sharing of information and knowledge' (Ashton et al, 2002, p12). HPWP share a number of features with the expansive-restrictive concept such as valuing team working, worker innovation, ongoing learning and less hierarchical management. A list of the 18 attributes of HPWP are in Appendix D ‘HPWP Features’. The two concepts have been directly linked by Fuller and Unwin who stated that: '...the characteristics of the 'high performance' approach are necessary for the creation of an 'expansive' environment for workplace learning' (Fuller and Unwin, 2003a p18). They also declared that '...'high performance' working practices [...] can be overlaid on the expansive column as they align very well with the cultural basis of
the model' (ibid, 2003a p18). However, there are two major problems with the linkage of HPWP to the expansive-restrictive concept. Firstly, the exact nature of the practices remains ill-defined. Lloyd et al (2006) noted that ‘...the measures of the components of the HPWO [High Performance Work Organisation] are loose, identified simply by the existence or absence of a particular activity rather than any attempt to explore their actual definition or use’ (Lloyd et al, 2006, p157). Poorly articulated definitions make it difficult to identify and implement the bundles and also harder to evaluate their effectiveness (Edwards and Wright, 2010). It has also been argued that some positive outcomes such as up-skilling could not be causally linked to HPWP and that the bundles may only be beneficial in selected sectors, such as the knowledge economy, rather than the service sector for example (Lloyd et al, 2006).

The second issue is that, as outlined towards the start of the thesis, the creators, Fuller and Unwin, stated that their concept had very wide application across many sectors (Fuller and Unwin, 2003a). However, less than a quarter (20%) of UK workplaces have implemented sufficient HRM bundles to be considered a high performing work organisation (Ashton et al, 2002). Of the remaining 80%, half of them have some form of training related HPWP and the remainder have little or nothing (ibid). The reasons for the differences may be due to price-sensitive product and position in the production process as explained earlier. As Ashton and Sung succinctly stated: '...some of the practices may be more appropriate in some industries than in others' (Ashton et al, 2002, p104). Thus if expansive criteria and HPWP are closely aligned this suggests that the expansive end of the expansive-restrictive concept is also limited to only 20% of UK workplaces too.

Other studies have also echoed the paucity of HPWP in practice across Europe. In a study covering 10 European countries only 1.4% of workplaces were considered to be using HPWP (Edwards et al, 2010). One suggestion for the low figures in Edwards et al’s study has been that evidence of ‘team work’ could mainly be found at a lower level of autonomy, similar to that required for the Toyota ‘lean’ variant of post-Fordism, rather than in the more autonomous scenario described by HPWP criteria (Lloyd et al, 2006). The alignment of
expansiveness with the relatively rare HPWP appears doubtful as the authors imply the expansive-restrictive framework has near universal applicability (Fuller and Unwin, 2003a, 2003b).

Notwithstanding the debate regarding the definition and widespread existence of HPWP, their presence has a potentially negative aspect for workers. The pressure to constantly improve products, and develop multi-skilled workers has in some cases resulted in work intensification and multi-tasking and thus a more stressful and less satisfying job (Boxall and Macky, 2014). HPWP therefore are a rather tendentious entity: they are poorly defined and, even allowing for broad definitions of the criteria, are employed in a small proportion of organisations. Although the bundles of HRM practices are deemed to provide the conditions for increased worker productivity, via increased collaboration and learning, they may in fact lead to intensified work, resulting in less autonomy and more stress (Sparham and Sung, 2007). The empirical study for this thesis does not address the presence of HPWP as it is tangential to the research focus. However, the fact that the authors feel the expansive-restrictive framework should be so closely aligned with a concept that may be sparsely implemented, and may not even be beneficial when implemented, is included to demonstrate that the expansive-restrictive framework is not yet mature. There is therefore a need to initiate debates on how to improve the framework. This research aims to initiate the debate regarding applicability to older workers. The next two sections address particular aspects of the framework which demonstrate potential incompatibility with older learners.

The influence of apprenticeships

One of the reasons that older, established workers within a knowledge intensive environment may not have been fully considered by the expansive-restrictive framework could be due to the apprenticeship scenario still dominating the list of features. Evidence of this is taken from two main areas: examples used by the authors (eg Fuller and Unwin, 2004a, 2005) show evidence of a 'transition' via pre-planned up-skilling rather than 'everyday' work situations and broad yet shallow knowledge is considered more favourably than the deep expertise required in high-tech organisations.
Many of the examples given by Fuller and Unwin (2004a, 2005) to support the expansive-restrictive concept being applicable to all workers do use established workers and not apprentices. However, these workers often appear to be following a mapped out journey from a less knowledgeable state to a defined level of being more knowledgeable/competent. This has echoes of apprenticeship. For example, one company rearranged how work was organised so that sales staff sold all of the company's products not just a few (Fuller and Unwin, 2004a). Thus their 'journey' was learning about the products they did not currently sell. Another example concerned reorganisation of shifts and shift patterns that required workers to increase the breadth of tasks they were familiar with. They were given a minimum target of competency in 60% of tasks (ibid). Again, there was a pre-determined learning goal with a fixed end point. The above are not examples of 'everyday' learning but pre-defined learning goals often created as a consequence of specific organisational change initiatives. The notion of developing to a set level via pre-defined learning echoes the transition of an apprentice from novice to expert. It could be argued that this is an additional strand of learning and is separate from the 'everyday' workplace learning undertaken by high end knowledge workers to solve problems and keep up to date. A competent worker may not always have a defined learning trajectory, such as those described above, but still be productive by using other elements of an expansive learning environment such as problem solving and cross team collaboration. Indeed the expansive-restrictive environment does acknowledge the importance of problem solving, innovation and working in multiple communities of practice amongst its features. However, it places considerable emphasis on a 'transition' being present, which, as explained above is not a prerequisite for all established workers.

An additional point which belies the circumstances of apprenticeship being in the minds of the authors is a feature presented as applicable to all yet would appear to be more appropriate for beginner/novice workers. The feature is: 'Expansive: Gradual transition to full rounded participant; Restrictive: Fast - transition as quick as possible' (Fuller and Unwin, 2004a p 130). This feature may have been a response to a particular apprenticeship situation encountered
during the initial study where one company appeared to use the apprentice scheme to fill vacancies and did not offer a more rounded introduction to the company or industry (Fuller and Unwin, 2003b). It is debatable whether the wording may have been an oversight: the same feature is included in a concurrent paper by a different author with suitable wording in parentheses to show the feature was not applicable to experienced workers (Rainbird, 2004 p2). However, the feature appeared unaltered in 2007 (Fuller et al, 2007) but in a later publication the words 'newcomer/trainee' were included (Fuller and Unwin, 2013 p52). It could perhaps be pragmatically assumed that the feature above only applies to those who are apprentices or new recruits but the authors do not make this clear.

A further point concerning the potential presence of an 'apprentice' lens is the desired goal of achieving 'breadth and depth' and considering narrow and deep experts to be less desirable. This is indeed a good premise for new recruits. However, the issue of whether in today's high technology labour market, 'narrow experts' are a negative is a moot point. In a highly technical industry occupied by many high-end knowledge workers, it is not feasible to maintain breadth if deep expertise is required. For example, becoming an 'expert' in the generally held interpretation in IT requires several years of study followed by work to remain up to date in the chosen field of IT. As a consequence there is a narrowing in the area of expertise. In high-end organisations narrow but deep expertise is not detrimental to the employer: it is essential to maintain their place in the market. The apparent mis-match regarding breadth and depth may in part be due to the rapid development of technology and increasing complexity of high end knowledge work since the expansive-restrictive concept was devised in 2003. Unpublished research into the internal churn of a UK civil service department supports this supposition. The internal labour market exhibited a significant change in the pattern of job rotation over the last decade (UK CS Dept, 2010). Job rotation is a feature of HPWP and is employed to reduce boredom and increase stimulation and challenge in work, as well as provide the employer with a more widely experienced workforce which, it could be argued, might be able to cover for others in an emergency. In the department studied above, movement to completely different types of work was encouraged. Training would be provided and workers quickly functioning at a satisfactory level. However, over the last
ten years, as work has become more complex, the number of job moves did not significantly alter but the pattern of movement changed. Whereas moving occupational group was previously evident, moves began to form clusters as people only moved between broadly similar job groups (ibid). Entry to some professional groups required prior qualification/experience. The internal policy regarding moves had not changed significantly and nor had related aspects such as number of posts, availability of training or routes to promotion. It could be argued that the reason for the narrowing of internal movement is that the expertise, knowledge and contacts required to successfully function in a completely new sphere had become too great for a total newcomer to gain, but was manageable for someone experienced in a related sphere. Thus the complexity of jobs in the high end knowledge sector may have risen since the elaboration of the expansive-restrictive concept and as a consequence 'expert' workers could not now expect to be equally proficient across a broad range of subjects. A new recruit could reasonably be expected to acquire a broad appreciation of the company rather than a deep understanding of a narrow perspective. Consequently the above issue adds weight to the pervading sense of 'apprentice' which runs throughout the concept.

The critique above regarding the apprentice lens specifically looked at work aspects and not the age of the worker. This is because in the UK, an increasing number of older people have enrolled in apprentice schemes. Enrollments in adult apprenticeships by those over 45 increased sharply in 2010/11 from 10 thousand individuals (3.5% of enrollments) the previous year to 54 thousand (12%) (BIS, 2014a). The latest data shows 64 thousand over 45s enrolled in 2012/13 (ibid), including 1200 in the Information and Communication Technology sector (BIS, 2014b). For these older workers, the features of the expansive-restrictive concept may be well aligned with their learning needs so it would be inappropriate to suggest that the concept is not useful for any older individual learning in a technology environment. Further research into the learning activities and preferences of older apprentices would be necessary to understand whether the expansive-restrictive features are appropriate for older workers in an apprentice scenario. However, this is outside the scope of the present research.
The above outlined issues that could indicate new recruits/apprentices were at the forefront of thoughts when devising the expansive-restrictive concept. It is acknowledged that the features of the expansive-restrictive concept do not form a prescribed list of attributes that an organisation must demonstrate. However, if the concept is applicable to a wide variety of work situations, as claimed, the features too should be widely applicable.

From the evidence above it could be argued that the overall concept was still being viewed through the lens of apprenticeship, albeit weaker than the one used when the features were initially identified. The generalisation of the original concept from just apprentices to being applicable to all workers, without including modifications and provisos for various situations, means that the tool may not deliver the benefits expected. An organisation may strive to implement a more expansive variant of a feature expecting returns but be unaware that it does not suit the work organisation or employee profile. It is against this backdrop that qualifications, the main feature selected for particular attention in this study, is introduced.

Qualifications

Gaining qualifications is a key feature of the expansive-restrictive continuum and has been emphasised as one of the three 'participative dimensions': '...the opportunity to pursue knowledge-based courses and qualifications relating to work' (Fuller and Unwin, 2004a, p126). As evidence above has shown, many older workers are interested in learning for their job but not taking on extra study for a future role (Armstrong Strassen and Ursel, 2009). For example, older workers who belonged to a professional accountancy body where continuous learning is a requirement of membership did not shy away from acquiring the necessary knowledge but resented the need to keep a learning log, seeing it as 'surveillance' and their professional body not trusting them (Fenwick 2012b). This shows that there is a disregard for learning related activities which older workers perceive as not directly contributing to their work. It would appear, therefore, that selecting relevant modules of qualification courses would be the preferred option for older workers, allowing those who wish to complete the
'non-essential' elements in order to gain a qualification to do so. The idea of only doing bite-sized pieces of learning was considered by Fuller and Unwin but dismissed, not only because it endangered acquisition of whole qualifications, but also due to the potential for misguided use by policy makers:

'The danger is, however, that individuals would not be supported to put the chunks together to form a whole qualification. Furthermore, policymakers might be attracted to unitisation because it could present a cheaper and quicker route (however dubious) for measuring workforce development activity in the economy' (Fuller and Unwin, 2003a, p23).

However, if the preferred way for older workers to learn is by selecting targeted segments then it could be argued that the expansive-restrictive exhortation to workplaces to provide opportunities for acquiring a full qualification is not appropriate for older workers. Indeed the rejected alternative of smaller elements, perhaps not joined up into a full qualification, may be the most appropriate option for older workers - and also for policy makers in order to encourage and facilitate greater learning amongst older workers and their continued engagement in the labour market as productive employees.

Fuller et al, (2015) did consider older workers and qualifications but did not advocate any changes to the framework. In an examination of adult apprenticeships (Fuller et al, 2015) apprentices aged 25 and over and the application of the expansive-restrictive concept was considered. However, despite there being some apprentices aged over 50 amongst the respondents, the specific issues addressed in this research were not raised. This may be due to the focus being on ‘apprenticeship’ and the necessity to acquire ‘…qualifications that have labour market currency and support progression to the next level’ (Fuller et al, 2015 p72). One of the report’s recommendations could be taken to support the argument made in this thesis that formal qualifications are not necessarily the most appropriate option for older learners: ‘…[the UK] government should review the current reliance on the achievement of qualifications as the measure that training has occurred’ (Fuller et al, 2015 p80). However, far from suggesting support to move away from qualifications, the surrounding context
strongly indicated that the authors were lamenting the evidence that many apprenticeships are not resulting in adults undertaking new learning but are being used to accredit existing skills and knowledge. It appears, therefore, that the authors of the expansive-restrictive framework remain adamant that ‘…adults value qualifications when they provide access to new learning’ (ibid, p80). They also remain convinced ‘…that there is considerable scope within all sectors to use apprenticeships as a model of learning for upskilling and retraining the adult workforce’ (Fuller et al, 2015, p77).

A contentious area which will not be covered by this research is the expansive requirement to learn for future roles, not just the current job. As with the qualification argument, older workers appear less enthusiastic to learn in this way. According to Atkinson (2007), future roles may not always be vastly different to current roles. When asked whether the existence of an internal labour market was an important feature that had encouraged them to remain with one employer for over twenty years, some of the respondents commented that it was initially but once they found their preferred area of work they wished to remain in that sphere. Thus these employees would not wish to acquire new skills to facilitate a move to a new job: they wished to move within the current area and often remain at the same hierarchical level. Their decision was not due to a disinterest in learning as the figures quoted earlier demonstrated, training was an important factor in their long tenure (Atkinson, 2007). As mentioned previously, this part of the research had to be set aside as the data was unlikely to be reliable (Bryman, 2004).

When older workers formed a small segment of the workforce, and perhaps one which did not attract management attention regarding up-skillling/re-skillling, the expansive-restrictive concept would have been a useful tool to assess a whole organisation for the kinds of activities which promote an expansive learning culture. However, with a greater number of older learners in the workforce, and it being likely to grow, criteria which are less appropriate for older learners, although they might still provide advantages to those who wished to take them up, cannot be considered key criteria for achieving an expansive environment.
Although only one feature (qualifications) has been selected for closer examination, this does not indicate that the others are without challenge. For example, the expansive feature of 'planned time off-the-job including for knowledge based courses and for reflection' and its restrictive 'partner': 'virtually all on-the-job: limited opportunities for reflection' (my emphasis) can be challenged not only through the preferences regarding courses as explained above but also on the disputed importance of 'reflection' in learning. Some researchers place greater emphasis on the value of experiencing:

‘When it comes to learning in the workplace it has been suggested that less weight should be put on the role of reflection (Collin, 2004). Instead, learning in the workplace has more to do with learning when experiencing. That is applying personal experience to solving practical problems or performing specific tasks at work. Thus experience in learning in the workplace can be understood as embedded in and accumulated during practical doing’ (Paloniemi, 2006 p440).

Thus future studies need to examine other facets of the expansive-restrictive framework and debate their validity in light of existing research. There do not appear to be any direct critiques of the whole framework or even significant segments of it. It has been referenced in several other studies, (for example Boyd et al, 2014; Cox 2007; Hodkinson and Hodkinson, 2005), the majority of which examine novice workers transitioning to more expert workers, which echoes the argument made here that the concept has not really grown from the apprentice roots to the universality it claims. Within these studies there have been several oblique references to weaknesses in the concept itself, but none examined further the points made. For example, a footnote under the features selected as relevant to research on NVQs succinctly captures the problem of universality: 'This analysis also raises the question of which criteria from the long list in the expansive-restrictive learning framework are more or less important in different organisational contexts, facing different contextual pressures, but this is beyond the scope of this paper' (Cox, 2007, p17). This sentiment is echoed in other work. In research on school teacher learning the framework is described as
'illustrative' and the degree of expansiveness that would be practical in different departments of the same school could vary to the extent that '...there may be circumstances where two expansive dimensions are partly contradictory' (Hodkinson and Hodkinson, 2005 p125). This demonstrates that other researchers have found the concept to be a useful tool in their analysis of learning but that it is not sufficiently nuanced to apply to whole organisations without caveats, as it does not take into consideration the different facets of the sections which make up the whole. It is hoped that once this current examination of the expansive restrictive concept has been completed, it may stimulate debate on the features within the concept and foster the creation of 'nuances' which will enhance the value of the expansive-restrictive framework as a diagnostic tool for better understanding of workplace learning environments.

This chapter has provided an overview of the literature concerning the expansive-restrictive concept from its creation arising from the study of apprentices. It highlighted the authors’ claims of universality as well as their comments concerning areas where it might be less useful (Fuller and Unwin, 2003a and 2003b). The latter were not substantiated with any examples or further evidence, indicating that research into this aspect is required. The chapter then outlined the population being studied, that of older workers. Various definitions of ‘old’ were presented and one was selected for this research: people aged 50 years and over. The main reasons for the rise of chronologically old workers in the labour market was then explained. Major influences such as demographics, health and government actions were outlined, demonstrating that research into older workers is a salient topic.

The chapter went on to provide further context in the form of brief summaries of the changes in the organisation of work and development of learning theories, plus the importance of learning for an organisation operating in the knowledge economy. The focus then returned to the key issues being addressed by the research question: older learners and the expansive-restrictive framework. Evidence regarding learning by older workers provided a mixed picture of them receiving less than others (Loretto et al, 2006) or more (Simpson et al, 2002) or being quite selective in choosing what best fits their current needs.
Without details of the specific groups the previous research was based upon, it was difficult to determine which, if any, of the previous findings were good comparators for the current research. However, it demonstrated that knowledge regarding older workers and their learning requires more work to better understand this growing section of the labour market.

The chapter concluded with a look at some points which show that the expansive-restrictive concept needs examining to determine whether it is as universally applicable to all ages as the authors claimed. In particular, the fact the framework has not moved from its apprentice roots to encompass the requirements of older learners. Also, and particularly germane to this research, the emphasis on qualification acquisition which does not align with some of the evidence on older learners presented earlier in this chapter. The information covered in the literature review is now carried forward into the Methods chapter where the work undertaken to address the research question is explained.
METHODS

This chapter will explain the methods used to investigate the applicability to older learners of the third participatory dimension of the expansive-restrictive framework. It will outline the overall approach and include the reasons why certain routes were selected over others. The chapter begins by outlining the philosophical stance which underpins the research. It proceeds to explain how the particular approach led to the way the research was undertaken. The possibility of generalisation is addressed early on including the need for context to invoke theoretical generalisation. To assist with this, and to address the research question, the four themes introduced earlier are explained more fully and used throughout the remainder of the thesis. The chapter continues by outlining how a suitable organisation was identified and also where it sits on the expansive-restrictive continuum according to internal documents. How a survey tool was developed to address the four themes is then discussed. It covers the process from design through piloting to obtaining participants and receiving returns. Particular attention is paid to the creation and use of an online web survey and the ethical and practical considerations this raised. The final section of this chapter introduces the respondent population and explains why it is suitable to address the research question despite being a small proportion of the whole population. Explanations of two particular statistical techniques used to analyse the responses bring the Methods chapter to a close.

Philosophical approach

This research is based on an objectivist ontology (Bryman, 2004). This means that the organisation where respondents work is considered to exist as an entity in itself, an entity separate from the people that work there. As it is a separate ‘thing’, it can have an influence on the people who work there and are its constituent parts. It is seen as having ‘...a reality that is external to the individuals who inhabit it’ (Bryman, 2004, p16). As such, constant workplace learning could be viewed as one of the requirements of working at The Organisation. This is due to job rotation and consequent changes in work undertaken (The Organisation, 2013) This appears to be accepted by the workforce as part of the organisational culture along with the structured hierarchy and rule bound procedures which, it could be argued, are features of
being a public sector organisation. Viewing the organisation as an ‘objective reality’ (Bryman, 2004) and turning attention to the expansive-restrictive framework, it is the effects of the expansive and restrictive features that influence the workforce’s opportunities to learn. Although the features are implemented by the management, their ability to become part of the accepted culture of the way work is conducted, affects the learning activities of the workforce.

The concept of an expansive-restrictive learning environment is not in itself directly observable. For example, it is not feasible to observe a worker silently using a computer and tell whether they are experiencing an expansive or restrictive learning environment. They could be participating in an online study group or working through a self-tuition module. However, other researchers such as Felstead et al, (2005a) have addressed this problem and determined some of the elements which are present when such concepts are in use. By seeking the presence of these indicators it can be deduced whether a concept is active within the population under scrutiny. A similar process is required to determine the position of an organisation on the expansive-restrictive continuum. The position cannot be seen or measured as one entity but the presence of several indicators can be ascertained to determine whether the organisation sits towards the expansive pole as indicated by the organisation’s internal HR documentation (The Organisation, 2011, 2012). This research is therefore seeking to measure pre-determined facts and check how they are aligned with an existing theory (that of expansive/restrictive learning environments), not uncover as yet unknown facts underlying the concept.

It is acknowledged that once the presence of a concept has been determined via the aggregation of indicators, there may be something unknown which may be providing the findings and not the actual indicators used. It may not relate to the concepts being studied but to an undefined entity which manifests contemporaneously. Erroneous conclusions would innocently be promulgated due to not knowing whether the activities observed have stronger associations with the as yet unknown entity. However, as examination of more than one case by Fuller and Unwin (2003c, and et al, 2007) has confirmed the
features associated with expansive or restrictive tendencies, it could be argued that with current knowledge, the presence of the indicators used in this study are an acceptable indicator of the learning environment experienced. Similarly, the concept itself may exert an influence that is as yet unknown on the population or organisation. The purported benefits of developing an expansive environment may be creating a less beneficial environment in another aspect of the workplace. Although conclusions are reached by this research, the potential presence of unknown factors restricts their generalisability.

The research is based on the belief that not everything can be known. However, some elements of what is known can be measured and may indicate the likely presence of concepts not directly measurable. To seek information on the expansive-restrictive concept under these conditions a post-positivist approach has been taken. Evidence is considered to exist if it is observable via the human senses, as per positivism, but in addition, things that cannot be observed do exist and may be affecting those things that can be observed (Clark, 1998). I subscribe to the view that ‘...a particular research approach should be selected because it is most appropriate for answering a particular research question’ (Wildermuth, 1993, p466). In this instance, a combination of approaches serves the research question best. How this fits the needs of the various aspects of the research is outlined next.

Positivist epistemology draws together factual pieces of information to analyse and determine generalised conclusions (Anderson, 2004). It assumes all facts can be measured, unlike qualitative analysis, which seeks to explore society from the perspective of its constituents and understand their thoughts and emotions (Potter, 2000). This research often seeks a choice, such as whether certification of learning is important or not, then combines it with demographic data to see whether there are variations notable in those over 50 years of age. It is not trying to build up an understanding of the rich layers which may lie beneath the individual’s decision to work towards a qualification. If this were the intent, phenomenological methods to understand the reason for actions and a far deeper understanding of forces at play would be appropriate. From a critical realist perspective, for example, this would include exploration of all
three layers of society (Sayer, 2000). It would seek to understand the ‘actual’ where the respondent decides how to react and may also gain an insight into the ‘deep’ where power and potential reside. The research in this thesis is examining only the ‘empirical’ layer where reaction to events can be observed. Thus the use of a survey tool was deemed to be the most appropriate method to gather the larger amounts of measurable data required to answer the research question, whilst being unobtrusive so as not to influence the activity being examined (Bryman, 2004). The reasons for selecting this approach are explained below.

The data for the research was acquired via a quantitative survey. This approach was considered suitable because it fits well with the deductive type of research question being addressed which ‘…deals with questions of what things are like not why they are that way’ (de Vaus, 2002b p8). Factors relating to the areas of research could be identified from previous work (eg Felstead et al, 2005a, 2005b and 2007a) and therefore listed to elicit agreement or level of importance from respondents. In addition, a large sample of several hundred individuals was potentially available to provide sufficient returns to draw generalisations (Bryman, 2004). However, as mentioned in later paragraphs, generalisation from this research is not likely to be widespread. A strict positivist would expect that, as in the natural sciences, having understood the cause and effect in one instance, it could be applied to all similar cases. This would be too prescriptive an approach for such a multi-faceted topic as age and learning. As explained in the literature review, an employee’s individual circumstances can influence their decisions regarding workplace learning and therefore each respondent could view the situation from a different perspective. Consequently a post-positive stance was considered more appropriate as it acknowledged different respondent reactions to, for example, their personal perception and response to ageing, learner territory and training requirements (Buchanan and Bryman, 2007). A qualitative approach was employed prior to the survey to prepare the survey tool for use by the population. It was designed to ascertain the various words used by the population for items the survey would address. This entailed trialling the prototype survey tool with potential respondents and seeking their thoughts and comments. This is dealt with in
more depth later in this chapter, including changes made as a result. Employing a qualitative approach at this stage was to improve the survey tool. This in turn enabled the positivist survey to target more accurately the information it was seeking to address, taking heed of Wildermuth’s assertion that: ‘...[t]he ability to learn the language of the population being studied and to see their milieu through their eyes can greatly increase the validity of positivist follow-up studies’ (Wildermuth, 1993, p458).

The picture that could be derived from qualitative research is potentially a far more complex one than that obtained by the largely quantitative approach selected for this research. Using a qualitative approach of, for example, in-depth interviews would provide information on individual perspectives as qualitative methods ‘...are sensitive to unique personal experiences, perceptions, beliefs, and meanings related to individuals’ (Sim, 1998 p345). It would also enable greater understanding of the facets of age such as retirement intentions, physical and mental health and personal circumstances discussed in the literature review that may be influencing individual decisions to engage in workplace learning. Gathering information in this way would also provide an opportunity for reasons as yet unknown to the researcher to be expressed. All these points, coupled with the span of ages that the research question needs to cover to understand whether the expansive-restrictive concept is equally applicable to all ages, would require too large a quantity of interviews for the constraints of this thesis. Moreover, much of the additional information gathered would not be apposite to the research question being examined. It would pertain to a related strand examining the various ways that ‘age’ can affect learning decisions. Understanding this aspect is indeed important and could be the focus of future studies but it is not the focus of the present one which is exploring over 50s and workplace learning opportunities rather than seeking to explain why the current state is as it is. As explained above, a qualitative approach was unsuitable for the main empirical part of this research but was employed at the start. There was also scope to use it again at the end. Survey respondents were asked if they would be willing to take part in any follow-up research regarding the survey findings. If necessary such qualitative data would be used to clarify the meaning of results. This concurs with the assertion that ‘...a mixed-methods
approach potentially provides opportunities for greater insight than can be achieved by one approach alone’ (Buchanan et al, 2007, p487). In this case, richer information was required to establish a survey tool that would elicit suitable data to address the research question and then, as a potential follow up, to help interpret results of the positivist element. The use of qualitative data is explained when the development and use of the survey tool is addressed. Although using both quantitative and qualitative methods has been shown to reduce bias introduced by any one method and reinforce the validity of findings (Bryman, 2004), in this work the two approaches are not being used to study the same material. Therefore they do not provide triangulation and additional verification of results. They are being used as complementary approaches to address individual elements of research which are better tackled using a different epistemological approach which is suited to their characteristics.

Generalisation

In order for the findings to be useful beyond the group of individuals whence they were obtained requires consideration of generalisation. To improve the potential for generalisation, theoretical issues and current factors affecting the wider population need to be considered during the development of the research (Payne et al, 2005). For empirical generalisation, only if the sample is representative of the population of IT Engineers will it be useful to those seeking to better understand workplace learning of their IT professionals of various ages. To invoke empirical generalisation requires a carefully selected sample as its validity ‘...hinges upon the statistical representativeness of the sample with respect to the target population’ (Sim, 1998 p350). A wide pool of jobs was present in the population and the Skills Framework for the Information Age (SFIA)³ nomenclature was used. However, as the return rate was low at 11%, it did not cover all job types and respondents were not sufficiently aware of SFIA to explore those jobs which did attract several responses. Thus, empirical generalisation was not possible.

³ SFIA is a framework used in the IT industry around the world and also the UK government to describe the work and level of responsibility of IT workers. It also details the skills required for each role/level. Using this would provide information in a way that would be understood by others researching the IT industry.
For theoretical generalisation there need to be similarities in the context and data needs to ‘...provide theoretical insights which possess a sufficient degree of generality or universality to allow their projection to other contexts or situations which are comparable to that of the original study’ (Sim, 1998 p350). In this research, identifying the position of the workplace on the expansive-restrictive continuum - both intended and that actually experienced - provides a means of matching context so that subsequent researchers can determine how well a new group maps to this research to decide whether it is an appropriate candidate for comparison. Returns did permit this sort of generalisation and the information regarding intended expansive and restrictive features is provided later in this chapter and those experienced is in the Analysis chapter. Thus the post-positivist epistemology, using both qualitative and quantitative approaches, gives the research the potential to produce data that could, with sufficient returns, be used for both empirical and theoretical generalisation.

The four themes

The research question was broken down into four themes. The first three explore various aspects of learning and the expansiveness of the learning environment experienced. If the requirement and conditions for workplace learning were not present there would be a reduced likelihood of being able to examine whether there was any difference in the learning undertaken by a specific subset of workers, in this case, older workers. The fourth theme builds on the findings from the first three and addresses the research question of whether the expansive-restrictive framework is applicable to older workers. Questions in the survey tool were designed to address the four themes. How questions mapped to the themes can be found in Appendix E ‘Chart of Questions’. The themes are introduced below.

Theme 1: Do older workers place similar importance, compared to their younger colleagues, on having variety and stimulation in their work, and continually having to learn new things?

This is to establish whether respondents of all ages need to learn to do their
jobs and whether there is variation by age in finding variety and challenge enjoyable and being keen to learn. If there is no requirement to learn then it will be unclear whether any detected lack of engagement in learning is due to the lack of a requirement to do so or a difference due to age, or indeed another factor. A reduced level of importance placed on learning by 50+ would impact on interpretation of results for more specific learning approaches in subsequent themes.

Theme 2: Do older workers place similar importance, compared to their younger colleagues, on the three participatory dimensions?
The Organisation was selected for this research because internal documents (The Organisation, 2011 and 2012) suggested that largely expansive features were present. Documentary evidence of where it sits on the expansive-restrictive spectrum is covered later on in this chapter. The Analysis chapter explores whether the espoused policy is in fact experienced by the workforce. Variations in responses by age are analysed for indications of whether aspects of the expansive-restrictive concept are experienced and valued by both older and younger workers. The absence of certain features is also examined.

Theme 3: Do older workers place similar importance, compared to their younger colleagues, on acquisitive and participative learning approaches?
The expansive-restrictive framework encourages both participative learning such as team work and pooling ideas as well as acquisitive learning such as formal courses. If, for example, older workers placed low importance on acquisitive learning and high importance on participative learning this could partially explain the lower incidence of accredited training undertaken by older workers (Felstead, 2011). Scales are created to examine this theme as well as focusing on responses to individual questions.

Theme 4: Do older workers place similar importance, compared to their younger colleagues, on acquisition of qualifications relating to their work?
The final theme takes the above three into account to address the overall research question exploring attitudes toward, and opportunities to obtain, qualifications.
A scale is again created and analysed alongside individual questions to obtain a rounded view of the 50+ perspective. The section below explains how and why the particular organisation was chosen to investigate the themes outlined above.

**Selection of a suitable organisation**

An organisation was sought that met the criteria that the creators of the expansive-restrictive concept stated were compatible with its use (Fuller and Unwin, 2003a and 2003b). By selecting such an organisation it could be argued that the outcome of applying expansive features would match that put forward by the concept. However, this study is examining an aspect that research into older workers' learning activities suggests may not produce the assumed results. Using an organisation that strongly matches the requisite conditions for the concept reduces the likelihood that poor selection may be the cause of any deviant results. It has been suggested that '...picking a case study that conforms to the theory in every relevant dimension [...] then demonstrat[ing] that even under 'most likely' circumstances for the causality or argument to hold it does not, the theory must have deeply problematic sides' (Hancke, 2010 p 68). The 'deeply problematic sides' being investigated are the requirements for more nuanced versions for workers over 50 in at least some parts of the economy. It is possible that other groups of worker, may also require further study to address the creation of additional nuanced forms of the concept. However, this study is only considering part of the whole concept: formal learning and acquisition of qualifications and how appropriate such learning opportunities are for older UK workers in the high end knowledge sector.

The organisation chosen is one that I was acquainted with via my own HR-related work with various public sector organisations. Access to internal HR documents on learning opportunities was provided by a colleague so that I could determine whether the organisation might exhibit suitable characteristics for subsequent research. Access was allowed to these documents on the condition that the organisation remained anonymous, thus it is referred to as ‘The Organisation’. The evidence that it did meet the needs of this research is now presented. The first part will explain how The Organisation fits statements made by the authors of the expansive-restrictive concept. Then an
examination of where it sits on the expansive-restrictive continuum will be provided. This will demonstrate that according to internal documents (The Organisation, 2011 and 2012) the organisation and the IT department meet all the stated criteria. They sit towards the expansive end of the spectrum indicating an environment which should provide plentiful learning opportunities for all ages. Therefore it provides a suitable testing ground for research into whether the expansive-restrictive concept needs to be revised to fit more accurately with the learning focus of older workers.

The age span of the whole organisation stretches from 19 to 70. Tenure extends from recent recruits to over 40 years. The specific demographic profile of the potential respondent population (the IT Engineers) is 19 to 69 years and tenure of 0 to over 40 years. It thus incorporates subjects in the 50+ age bracket and people who are already established in their profession. Both of these characteristics are suitable for application of the expansive-restrictive concept (Fuller and Unwin 2003b). The presence of workers nearer the start of their working lives in the same organisation provides an opportunity to consider whether their learning activities, in the same environment, differ compared to those of their older, more established colleagues. The Organisation has several thousand employees and is in the public sector. This is deemed suitable by the authors who stated that: 'The model can be applied regardless of the size or nature of the organisation and by those in both the public and private sector and the voluntary sector' (Fuller and Unwin 2003a p17-18). The IT area also met statements made by the authors regarding suitability. For example, Fuller and Unwin asserted that:

'Companies with an expansive learning organisational culture are likely to be found in sectors such as engineering which have a strong community of practice, supported by a long tradition of apprenticeship training and readily identifiable training infrastructure in which knowledge and skills are recognised as being widely distributed throughout the company and in which formal qualifications are valued...' (Fuller and Unwin 2003b p51).

Consequently the engineering department of The Organisation was approached
via an introduction from the HR department. Having explained the nature of my research to the Head of IT Engineering, I offered to share broad results about respondent labour market intentions over the next two years, as an incentive to allow me access. Resignation and the subsequent need to replace staff and invest in bringing new employees up to date on current projects is a large cost to employers (Martin, 2003). Consequently being aware of potential disengagement could enable work to be undertaken not only to investigate why there was significant intention to leave but to either attempt to retain the employees or prepare for their successors. Throughout these discussions it was stressed that individuals would remain anonymous in any research output. As explained later on in this chapter, total anonymity from the researcher could not be offered as an online survey was being used, but confidentiality could be promised. In addition to future plans, I offered to provide the Head of IT Engineering with the results of the analysis revealing whether there were any age variations in the desire to undertake challenging and stimulating work and continue learning. This would provide some evidence regarding the attitude of older workers and address the oft quoted stereotype of older workers not wanting to learn new things (Ng et al 2012). Providing information regarding his ageing employees was welcome. I obtained his authority for the tool to be run on The Organisation’s system and also for staff to use ‘work’ time to complete the survey and participate in any related activities. A positive relationship was therefore established which confirmed the selection of the IT Engineering section as suitable and accessible for the empirical work for this thesis. The relationship was maintained via phone calls and emails which were exchanged every two weeks or so plus a small number of physical meetings to discuss the content of the proposed survey and development of an online survey tool by one of his staff. The latter is explained later in this chapter. When I began the analysis, I sent a message outlining the future intentions of respondents (most intended to stay put) and later provided a verbal precis of other salient findings.

By selecting a department of a relatively large public sector organisation, engaged in the high tech knowledge economy, employing older workers as well as younger colleagues, it is argued that the features of the expansive-restrictive
concept should be present across the respondent group. Thus, once the presence of features which facilitate workplace learning have been ascertained, analysis of age differences in the take up of the learning opportunities presented should be possible. This will in turn provide material for a discussion on the validity of the expansive-restrictive concept for all ages of workplace learner. A closer examination of The Organisation and where it sits on the expansive-restrictive continuum will be provided next.

The Organisation appears to sit towards the expansive end of the spectrum according to internal documents (The Organisation, 2011 and 2012). The evidence for this is given below by taking some of the main features of an expansive and a restrictive learning environment and providing evidence of the features which are present in The Organisation. To aid comprehension whilst reading the text, a table of features (which is also presented in Appendix B) has been reproduced here. The features within it have been given numbers to identify them. The letter 'E' or 'R' after the number indicates that the statement refers to an Expansive or Restrictive feature respectively. Where a statement below demonstrates one of the features it will be referred to by the number/letter combination in the table. For example, if there is evidence that technical skills are valued ‘(2E)’ will appear after the relevant statement that suggests this is the case. The sources of information are The Organisation 2011 and 2012 plus discussions with HR and the Head of IT Engineering.

To determine the overall position of The Organisation on the expansive-restrictive continuum, the features which sat towards either pole were tallied to determine which pole was the more popular. To facilitate this an asterisk (*) is placed alongside the feature in Figure 2 when evidence suggests it is present. Some features attracted an asterisk in both expansive and restrictive columns which shows it cannot be clearly determined whether the feature is at the expansive or restrictive pole. This is a rather crude method as there is no weighting of features. However, instructions for using the framework (Hodkinson and Rainbird, 2006) do not provide any indications of whether any single feature – or combination of features – should be allotted additional significance. The evidence behind the asterisks is given below.
<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E Widely distributed skills</td>
<td>* 1R Polarised distribution of skills</td>
</tr>
<tr>
<td>2E Technical skills valued</td>
<td>* 2R Technical skills taken for granted</td>
</tr>
<tr>
<td>3E Knowledge and skills of whole workforce developed and valued</td>
<td>* 3R Knowledge and skills of key workers/groups developed and valued</td>
</tr>
<tr>
<td>4E Team work valued</td>
<td>* 4R Rigid specialist roles</td>
</tr>
<tr>
<td>5E Cross-disciplinary groups / communication encouraged</td>
<td>* 5R Bounded communication and work</td>
</tr>
<tr>
<td>6E Manager / supervisor as enabler</td>
<td>* 6R Manager as controller</td>
</tr>
<tr>
<td>7E Pursuit of formal qualifications valued / supported</td>
<td>* 7R Pursuit of formal qualifications not valued or supported / or seen as tangential to business need – may be supported for personal motivation</td>
</tr>
<tr>
<td>8E Chances to learn new jobs/skills</td>
<td>* 8R Lack of workplace mobility</td>
</tr>
<tr>
<td>9E Expanded job design</td>
<td>9R Restricted job design</td>
</tr>
<tr>
<td>10E Bottom-up approach to innovation</td>
<td>10R Top down approach to innovation</td>
</tr>
<tr>
<td>11E Formative approach to evaluation</td>
<td>11R Summative approach to evaluation</td>
</tr>
<tr>
<td>12E Individual progression encouraged - strong internal labour market</td>
<td>* 12R Weak internal labour market - recruitment usually from outside to meet skill needs</td>
</tr>
</tbody>
</table>

Figure 2 Features at The Organisation (See accompanying text for explanation of the asterisks) Adapted from Fuller, A. & Unwin, L. (2003b): "Fostering Workplace Learning: looking through the lens of apprenticeship", European Educational Research Journal 2:1, p52 'Figure 2. Organisational Learning Culture'.

The Organisation has held Investors in People accreditation for several years which reflects the general ethos of developing and valuing employees (3E) and each employee is encouraged to develop a training plan with their manager (6E). Training on aspects of the organisation is available to all employees to enable them to understand what they are contributing towards and how their particular role fits in (1E). Places on courses are open to all employees with priority given to those with a direct work requirement. In practice this results in few places for 'others' but should there be a space and the person can be released from their current duties they will be allowed to attend (8E). Costs of such training are met by the employer. As attendance must be approved by the potential student’s manager this puts them in the position of enabler (6E). However, the releasability issue could be regarded as being a controller and
indicate more restrictive behaviour (6R). Thus the position of the manager could be viewed as expansive or restrictive depending on whether it is being viewed from the perspective of the business or the individual. By attending additional events, employees are able to broaden their work horizons and learn new skills which may be useful in future roles (8E). The future role may be with the same organisation as an internal labour market exists. Posts are usually filled by existing employees who have gained the experience and additional skills necessary for a different or more senior position. External recruits are used to bring in fresh perspectives and fill gaps in expertise not covered by existing staff (12E).

The internal market is stimulated by job rotation. This constant change has proved to be a popular feature, providing variety and stimulation which employees value. The Organisation also gains from this mechanism as it creates multi-skilled employees who understand several areas of the workplace and can more readily participate in cross-organisation problem solving teams when required (4E, 5E). The internal churn, whether on promotion or not, creates an atmosphere where learning new roles and skills is a constant feature (3E, 8E). As alluded to above, teamwork is a key part of The Organisation and contact between and within different areas is encouraged (4E). For example, all employees can search a central directory by job function, (in additional to name), and contact another employee regarding a work issue. Soft seating areas for face to face discussions are available to facilitate such organisation-wide interaction (5E). All employees require computer literacy. This level of technical skill is not valued specifically and it would appear it is taken for granted (2R). Being a high tech organisation it could be argued that the baseline requirement of a competent IT user is expected and thus taken for granted. Those with truly technical skills are indeed valued, for example, via bonuses to encourage them to remain with their employer (2E). Thus valuing technical skills appears to exist at both ends of the spectrum depending on the definition of 'technical skill' used by an observer. The engineering function required employees to maintain currency and acquire knowledge of new technological advances/new software via a combination of formal external courses, self-reflection, practice, team interaction and actually doing the work.
Although employees are expected to successfully complete tuition on, for example, new software, there is no compulsion to go on to complete a degree or become a certified expert. This is largely a decision for the individual. Depending on the circumstances, the employer may contribute towards the cost and allow time off work to pursue the additional learning. The engineering area sponsors and encourages people to work towards chartered engineer status. Again, this is not compulsory and those who choose not to follow this path are not penalised. The primary emphasis is on accomplishing work tasks and not on becoming chartered. This group of respondents therefore has the opportunity to work towards recognised qualifications (7E). The availability of tuition on new developments without the need to become a certified expert, plus the opportunity to work towards achieving chartered status are both key factors in selecting this organisation. The potential respondents have various opportunities to acquire portable, industry recognised qualifications. Thus any significant difference in uptake by those aged over 50 may suggest that offering expansive opportunities to all employees does not necessarily result in all employees taking them up and adds weight to the need to open a debate for more nuanced criteria for the expansive-restrictive concept.

The simplistic assessment of internal documents (The Organisation, 2011 and 2012) above revealed 9 ‘expansive’ expressions and 2 ‘restrictive’ expressions of the 12 features in Figure 2. Therefore from this assessment it can be argued that The Organisation sits primarily towards the expansive end of the spectrum. It offers, indeed requires, its employees to undertake frequent learning whether they be novice or experienced, under 50 years old or over 50. All ages are expected to meet the same standards, commensurate with their grade and are appraised annually in the same way. The appraisal criteria include some of the features of the expansive-restrictive framework such as teamwork, innovation and cross-disciplinary communication (The Organisation, 2011). The Organisation would therefore appear to be encouraging the workforce to exhibit expansive characteristics. It could be argued that whereas the expansive-restrictive concept brought together ‘... the factors (pedagogic, organizational and cultural) that contribute to approaches to workforce development and the creation of learning environments into a single conceptual
framework' (Fuller and Unwin 2004a p129) the explanations above demonstrate that it is possible to identify an organisation which brings '... the factors (pedagogic, organizational and cultural) that contribute to approaches to workforce development and the creation of learning environments into a single...' workplace. Having identified a suitable organisation, gained access plus established a good working relationship with the head of the selected section, focus will now turn to how information was obtained to address the research question.

Development of the survey

The selection of a post-positivist approach, explained earlier, was predicated on the availability of a pool of potential respondents that was several hundred strong. Having secured access to such a group, a survey mechanism was designed. This section explains how the survey was developed, piloted and amended to become the tool actually delivered (see Appendix F ‘Survey Tool’). The respondent population and how many participated is considered after discussion of the survey itself.

The questions in the survey tool were designed to obtain information which would shed light on a specific perceived anomaly in the expansive-restrictive concept. Appendix E ‘Chart of Questions’ shows which particular questions were designed to elicit information pertinent to each of the four themes. Presenting the connection between the research questions and the survey questions provides evidence that all relevant areas have been covered and often by more than one question.

The attributes selected for measurement in the survey tool needed to be strong indicators of the desired variable to minimise bias in the data (Bryman and Cramer, 1990). To achieve this, selected questions from three existing surveys (Felstead et al, 2005a; Felstead et al, 2007a and Atkinson, 2007) were used for the elements which had already been surveyed in other research. Questions based on other research are annotated in Appendix F ‘Survey Tool’ so that the source of questions, as well as the intended area of information gathered,
can be seen. The survey tool given to respondents did not include these annotations. In addition, some new questions were devised to meet the study’s specific requirements. Where a suitable variable could not easily be ascertained a proxy was employed. For example, in case older respondents had not certificated their level of knowledge/expertise, ‘years in IT’ was requested in order to give an indication of a respondent’s ‘level of expertise’. As mentioned previously, many older workers have not had the opportunity to gain high level qualifications, but may have similar work related expertise gained via ad hoc courses and experience on the job. The request for hierarchical level provides an additional source of data. The next section explains how the survey tool was developed from these various sources.

The three prior pieces of work used were: The Learning at Work Survey 2004 (LAWS Survey) (Felstead et al 2005a) which was designed to: ‘…reveal previously under-researched (and under-surveyed) sources of learning associated with everyday work activities; identify their relative importance in helping individuals improve their job performance; map their distribution among employees’ (ibid 2005a, p2). The second work was also a survey: the Communities of Practice Survey 2007 (CoP Survey) (Felstead et al, 2007a). One of the original purposes of this work was to, inter alia ‘…trace the extent to which CoP [Communities of Practice] are experienced by novices, experienced newcomers and old-timers, men and women, and young and old’ (ibid, p2). It also considers how features of a Community of Practice (CoP) are associated with other learning activities. The third work was an unpublished study on workers with over 20 years’ tenure which explored attitudes to job movement and learning, as well as an indication of job satisfaction attached to learning activities (Atkinson, 2007). Elements from these three provided data on acquisitive and participative learning activity and the presence of joint working with colleagues in a CoP type environment. Where new questions were developed, care was taken to ensure they were ‘…clear, unambiguous and useful…’ (de Vaus, 2002b, p97) by adhering to several key points which included using language appropriate to the audience, not implying a desired response and also making the question one which the population could reasonably answer (ibid). The fact that the features being examined are covered by more than one
question will help to reduce the impact of a poorly worded or misunderstood question (ibid). It cannot, however, be assumed that a question returning contrary responses is poorly worded or being misunderstood as it could indicate the presence of a factor that had not been considered in the planning stage. This highlights a weakness in using the fixed nature of surveys as they cannot be amended once launched unlike the qualitative interviewer who could modify a poor question in subsequent interviews. To overcome this point, qualitative research in the form of follow-up interviews, or a focus group, is part of the research plan, should it be necessary.

All three of the pre-existing surveys were developed for use in the UK, in English and to seek information about workplace learning activities. Therefore it was considered acceptable to re-employ them against a new population of English speaking, UK workers, for research focusing on workplace learning. It also provided the opportunity to compare findings from this research with similar research conducted earlier. It could add weight to findings if they were similar to those obtained after examining a different setting and at a different time. Comparison to other research is considered, where appropriate, in the Analysis chapter. The existing survey tools were not used in full because the focus of the current research although similar is not identical to the work they were designed for. Some questions were used in part or were amended (see examples below). One significant amendment was to the choice of answers. As this research is seeking a simple choice of response and not measuring a fine grain gradation of intensity, several questions were stripped of the ‘somewhat agree/somewhat disagree’ response categories. This decision proved to be unwise as explained towards the end of this chapter when outlining analytical approaches.

After adapting questions from existing survey tools and including additional questions to cover the major factors of the expansive-restrictive concept, further questions were inserted to obtain demographic information and future intentions regarding, for example, continued participation in the labour market. The latter information is required because it could be argued that a respondent’s intended relationship with the labour market could influence their attitude towards expending efforts whilst still in it. It is acknowledged that
respondents may be reluctant to divulge this information. The introduction to the survey made it clear that the overall findings would be made available to the Head of IT Engineering. This may have made some respondents reluctant to admit to their retirement intentions in case it triggered negative perceptions about work enthusiasm and loyalty. Answering in a socially desirable way to appear loyal to the employer could apply to younger workers too, as they may not want to reveal their intentions to resign. Thus, although this question might provide an indication of future intentions its output has to be considered in light of the caveats above.

The demographic information was placed first although it has been recommended not to do this (de Vaus, 2002b, p110 and Bryman, 2004, p161). The reason for contradicting this advice is that as age is a key question for this research I did not want that piece of information gathered near the end when a respondent might be feeling jaded and perhaps not answer at all. I enquired whether any pilot respondents found this off-putting and none of them felt the position mattered and just saw it as another question. One reason for this could be that the annual Civil Service employee survey, which the population were familiar with, also asked for demographic information first (Civil Service, 2013).

Testing the survey

It has been declared that it is important ‘...to be as informed as possible about the study population...’ (de Vaus 1996 p53) so that the survey instrument is relevant to them and will therefore gather the intended information. To meet this requirement, variables appropriate for the target population were selected so that they could be expected to have an answer. To test that this was the case and to ensure the questions conveyed the intended meaning, the survey instrument was shown individually to three IT engineers selected by the Head of IT Engineering. Two were over 50 and one was in their 20s. Although the focus of the research is on over 50s, it was important that the survey was equally accessible for younger workers so that age comparisons of responses could be made. The pre-test of the instrument was ‘declared’ (de Vaus 2002b, p116) as the pilot respondents were told what the research was seeking and then asked to complete the survey in my presence. They were asked to mention anything
that was not clear, could be better expressed or if an answer they wished to give was not available. When an issue was raised, it was discussed and potential solutions also discussed. The same version of the survey was used with each pilot respondent to check whether similar problems were identified. After completing the survey, pilot respondents were asked if there were any additional issues or areas that might be relevant. Interviewing of this nature has been found to be a useful way to identify, and rectify, problems with a survey instrument (Drennan, 2003). However, this method has also been criticised as respondents may consider the questions more thoroughly than usual (ibid). With this point in mind, the answers given during this phase were withheld from analysis but the three individuals were free to complete the ‘live’ survey. The above process helped to eradicate several issues, some of which are described below.

One block of questions was removed, which focused on the offer and uptake of learning relating to a subsequent role or job. This is a feature of the third participatory dimension (refer to the third block of features in Appendix C ‘The Three Participatory Dimensions’). It is also an important factor in this research as older workers are more likely to learn for current needs rather than future ones (Fenwick, 2012a). However, pilot respondents found the question difficult to answer. They understood the meaning but found it hard to recall whether they had been offered development opportunities which were not directly relevant to their current role. It is recommended that questions are not posed which rely on respondents recalling events as their recall may not be accurate and therefore provide unreliable data (Bryman, 2004). As one of the older pilot respondents commented: ‘As I am not really interested in ‘another role’, I don’t take much notice of what else is available’ (Pilot Respondent 2). Bearing the above in mind, it was decided to remove the series of questions from the survey rather than redraft them.

A number of improvements were made to questions which remained in the survey. For example, ‘My colleagues and I willingly share ideas about how to get the work done’ (CoP Survey Q13) confused respondents as they felt ‘share ideas’ could be random nuggets of personal discovery and did not necessarily incorporate a sense of focused cooperation. To suggest collaborative problem
solving the word ‘share’ was replaced with ‘pool’. Thus this question became ‘My colleagues and I willingly pool ideas about how to get the work done’ (Q13 item L). Alterations also had to be made to the section collecting information about the respondent. The question on role had been designed to take the Skills Framework for the Information Age (SFIA) code which would have provided the role and level in an IT industry standard manner. However, SFIA was used by senior management, rather than staff, resulting in pilot respondents not being aware of what it was for their position. Thus, it was decided to make this a free flow field. The Head of IT Engineering agreed to assist in grouping the role descriptions should this be necessary. Owing to the low response rate, it was not. The above work made the tool more appropriate for the intended audience. However, developing a respondent-friendly well worded research tool appears to be no guarantee of reliable responses. It has been demonstrated that when the same questions were presented in the same way on separate occasions, respondents provided different answers to apparently factual questions such as the state where they were born (de Vaus, 1996). It could be argued that having devised a good research instrument and carefully selected respondents, delivery time and also method, ‘false’ data is always a possibility when working with such a variable subject as a human being. Having explained the development of questions the delivery method is now addressed.

Web based survey

A web based survey was chosen for a variety of reasons. It can combine closed questions with restricted choices and also have open questions permitting free flow text (Bryman, 2004). It therefore has the desired features of a paper survey with the added ability to be completed and submitted online. Evidence from the initial respondents who read the pilot survey overwhelmingly pointed to an online survey being preferable. A telephone survey was considered the least likely to be successful. Reasons given for this included ‘…we [IT professionals] are working on the terminal all day so it does not require too much effort [to complete a survey]…’ and ‘…we hate paper. If it is on paper very few people will bother with it.’ (both from Pilot Respondent 1). Selection of the delivery method had to meet the academic and methodological requirements of the research as well as the preferences of the
potential participants. Participant preferences are a major consideration as the method of survey delivery can affect the response rate as well as the actual response provided (Hardre et al, 2007). Choosing the best method for the population was important despite the varying research results on the response rate of web based surveys compared to other methods. Paper-based surveys seem to be favoured over computer or web based ones (Hardré et al, 2007) and telephone surveys were found to be more effective compared to mail and other methods (Dillman et al, 2009). Thus choosing a web based option would appear to be selecting the method least likely to provide returns. Two factors led to this evidence being contested. Firstly, the overwhelming support for such a method by the pilot respondents and secondly, research that ‘electronic’ distribution can provide a higher response rate compared to physical questionnaires (Saunders, 2012). As the annual Civil Service staff survey is conducted online (Civil Service, 2013) respondents were familiar with the concept and did not require training. Respondents learned about the survey from an IT senior’s blog then followed a weblink to it. An additional advantage was that the form could be designed and written in such a way that answers went straight into a spreadsheet for analysis. This would avoid the time consuming, labour intensive task of manual data input and also eradicate potential for errors. Due to the variety of web browsers in use in The Organisation, some responses had to be manually inserted and part of a question did not display correctly for all respondents. The impact this had on results is considered in the Analysis chapter.

Having decided that online was the ideal delivery method, a web survey tool needed creating. Fortuitously, one of the pilot respondents volunteered to create the tool when discussing the prototype survey. An in-house developer brought with it a number of advantages and disadvantages. A major factor in favour of taking up this offer being the ability to acquire a survey suitable for the in-house IT system. For unspecified ‘commercial reasons’ The Organisation did not want their employees answering via a system such as survey monkey and therefore this was the only route available. The developer’s involvement was cleared with his management and I provided feedback for his annual appraisal. No reward was offered apart from being able to use the tool afterwards for his
own research into survey formats. In recognition of his assistance I gave him a £25 Amazon voucher as a personal thank you. It is unlikely this affected the support given, or could be considered a bribe or incentive as it was not mentioned earlier on and was given once the survey was ‘live’. Accepting the assistance of the developer would provide a tool that should gather data from the population quite swiftly without compromising on the return rate. However, this was countered by the risk that the developer could withdraw his services at any time and thus delay the data gathering part of the research. A back up plan of a physical paper survey was developed should this happen.

Two further considerations were how representative the sample might be and the issue of lack of anonymity in a digital transaction. These are explained below. The method outlined above required respondents to be self-selected, ensuring their informed consent to their details being used for the study (Bryman, 2004). It also avoided potential for bias had I selected the individuals, or any perceived pressure to participate due to my position as someone working in an HR capacity (ibid). Self-selection can have negative influences such as providing a skewed sample if only a certain group saw the notice. However, it would remain unknown whether lack of response was due to lack of awareness or lack of interest. Personalised physical letters or emails could have a similar lack of response although it would be known which areas they had been sent to and thus potentially had the opportunity to respond. In an attempt to mitigate this, the survey was ‘advertised’ on two separate occasions in the hope that interested parties would see at least one of them. How well this worked is covered towards the end of this chapter.

Conducting a survey online does not provide the total anonymity of a postal questionnaire as the electronic submission contains the sender’s details, in this case in the form of their employment number. The identifying information could not be stripped off automatically on arrival as it was being used to stop anyone submitting more than one response, thus avoiding potential ‘contamination’ of the resultant data. This unique identifier was omitted from the data set compiled for analysis as an extra confidentiality precaution should the dataset be mislaid. Safeguarding digital data in general is addressed further
on. Thus, although the response could not be anonymous, confidentiality could be promised and checks to ensure individuals could not be identified in any of the results were conducted after analysis had been completed. The respondents were all highly proficient in IT matters and would be aware that their return would contain an identifier. Thus, as they were self-selecting it was assumed they had considered and felt comfortable with this situation. However, it is possible that this point may have affected the response rate and been one of the reasons it was so low at 11%.

The involvement of the survey developer who worked in The Organisation represented a significant confidentiality factor as he could see responses and might know potential respondents. To mitigate the risk he was asked, and agreed, to sign the confidentiality agreement that those working in HR within The Organisation were asked to abide by. Utilising an existing document which carries weight within The Organisation and is therefore respected by the employees, reduced the potential harm that could arise and provided additional protection required to fulfill the guarantee of confidentiality. Respondents were informed that the tool had been constructed in-house but they were not informed who it was. It is assumed that respondents knew someone else could potentially access their responses and this too may have contributed to the low response. Completion took between 10 to 15 minutes. As the responses could not be saved and returned to at a later date, the survey was presented so that all questions were visible. This provided respondents with an overview of the task ahead so they could make a decision whether to complete it. Although respondents could miss a question if they were not happy answering it, apart from one incident mentioned a little later on, all questions were answered by the majority of respondents.

Participation was totally voluntary and this was emphasised in the communication to the Head of IT Engineering. Participants were also assured confidentiality from management knowing who had or had not responded. In addition, individuals would not be identifiable in any subsequent reports whether for academic purposes or for sharing with The Organisation. Unfortunately, the first ‘wave’ was not ‘recruited’ in the expected manner due to the Head of IT
Engineering forgetting to incorporate it into his regular communications. To rectify this he sent an email to the heads of each section asking them to include notice of the survey in their regular team communications. It is unknown how many section heads actually did this, thus it is not known how the survey was initially introduced. However, wording on the actual survey tool gave reassurance that information would remain confidential and their bosses would not be aware of who had completed it or what responses they gave. Further consideration of this and other ethical issues are presented a little further on in this chapter. A ‘closing date’ should have been included in the correspondence. However, owing to the different way in which it was communicated, it was omitted. After two weeks, responses ceased to appear. Consequently the second wave, introduced via the IT Head’s blog as intended was intentionally promoted without a ‘closing date’ as one seemed unnecessary. It attracted a further two responses. The participants and the response rate are considered next.

Participants

Participants had to be direct employees of The Organisation. This was to restrict respondents to only those immersed in the culture as described in the internal documents examined (The Organisation, 2011, 2012). Contractors, for example, would be subject to the conditions and culture of their own employer as well as those of The Organisation and thus their answers may be influenced by activities taking place elsewhere. IT Help Desk workers were also excluded from responding. They would be identified from the information provided in the free flow ‘role’ field. The reason for excluding them is that for this research, they are not considered to be at the high end of the IT spectrum. As discussed in the literature review on knowledge work, those at the higher end are required to create knowledge. However, many of those working in the Help Desk function are primarily acting as conduits for information already known.

Participants were not required to have any particular level of academic or professional qualifications. This was because as mentioned previously, many older workers may not have acquired such qualifications. Additionally, computer science degrees were not as prevalent when many 50+ year olds would have been at university. Thus they may not have had the opportunity to acquire a
degree but learned on the job and via a selection of smaller courses. The level of qualifications was requested in the survey so that any correlation between prior qualification attainment and current learning attitude could be examined.

The respondent pool was approximately 600. It had over 70% under 50 and a gender split of 82% men to 18% women. The large proportion of men is typical of a technology area (e-skills UK, 2011). The actual response rate was around 11% which was rather lower than the pilot respondents and Head of IT had implied it might be. However, the way its existence was broadcast and the potential for identification due to using an online survey, plus the involvement of a colleague writing the tool, may have influenced the take up. Also, it is unknown whether all of the potential population saw the messages promoting the survey. The composition of the sample and why it is still suitable for this research is covered towards the end of this chapter.

**Ethical considerations**

Throughout all stages of the research from initial piloting of the survey tool, receipt of returns, analysis and storage of resultant findings, the ethical aspects of conducting research on human subjects was considered. As alluded to previously, reassuring potential participants that they would not suffer as a result of participating was a key factor in seeking altruistic cooperation from other people. The respondents were promised that their participation and responses would remain confidential. Anonymity was not feasible due to the use of the online tool as explained earlier. Harm which could beset a participant could range from embarrassment due to inserting a silly comment on the survey, (for example, when asked to describe their role one respondent put ‘boring’), to their manager discovering they intended to leave their job within the next two years. Details of who did or did not participate were also withheld so that there could be no coercion to respond. A non-voluntary approach might have resulted in respondents giving answers they thought their manager wanted to see, or randomly ticked answers as they were only completing the questions because they had to. Similarly allowing managers to see the returns from their staff might have affected the veracity of some responses. A further cause of harm could be introduced by the researcher. The researcher must approach the subject from a
neutral position as possible and not pass personal comment on responses. For example, if participants revealed a lack of opportunities for learning compared to other research on a similar section of the market, it would be inappropriate to inform the participant they were with an employer who appeared to be treating its workers less favourably. This could lower morale and initiate resignations, thus harm to both the individual and the organisation must be considered.

In addition to not sharing the information with management there was a need to protect the information to avoid inadvertent disclosure. The data collected was treated in accordance with the Data Protection Act (1998). Apart from the individual having a right to know what information is kept about them and why, the Act requires information about an individual to be kept securely and destroyed when no longer required for the original purpose. The Act refers to personal data that can be identified back to a named individual. The data from the fieldwork does not have names but does contain the employment number. In addition, there was a chance that small groups of particular respondents (eg with very long tenure or very high seniority) could be traced back to one or two individuals. To guard against disclosure the data set containing the employment number field was held in only one place and a copy without this field was used for analysis. Should a participant wish to withdraw or otherwise need to be identified, reference to the ‘master file’ would identify their data which could be matched in other files. The master file was password protected and files created from it were also password protected but using a different password for additional security.

Having promised to protect identities and avoid harm, sharing the raw data or revealing the identity of The Organisation after agreeing certain levels of confidentiality, would constitute deception. Apart from breaking academic ethical guidelines and potentially harming participants and their employer as outlined above, it could also harm researchers yet to start their work. Having experienced an untrustworthy researcher, an organisation may be less likely to accept an approach in the future, particularly from the same university. Thus negative consequences of unethical practices can last beyond the original piece of research. A further issue could arise if any participants had connections with my
own workplace and knew that I work in an HR role, although not related to learning. The survey questions may be perceived as an HR fact finding tool as well as a means of progressing my research. To avoid this, I explained my current work position to the Head of IT Engineering and emphasised all assurances of confidentiality will be honoured.

Analytical methods

The analytical methods used to glean information from the responses are outlined below. This section will show how the responses were examined to establish whether they presented a suitable dataset for subsequent analysis of the research question via the four themes outlined earlier. This is followed by an overview of two analytical methods. The first will explain the statistical analysis used to identify variations in responses which are unlikely to have arisen due to sampling error or by chance, thus helping to identify differences between age groups. The second will explain the creation and use of collections of responses into scales to examine a particular topic. The results obtained and how they relate to the research question are presented in the Analysis chapter.

To analyse the data, responses were coded for use in SPSS (version 20). The coding table used is in Appendix G ‘Coding’. The strength of agreement aligns with the strength of ‘expansiveness’ that the element provides to the learning environment. For example, a response of ‘strongly agree’ to the question ‘I feel valued by my employer for my skills/experience’, denotes a strong alignment with the expansive end of the expansive-restrictive continuum. Consequently, it is assigned the highest score and ‘strongly disagree’ the lowest. Three questions were reverse coded. Using such questions breaks the rhythm of positive questions and also highlights respondents who decide to mark the same response for all questions (Bryman, 2004). Seemingly contradictory responses can be further analysed to determine whether the respondent was just choosing the same box throughout.

Prior to analysis, scoring for all the 18 elements in two questions (Q11 and Q12) required additional attention. This was due to the mistake when making the survey tool, mentioned previously, which did not become apparent until the
analysis stage. Some questions were given three potential responses whereas others that might be combined with them had four. The five option response used in the original surveys was not followed as it was thought the fine grain information would not be used in analysis. However, responses need to be comparable when combined to create a scale or the different scoring can make some responses count for more than others in the output. There was no intention to weight answers as all elements in the questions are considered to be of equal importance. Therefore the coding for responses needed adjustment. To achieve this, the scales for Q11 and Q12 were converted to have the same upper and lower limits as Q13 and Q14.

Composition of sample

This section will show that despite the low response rate of 11%, (65 responses from a population of 600) the responses received are still suitable for this research. As the research focuses on the applicability of a framework to older people, the age composition of the sample is a key issue. It requires respondents over 50 and under 50, preferably with a spread across the ages. The age variable contained 28 individual categories with few cases in each category, as shown by the chart below.

![Age profile of sample and age groups used in analysis](image)

Figure 3. Age profile of sample and age groups used in analysis

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The formula used to achieve this was:

\[
Y = \frac{X - X_{\text{min}}}{X_{\text{range}}} \times \text{n}
\]

Where \(Y\) = new variable; \(X\) = old variable; \(n\) = upper limit of the new variable

New variable = ((old variable - lower limit of old variable) / range of old variable) \(\times\) upper limit of new variable  \((\text{deVaus 2002a p108})\).
This could lead to unreliable results when performing statistical analysis (de Vaus, 2002a). Therefore a method of grouping cases into several categories was sought. As age is an ordinal variable, distributional coding could be used. This method ‘...creates categories by dividing a distribution into equal sizes - that is each category will have approximately the same number of cases’ (de Vaus, 2002a p36 italics in original). Dividing strictly in this manner resulted in the following groups: <=30; 31-36; 37-49 and >=50 years. Moving the cut points slightly to accommodate blocks of 10 years (ie 30, 40, 50), as shown in Figure 3, required moving a few cases into different categories. Although this makes the new categories uneven (15, 19, 15, and 16 respectively) there are still sufficient in each to achieve anonymity for respondents. As explained earlier, respondents were guaranteed they could not be identified in any results and so achieving this was an important consideration. An additional advantage of breaking the ages into 10s is that it makes more convenient groupings for discussion of results and comparison to other organisations, official statistics and previous research. Creating groups to reflect commonly used generational groups such as baby boomers (born 1946-1964); generation X (1965 to 1980) and generation Y (1981 to 2000) would not have created roughly equal groups thus the blocks of 10 were more appropriate.

The gender composition of the sample was representative of the whole population and the UK IT workforce. Just over 20% of respondents were female. This compares well to 18% women in the potential population and under 20% in the UK IT and Telecoms sector (e-skills UK, 2011). Therefore the low proportion of women is to be expected. However, three of the age groups contained approximately 25% women whilst the 30s group only contains 10% women which does not reflect The Organisation. The IT department has the same proportion of women in the 30s and 40s age groups and a slightly lower proportion in the <30 and 50+ groups (The Organisation, 2013). Gender differences are not part of the research question and due to the small sample, comparison of male/female responses will not be performed. However, should differences in the learning attitudes by age be established, exploring more specific issues within that difference, such as gender, might be appropriate for future
research.

From the questions which gathered information about work history and current role it was evident that most respondents were very experienced IT Engineers. Many of the 40s and 50+ groups had over 20 years’ experience.

![Experience in IT Industry](image)

Figure 4. Experience in IT industry

Almost 70% of the sample had spent the majority of their IT career with their current employer. This indicates the employer is able to provide the variety of roles employees seek as they age and their preferences and abilities change (Brooke, 2009). Further evidence of this is that certain roles were clustered around ages, as suggested by Brooke (ibid). For example, software engineers were only found in their 20s or early 30s whereas project managers were primarily in the 40s and 50+ but largely absent from the younger groups. Due to the small sample, the age/role combinations prevalent in the population are not represented. Therefore, examining results by broad role is not possible.

Apart from tenure, an additional indication of experience was the hierarchical level. Figure 5 shows the levels in each age group. They range from A the lowest (on left) to E the highest (the darkest shading on the right). Junior to mid-level roles (B and C) are found in all age groups whereas the more senior roles (A and B) are absent from the youngest group. The respondents in the very junior role (E) in the 40s and 50+ groups are relatively new to the employer and intended to seek promotion within the next two years, so they are considered exceptions to the distribution above rather than a particular feature of IT Engineering in that age group.
The sample was well educated: 72% had a degree and several respondents possessed more than one. Over 80% of the 30s group had at least one degree, 73% of the 40s and 67% of the under 30s. The group with the lowest percentage was the 50+. However, they too were highly qualified with over 60% with at least a Bachelor’s degree. The sample is therefore not typical of the general population. As mentioned previously, in 2011 around 40% of people aged 25 to 34 had degrees compared to under 30% of those over 50 (ONS, 2014).

IT qualifications were evident in all age groups, ranging from almost 50% in the 30s group to under 10% in the under 30s. In the other two groups between 30–40% had an IT qualification. It could be argued that some sort of IT qualification is required for long term professional IT Engineering work. The paucity of them in the youngest group is not what was expected. An informal discussion with the survey developer about this revealed that most people did have some sort of IT ‘certification’ but may not have counted that as they had just been thinking about degrees and A levels in the immediately preceding question. This explanation seems plausible; in retrospect the question should have been more explicit. Gathering data on the level of the IT qualification might have been useful to distinguish between the lower level ones relating to, for example, proficiency in a certain tool and higher, more complex achievements. However, the fact that so many of the respondents possessed degrees made this question partially redundant. The question had been included primarily to obtain information on whether non-degree holding workers - which older workers were more likely to be, based on figures from ONS above - had obtained work-related qualifications or appeared to shun them.
ANOVA and creating scales

The above shows that although the sample is relatively small, it does broadly represent the population and can be split into appropriate age groups for analysis making it suitable for this research. Before moving on to the analysis in the next chapter, two statistical approaches used in the analysis process, ANOVA and using scales, will be outlined. Respondents’ future plans regarding promotion are used to illustrate the first approach and interest in qualifications used for the second one.

<table>
<thead>
<tr>
<th>Descriptives</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>seek promotion / advancement</td>
</tr>
<tr>
<td>&lt; 30.0</td>
</tr>
<tr>
<td>30.0 - 39.0</td>
</tr>
<tr>
<td>40.0 - 49.0</td>
</tr>
<tr>
<td>50.0+</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Figure 6. Descriptive statistics from SPSS

The raw data for question 10H, which asked about the likelihood of seeking promotion or advancement in the next two years, showed a far smaller proportion (40%) of 50+ respondents were likely to do so compared to the other age groups (90% of <30; 74% of 30s and 80% of 40s). To establish whether the variation in responses could have happened by chance, one way analysis of variance (ANOVA) was performed using SPSS. The stages of the process are explained below.

The descriptive statistics in Figure 6 show that all 65 respondents have been considered in the calculations, in their respective age groups (column ‘N’). It also shows the difference in mean score that the groups exhibit, where a clear difference can be seen between the youngest and oldest groups (column ‘Mean’).
To begin ANOVA it is necessary to ensure that the assumption that the variance of scores in each group is the same has not been violated (Pallant, 2007).

<table>
<thead>
<tr>
<th>Test of Homogeneity of Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene Statistic</td>
</tr>
<tr>
<td>seek promotion/advancement</td>
</tr>
</tbody>
</table>

Figure 7. Levene statistic results from SPSS

A significance value for the Levene statistic of over 0.05 is required to pass this test and for this example the score is above that level at 0.181 (see right most column in Figure 7). Should the figure be lower than p<0.05, additional robustness tests can be performed however, they were not required for any of the calculations performed for this research. The next stage examines results from the ANOVA calculations (see Figure 8). The probability level set for these calculations was p<0.05. Thus in order to reject the null hypothesis of all age groups being the same there has to be less than 5% probability that the variation could have happened by chance.

<table>
<thead>
<tr>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of Squares</td>
</tr>
<tr>
<td>seek promotion/advancement</td>
</tr>
<tr>
<td>Within Groups</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Figure 8. ANOVA results from SPSS

From the right most column (Sig) it can be seen that this particular question does have statistically significant variations between the age groups. There is a less than 1% probability (0.4%) that they could have arisen by chance. The null hypothesis is therefore rejected as there is a difference between the groups. However the above does not reveal which groups are involved. To establish that post hoc tests are required (see Figure 9).
### Multiple Comparisons

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(I) age (Binned)</th>
<th>(J) age (Binned)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>seek promotion/advancement</td>
<td>&lt;30.0</td>
<td>30.0 - 39.0</td>
<td>.3895</td>
<td>.2640</td>
<td>.458</td>
<td>-3.08</td>
<td>1.087</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40.0 - 49.0</td>
<td>.5333</td>
<td>.2791</td>
<td>.234</td>
<td>-.204</td>
<td>1.270</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0+</td>
<td></td>
<td>1.0375*</td>
<td>.2747</td>
<td>.002</td>
<td>1.763</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.0 - 39.0</td>
<td>&lt;30.0</td>
<td>-.3895</td>
<td>.2640</td>
<td>.458</td>
<td>-1.087</td>
<td>.308</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40.0 - 49.0</td>
<td>.1439</td>
<td>.2640</td>
<td>.948</td>
<td>-.553</td>
<td>.841</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0+</td>
<td>.6480</td>
<td>.2593</td>
<td>.070</td>
<td>-1.333</td>
<td>1.333</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.0 - 49.0</td>
<td>&lt;30.0</td>
<td>-.5333</td>
<td>.2791</td>
<td>.234</td>
<td>-1.270</td>
<td>.204</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30.0 - 39.0</td>
<td>-.1439</td>
<td>.2640</td>
<td>.948</td>
<td>-.841</td>
<td>.553</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50.0+</td>
<td>.5042</td>
<td>.2747</td>
<td>.267</td>
<td>-1.221</td>
<td>1.230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50.0+</td>
<td>&lt;30.0</td>
<td>-1.0375*</td>
<td>.2747</td>
<td>.002</td>
<td>-1.763</td>
<td>-1.312</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30.0 - 39.0</td>
<td>-.6480</td>
<td>.2593</td>
<td>.070</td>
<td>-1.333</td>
<td>.037</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40.0 - 49.0</td>
<td>-.5042</td>
<td>.2747</td>
<td>.267</td>
<td>-1.230</td>
<td>.221</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 9. Post hoc test results from SPSS

These reveal, by means of an asterisk against the mean difference result, which combinations are significantly different at the p<0.05 level. As can be seen from Figure 9, where the relevant lines have been shown in bold, the <30 and 50+ age groups have an asterisk. Referring to the two far right columns reveals both the lower and upper difference between <30 and 50+ is always a positive figure representing a consistently higher score by the <30 group for the variable. The coding for Q10 gives a higher number the more likely the respondent is to seek promotion/advancement (see Appendix G ‘Coding’). Therefore the <30 group is more likely to seek promotion/advancement compared to the 50+ group. The ad hoc tests also show that there is a less than 1% chance (0.2%) that the difference could be due to a sampling error (see column ‘Sig’). ANOVA has therefore revealed a statistically significant variation between the age groups at the p<0.05.
level: F (3, 61) = 4.9, p = 0.004. Post hoc comparison using the Tukey test showed <30 age group (M=1.6, SD=0.63) was significantly different to the 50+ age group (M=0.6, SD 0.8). The 30s (M=1.2 SD=0.8) and 40s (M=1.1, SD=0.7) did not differ significantly to any other group.

Now that it has been established that a difference is present which is unlikely to have occurred by chance, the size of the effect for the whole population can be calculated. This can be achieved by calculating omega squared\(^5\) using figures from the ANOVA output. The effect size of the above is 0.153, which is small to moderate (Ferguson, 2009 p533). However, owing to the small sample size the estimated effect for the whole population should be treated with great caution. For this reason, effect sizes are omitted from the Analysis chapter.

The statistical technique explained above involved examination of an individual question. The second technique involves grouping responses together into a scale to consider a particular topic. The creation of a scale regarding acquisition of work-related qualifications is used here as an example. The creation of other scales is covered in Appendix H ‘Scales’. The qualification scale was developed from five variables selected due to them all concerning the utility of qualifications. Figure 10 below shows the SPSS output to establish the reliability of these variables as a scale. For a scale to have good internal consistency and all elements measuring the same concept the Cronbach alpha should be above 0.7 (Pallant 2007 p96).

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's Alpha</td>
</tr>
<tr>
<td>.668</td>
</tr>
</tbody>
</table>

\(^5\) Omega squared (Ferguson, 2009 p 535) =

\[
\text{Model sum of squares - model degrees of freedom x mean square within groups} \div \text{Total sum of squares + mean square within groups} = 0.153 = \text{small to moderate effect}
\]

0.04 = ‘...minimum effect size representing a “practically” significant effect for social science data’ (ibid, Table 1, p 533) \quad 0.25 = \text{moderate} \quad 0.64 = \text{strong}
<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>4.862</td>
<td>5.840</td>
<td>.160</td>
<td>.042</td>
<td>.715</td>
</tr>
<tr>
<td>Item 2</td>
<td>4.585</td>
<td>3.747</td>
<td>.655</td>
<td>.537</td>
<td>.488</td>
</tr>
<tr>
<td>Item 3</td>
<td>4.062</td>
<td>4.684</td>
<td>.475</td>
<td>.357</td>
<td>.593</td>
</tr>
<tr>
<td>Item 4</td>
<td>4.969</td>
<td>4.593</td>
<td>.459</td>
<td>.381</td>
<td>.599</td>
</tr>
<tr>
<td>Item 5</td>
<td>4.723</td>
<td>4.985</td>
<td>.373</td>
<td>.157</td>
<td>.638</td>
</tr>
</tbody>
</table>

Figure 10. Scale reliability results for 5 items from SPSS

In this case the Cronbach alpha was 0.668 indicating not all selected variables were suitable for the scale. In the large table of Figure 10 it is evident that the first item was not measuring the same as the other items as it had a corrected item-total correlation below 0.3 (0.16) (Pallant 2007 p98). Removing this would raise Cronbach alpha to 0.715 (far right column), demonstrating the remaining elements have an acceptable level of validity. After removing the above variable, the remaining ones all exhibited corrected item-total correlations ranging from 0.381 to 0.673 (See Figure 11). Removing the last item in the list would have raised the internal consistency slightly (to 0.72) but as the improvement was only slight it was left in.
Once the scale had been created it was used in a cross tabulation with the four age groups to compare the relative importance each group assigned to qualifications. To achieve a total overall score, the scores each case gave to the variables in the scale were added together. This gave a figure between 0 and 12 as there were four questions (ie the four variables) each with a maximum score of 3. This is an example of why it was important that each variable was scored in a similar way to ensure each carried similar weight. The total scores for each case could have been summed and divided by the number of cases in each age group to provide a mean age group total score. This would not provide the granularity required to understand the distribution of responses within an age group. It would be possible for the same mean age group total score to represent either: all respondents in a group answering ‘fairly important’; or part of the group answering ‘very important’ and the other part assessing the attribute as ‘not at all important’. To ascertain the internal distribution, the case total scores (ranging from 0 to 12) were therefore divided into four categories: <3; 3 to <6; 6 to <9; 9 to 12. Each category was assigned the appropriate term (very low; low, high, very high) to represent the level of support for the scale topic. Consequently, the importance each case within each age group assigned to the issue could be examined. One way ANOVA was also performed on the output from scales. Results from the analysis are given in the next chapter where findings are discussed under each of the four themes.
This chapter has explained the philosophical approach is one of post-positivism. Although everything is already ‘there’, it may not actually all be measurable as expected by a positivist. Bearing this in mind, the issue of generalisation was addressed and concluded that theoretical generalisation might be possible with a large return rate from the survey. The four themes which constitute the research question were then outlined and the chapter went on to explain the selection of The Organisation and the IT section within it. Internal documents placed The Organisation towards the expansive pole indicating the presence of varied learning opportunities. The chapter then moved to the actual research process, covering the evolution of the survey tool using questions from previous research plus additional original questions; through a preparatory phase of revision to ensure the questions were suitable for the intended audience and the eventual distribution and receipt of responses. The choice of an online survey tool and the issues associated with it were addressed paying particular attention to respondent confidentiality and the involvement of a potential respondent to create and manage the tool. Although many changes were made to the tool in light of piloting and testing there were some problems that did not become apparent until responses were being analysed, such as the number of answer options not being consistent. The focus in the latter part of the chapter shifted to analysis of responses and outlining the respondent group to determine that it was suitable for the research despite the low return rate. Two particular statistical techniques were then explained using examples from the research to illustrate their operation. The next chapter analyses the data gathered via the methods outlined in this chapter. It addresses each of the four themes explained earlier and considers the overall research question of whether the expansive-restrictive concept is applicable to older learners.
ANALYSIS

This chapter brings together the existing literature and the research conducted at The Organisation to address the research question of whether the expansive-restrictive framework is applicable in its current state to learners aged 50 and over. The chapter is structured around the four themes mentioned earlier. The themes explore age differences in the importance of continuous learning and having variety at work; whether all ages experience the expansive environment which exists in The Organisation according to documents examined in the previous chapter; age differences in the importance placed on acquisitive and participative learning and finally any age differences in the approach to qualifications. Three scales are created to examine the importance each age group attaches to acquisitive learning, participative learning and qualifications. The chapter concludes with a review of what has been revealed by this research and considers whether the findings can be generalised further afield. In light of the results, a proposition is put forward that in this research 'experience' may be the cause of the incompatibility of the expansive-restrictive framework and those over 50.

Analysis of the results

Theme 1: Do older workers place similar importance, compared to their younger colleagues, on having variety and stimulation in their work, and continually having to learn new things?

The population was chosen as it was thought to be one which engaged in constant learning. The survey showed this to be the case. Apart from a small percentage (6%) of the oldest age group, who appear to be conforming to the stereotype, all respondents felt their job required them to keep learning new things. Not only did their work require constant learning but almost 90% of respondents felt that learning new things was an important factor in making their work enjoyable. In addition, over 90% of all age groups rated having variety and challenge and also stimulating work as important. All age groups demonstrated a similarly positive attitude towards these features with no statistically significant variation between them. The 50+ age group requires these factors to be present as much as other age groups which supports evidence that older workers are
equally willing to learn (Schultz et al, 2010, Fenwick et al, 2010). It also indicates that previous research (Ng, et al, 2012) that older learners were less enthusiastic to engage in development opportunities does not apply to all older learners. Only one respondent (in the 40s group) felt that these factors were not available to them. It was important to use a population like this for the research. Examining the 50+ age group’s attitude towards qualifications – which is a key element of the research question – would not be advisable with a group which did not need to learn or did not enjoy learning. Without these factors it would be difficult to determine whether a rejection of qualifications was due to a general disinterest in learning or in actual qualifications.

**Theme 2:** Do older workers place similar importance, compared to their younger colleagues, on the three participatory dimensions?

This theme is to establish whether expansive conditions are experienced by all age groups. If they are not, this casts doubt over whether the 50+ group’s attitude to qualifications is due to the absence of a suitable learning environment or whether it is related to the qualifications themselves. When looking at specific features that would indicate whether a restrictive or expansive learning environment was experienced, there was mixed evidence, but the overall position was largely expansive. This is explained below by taking each of the three dimensions in turn. To assist in reading this section, the relevant excerpt from Appendix C ‘The Three Participatory Dimensions’ is reproduced at the start of discussions about each dimension. As noted in the appendix, the tables are adapted from Fuller and Unwin (2004a). Features denoted by ‘#’ have been included to provide additional information and are taken from Fuller and Unwin 2003b (see Appendix B). A similar process is used here to the one used in the Methods chapter to identify expansive or restrictive features. The additional column to the right of a feature contains ‘*’ if the feature was noted.

The first participatory dimension concerns learning by interacting with groups beyond immediate work colleagues. Having contact with workers in other parts of the same organisation, or in a different organisation, contributes to widening the opportunities to learn. See Figure 12 below.
<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in multiple communities of practice inside and outside the workplace</td>
<td>Restricted participation in multiple communities of practice</td>
</tr>
<tr>
<td>Breadth: access to learning fostered by cross-company experiences.</td>
<td>Narrows: access to learning restricted in terms of tasks/knowledge/location</td>
</tr>
<tr>
<td>Workforce development fosters opportunities to extend identity through boundary crossing</td>
<td>Workforce development limits opportunities to extend identity: little boundary crossing experienced</td>
</tr>
<tr>
<td>Cross-boundary communication encouraged</td>
<td>Bounded communication</td>
</tr>
</tbody>
</table>

Figure 12  The first participatory dimension

There was strong support (shown by respondents agreeing or strongly agreeing with a statement or considering it some or a lot of help in learning to do the job better) for collaborative aspects of work and learning such as pooling ideas (97% of respondents), working closely with colleagues (69%), being shown by others (90%), helping others to learn (90%) and not keeping knowledge to oneself (98%). All of these indicate successful intergenerational collaboration and support the concept of mixed age teams (Zwick and Gobel, 2010). In contrast to the high level of internal cooperation, far lower importance was placed on keeping in touch with people in other organisations who were also working on IT issues. Under 25% of all respondents considered this ‘very important’. Almost half of the 40s age group considered it not important whereas 40% of the <30 group considered it ‘very important’, demonstrating that the youngest group found this feature particularly useful compared to the rest of the respondents. It is not evident why this might be so. The variation between the 40s and <30 groups was statistically significant at the p<0.05 level: F (3, 61) = 4.08, p = 0.01. The <30 age group (M=2.1, SD=0.76) was significantly different to the 40 age group (M=0.9, SD 0.95). The 30s (M=1.5 SD=1.1) and 50+ (M=1.6, SD=0.86) did not differ significantly to any other group. The above suggests a potentially restrictive outlook regarding external communications in contrast to the more expansive internal interaction. It is difficult to determine whether the first participatory dimension is offering an overall expansive or restrictive environment. It could be that external collaboration is not something that employees – or at least the small sample - are required to do as it could be argued that unless working on a similar IT project, external contact would not be necessary. Or, results may have revealed a pocket of employees not engaging in an activity they ought to be performing. As this point remains unresolved, The Organisation is assumed to
sit in the middle of the scale, due to the lack of evidence that it should be placed nearer to one end or the other.

The second participatory dimension (Figure 13) addresses the way work is organised and managed so that it provides a variety of learning opportunities. It covers many of the aspects noted earlier as important to the successful working of an organisation in the knowledge economy such as less hierarchical management, valuing skills of the individual, continuous learning and team working.

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary community of practice has shared 'participative memory': cultural inheritance of workforce development</td>
<td>* Primary community of practice has little or no 'participative memory': no or little tradition of apprenticeship</td>
</tr>
<tr>
<td>Gradual transition to full, rounded participation.</td>
<td>Fast - transition as quick as possible.</td>
</tr>
<tr>
<td>Vision of workplace learning: progression for career</td>
<td>Vision of workplace learning: static for job</td>
</tr>
<tr>
<td>Organizational recognition of, and support for employees as learner</td>
<td>Lack of organizational recognition of, and support for employees as learner</td>
</tr>
<tr>
<td>Workforce development is used as a vehicle for aligning the goals of developing the individual and organizational capability</td>
<td>Workforce development is used to tailor individual capability to organisational need</td>
</tr>
<tr>
<td>Reification of 'workplace curriculum' highly developed (eg through documents, symbols, language, tools) and accessible to apprentices</td>
<td>Limited reification of 'workplace curriculum' patchy access to reificatory aspects of practice</td>
</tr>
<tr>
<td>Widely distributed skills</td>
<td>Polarized distribution of skills</td>
</tr>
<tr>
<td>Technical skills valued</td>
<td>Technical skills taken for granted</td>
</tr>
<tr>
<td>Knowledge and skills of whole workforce developed and valued</td>
<td>Knowledge and skills of key workers/groups developed and valued</td>
</tr>
<tr>
<td>Team work valued</td>
<td>* Rigid specialist roles</td>
</tr>
<tr>
<td>Managers as facilitators of workforce and individual development</td>
<td>* Managers as controllers of workforce and individual development</td>
</tr>
<tr>
<td>Innovation important</td>
<td>* Innovation not important</td>
</tr>
<tr>
<td>Multidimensional view of expertise</td>
<td>* Uni-dimensional top-down view of expertise</td>
</tr>
<tr>
<td># Expanded job design</td>
<td># Restricted job design</td>
</tr>
<tr>
<td># Formative approach to evaluation</td>
<td># Summative approach to evaluation</td>
</tr>
<tr>
<td># Individual progression encouraged - strong internal labour market</td>
<td>* # Weak internal labour market - recruitment usually from outside to meet skill needs</td>
</tr>
</tbody>
</table>

Figure 13 The second participatory dimension

The majority of all age groups rated as helpful development via input from managers (81%); receiving/discussing feedback (86%); getting advice from the technical lead (95%) and reviewing their own performance (92%).
Innovation was encouraged with 95% of respondents feeling that they would be listened to if they had an idea. Having the freedom to develop your own way of working was also important to all respondents (97%) as was the autonomy to organise your own work (91%) and deciding how to tackle problems (95%). There were no statistically significant variations by age group for any of the above features. These all indicate an expansive environment and also demonstrate the reduced hierarchical management and increased worker autonomy characteristic of a knowledge organisation. In addition, these findings provide evidence of a workplace where all age groups perceive the organisation of work and management in a similar way which is contrary to findings in other research (e.g. Cennamo and Gardner, 2008).

As mentioned before, the importance of variety (97%), stimulation (98%) and learning new things (89%) was overwhelmingly considered important in making the job enjoyable. However, a small percentage (10%) felt that one of these attributes was not available to them. It is notable that the 50+ group showed no statistically significant difference to the other age groups, demonstrating that they also value these attributes, supporting evidence (Ng et al, 2012) that older workers are motivated and not resistant to change. The majority of the sample had already experienced at least one promotion within the organisation, some had had two or three. This demonstrates that they are aware of the mechanisms for advancement. However, it does not imply they are still seeking to advance further. For example, the 50+ group, although mostly having experienced promotion and having the opportunity to seek further advancement, was the least likely to do so in the next two years. This echoes previous research (Atkinson, 2007) that older workers, having found their preferred area of work, wished to remain there productively and not necessarily seek (further) advancement. However, it may also reflect the paucity of further promotion opportunities for those already at a senior level. Almost 40% of the 50+ group expected to seek advancement, whereas over 90% of the <30 group were likely to do so (see Figure 14 where darker shading indicates a higher score).
ANOVA showed a statistically significant variation between these two groups at the p<0.05 level: F (3, 61) = 4.9, p = 0.004. The <30 age group (M=1.6, SD=0.63) was significantly different to the 50+ age group (M=0.6, SD 0.8). The 30s (M=1.2 SD=0.8) and 40s (M=1.1, SD=0.7) did not differ significantly to any other group. The response to promotion/advancement was echoed in the likelihood of seeking a more demanding job where there was also a statistically significant difference at the p< 0.05 level: F (3, 61) = 3.3, p = 0.026. The <30 age group (M=1.1, S=0.7) was again significantly different to the 50+ group (M=0.3, SD=0.6). As before, the other two groups, 30s (M=0.7, SD=0.7) and 40s (M=0.7, SD=0.6) were not significantly different to any other group. As demonstrated above, via the use of ANOVA, the 50+ group were less likely to seek promotion/advancement and less likely to seek a more demanding job compared to the <30s. The oldest group had some of the most senior grades (Figure 5) which may indicate less opportunities for further progression. However, they were not seeking a less demanding job and still valued a varied, stimulating job and learning new things. Therefore, a lack of intention to progress cannot be taken as an indication of stagnation and unwillingness to learn in the older age group.

Evidence that an expansive internal labour market is in operation cannot be presumed from the desire for learning and stimulating work. However the ability to advance in the organisation, plus evidence that respondents of all ages have obtained promotions, indicates that there is most likely a range of roles to suit the changing abilities/requirements of IT workers (Brooke, 2009). However, it is supposition that opportunities are available as survey evidence regarding
suitable outlets for advancement within the organisation was not collected.

The above indicates a largely expansive environment; however, there was evidence of restrictive features within the organisation too. A third of the youngest group (<30) felt they had been denied development opportunities due to their age whereas under 10% of 30s (5%) and 40s (7%) and slightly over 10% of 50+ (12%) felt this way. The variation in the <30 response was statistically significant at the p<0.05 level: F (3, 61) = 5.5, p = 0.02. The <30 age group (M=1.3, SD=0.9) was significantly different to the 30s age group (M=0.4 SD=0.6), the 40s age group (M=0.5, SD 0.6) and also the 50+ age group (M=0.6, SD=0.6). The reason why the <30 response was different to all the other groups is not known. It could be argued that they wished to absorb as much information as possible in their initial years and felt thwarted when having to wait, or they may have been given unrealistic expectations of training opportunities in their recruitment/induction and early years. There were no supplementary questions to understand how respondents knew the reason for being denied training was actually their age and not their level of readiness, competing business demands or something else. However, the fact they reported this sentiment reveals a restrictive atmosphere for the younger respondents. It also demonstrates that if older workers did not feel they have been given less opportunities due to their age, the lower training levels reported (eg Loretto et al, 2006 and McNair, 2006) do not necessarily indicate a negative situation.

There was a slightly stronger feeling in the respondent group that peers appreciate others’ skills and expertise (75%) more than the employer (69%). The above examples suggest a potential problem with local management as ‘facilitators of workforce and individual development’ which contradicts the ethos espoused by corporate documents (The Organisation, 2011). This conflicts with the largely positive responses to other aspects of manager behaviour outlined above. The specific section within The Organisation where respondents worked was not captured so it is not possible to tell whether the ‘restrictive’ responses were widely distributed or confined to a few areas. However, it does again show an absence of inter-generational tension which supports the evidence of mixed age team being a successful organisational concept (Zwick and Gobel, 2010).
An additional indication of a potentially restrictive environment appears to have been intentionally created by The Organisation. Identifying where responsibility for learning and development lies gives an indication of whether an individual feels they need to proactively seek opportunities to develop or whether they feel it is up to the employer to initiate such activities. As succinctly stated by Felstead et al: ‘A key part of the concept of a ‘community of practice’ is that learning is stimulated by a shared belief in organisational goals and values’ (Felstead et al, 2007a, p5). The Organisation showed a very low ‘shared belief’ as explained below. Most of the age groups (55%) considered that their development was their own responsibility whereas half of this amount (28%) felt it was a joint responsibility. Only 2% felt it rested with the employer alone whilst the remaining 15% did not know. This is quite different to the findings in earlier research (Felstead et al, 2007a) where the largest group (41%) considered it a joint responsibility, 37% their own and 22% their employer’s. The previous research found the 55+ age group the most likely to feel it rested with themselves (ibid, p39), whereas this study found all ages to be roughly similar. Felstead also found that the responsibility moved from employer to self as age increased (ibid), which is not evident from this research. These differences may be due to the fact that the population used for the previous study was far wider ranging, containing not only many more cases but also covering numerous occupational sectors, unlike the population used for this research which is focused on one small segment of one occupation. The different results could also be an indication of how respondents in previous research interpreted their current situation. For example, Felstead et al’s (2007a) older respondents may think responsibility lies with them because their employer does not include them in development opportunities. Therefore, it is what they experience, rather than actually thinking it ought to be their responsibility. The overwhelming view that responsibility lies with the individual at The Organisation contradicts other evidence of an organisation situated towards the expansive pole of the expansive-restrictive continuum. However, part of The Organisation’s culture appears to be the cause of the apparent anomaly. Employees are encouraged to take ownership of their own learning and development (The Organisation, 2011) and they have clearly heeded that message. It was unclear whether all of the impetus must come from the employee or whether managers provided any additional support apart from the
creation of a development plan. Even bearing this point in mind, the second participatory dimension appears to reflect a largely expansive environment experienced by all ages.

The third and final participatory dimension is the one at the heart of this research. It concerns courses and qualifications. As this is the focus of the thesis it is discussed more fully in the rest of the chapter. An overview of the third participatory dimension is given here alongside the other two dimensions before elements of it are examined more closely. The features in this dimension are given in Figure 15.

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to range of qualifications including knowledge-based vocational qualifications</td>
<td>Little or no access to qualifications</td>
</tr>
<tr>
<td>Planned time off-the-job including for knowledge based courses and for reflection</td>
<td>Virtually all on-the-job: limited opportunities for reflection</td>
</tr>
<tr>
<td>Chances to learn new skills/jobs</td>
<td>Barriers to learning new skills/jobs</td>
</tr>
<tr>
<td># Pursuit of formal qualifications valued / supported</td>
<td># Pursuit of formal qualifications not valued or supported / or seen as tangential to business need - may be supported for personal motivation</td>
</tr>
</tbody>
</table>

Figure 15 The third participatory dimension

The majority of respondents (57%) considered development of existing abilities via formal training was an ‘important’ or ‘very important’ factor in their working lives whereas 41.5% felt ‘it is nice to have’ and 1.5% ‘not important at all’. Under a third of respondents (29%) considered the opportunity to gain qualifications was ‘important’ or ‘very important’ with half of respondents (51%) considering ‘it is nice to have’ and 20% feeling it was ‘not important at all’. There was no statistically significant variation in the responses by age group which shows that older learners are no less enthusiastic about learning via formal means, contradicting earlier evidence (Smith et al, 2010). Additionally, it reveals qualifications are not that highly rated by those under 50 either. The argument presented in this research is that qualifications may not be appropriate for those over 50 but this finding casts doubt on there being such an age distinction. Experience, which is often correlated with age, is proposed as a potential influence on findings. This point is returned to as further evidence is presented.

As mentioned in the Methods chapter, one part of a question did not
display correctly in all browsers. Only 31% of respondents answered whether certain attributes were available to them or not. This was deemed to be due to a technical error with the survey and not an unwillingness to answer. The next few paragraphs are therefore based on a rather small subset of respondents. It is not known whether this subset is representative of the larger pool. There was a similar spread of responses in the subset compared to the figures for the whole group given above. For example, responses in the subset for opportunities to develop skills/abilities via formal training was 65% very/important; 30% nice to have; 5% not important and to gain qualifications was 35% very/important; 40% nice to have; 25% not important. In addition, it is important to note that the smaller quantity means that one respondent could have a large impact on resultant percentages. The findings presented here into attitudes towards formal training and qualifications will therefore need substantiating in future research.

Using the available responses it was evident that almost half (45%) reported that opportunities to gain qualifications were not available to them. However, the vast majority (78%) of these people rated the opportunity as a ‘nice to have’ or ‘not at all important’, demonstrating that non-availability was not a major issue. For those who felt such opportunities were available to them 45% rated them as ‘important’ or ‘very important’ and for 55% they were not important. Thus it would appear that for the majority of those who valued opportunities to gain qualifications, and also responded to the supplementary question regarding availability, opportunities were there. However, examining the data from the perspective of those rating this feature ‘important’ or ‘very important’, almost a third (29%) reported it as being unavailable to them. There was no statistically significant variation by age group, in either the value placed on the feature or the availability, so it can be assumed that the 50+ respondents held a similar view of the feature and had similar opportunities compared to all other age groups. This again challenges evidence (Ng et al, 2012) of older workers having less opportunities and showing less enthusiasm for development. It also suggests that older workers have not been denied opportunities due to unease about returns under human capital theory. As mentioned above, this relates to a very small number of respondents. Therefore expanding these findings and applying them to the whole respondent group should be done with caution bearing in mind this
caveat. However, this evidence, coupled with that below, does constitute evidence of a restrictive environment.

The questions on developing existing skills via formal training were analysed in a similar way and produced similar results to those above, adding further weight to the evidence that this particular group of high end knowledge workers aged over 50 do not hold different attitudes towards formal training and nor have they felt excluded from opportunities. A smaller proportion (35%) felt that opportunities for formal training were not available to them. However, as with those who felt opportunities for qualifications were absent, the majority (71%) rated it as only ‘nice to have’. Similarly the vast majority (85%) of those stating it was available also rated it as important. There was a smaller group (15%) who rated the opportunity to develop existing skills via formal training as ‘important’ or ‘very important’ but felt it was not available to them. Only one individual reported both features to be important but neither available to them.

The fact that a large proportion of respondents reported low importance and non-availability for both features above raises the question of whether opportunities may be available but the respondent has not noticed because they are not seeking them, rather than opportunities being genuinely unavailable. These findings need to be considered in light of the fact that the respondents report being responsible for their own development. They are therefore less likely to be offered development opportunities but be expected to seek them out when required. This applied to all ages not just the oldest group. Thus it is taken as mildly restrictive evidence rather than a significant proportion of the sample were denied access to qualifications or formal training. The position regarding the third dimension therefore appears quite mixed and it is difficult to place the lived experience at The Organisation on the expansive-restrictive continuum based on the above simple analysis of responses to individual questions. To gain a greater insight into responses by age, more complex analysis was undertaken. The rest of the chapter explains what the deeper analysis revealed.

Before moving on, the overall findings from examining the three participatory dimensions above is summarised. The overall picture is that The Organisation sits towards the expansive end of the continuum and this is
experienced across all age groups. The main evidence for this has been taken from the second dimension. There was little information to determine the positioning from the first dimension which revealed expansive internal features but lacked strong external cooperation as the <30 group placed greater importance on keeping in touch with external contacts compared to the 40s group. The second dimension however, demonstrated several expansive features such as team working, innovation and worker autonomy being experienced by the majority of respondents. The <30s again showed a statistically significant restrictive response. This time it related to being denied development opportunities due to their age. Their response was statistically significant compared to all other age groups not just the 40s as in the first dimension. Turning to the third participatory dimension, there was no statistically significant variation in availability of opportunities for formal training or qualifications. Similarly, the majority of those placing importance on such opportunities felt they were available. This contradicts the denial of opportunities reported by <30. It could be argued that the denial was historic rather than current or the <30 would have reported an unmet desire. Alternatively, the low response rate to the supplementary question could have obscured their position.

Of significance for this research is that the 50+ age group did not exhibit markedly different attitudes towards the three participatory dimensions compared to those under 50. As chronological age does not appear to affect the approach to learning or opportunities to learn, this raises the question of whether it is appropriate to segment the learning workforce by age. Subsequent analysis will examine this point further. It will be achieved in the next two themes via more complex analysis of responses on acquisitive learning, participative learning and obtaining qualifications. Once findings from these have been discussed, the evidence from the survey and that from previous research will all be considered to determine how this study contributes towards a better understanding of the applicability of the expansive-restrictive framework to older workers.

**Theme 3:** Do older workers place similar importance, compared to their younger colleagues, on acquisitive and participative learning approaches?

The third theme focuses more closely on factors which may indicate a different attitude towards qualifications. For example, if the 50+ group place
low importance on acquisitive learning it would be likely that they would place low importance on qualifications. The preference for type of learning would then be an influential factor to take into account when addressing the research question. Information gleaned directly from the survey results suggests that both learning variants are used in The Organisation with all age groups considering both to be highly important. The evidence for this is presented below. To explore the concepts of age and both acquisitive and participative learning more deeply, scales were developed for each concept from the relevant elements included in the survey. The works of Felstead et al (2005a and 2007a) were used as a guide to their creation. The construction of scales and reliability of constituent variables was covered earlier, towards the end of the Methods chapter. See Appendix H ‘Scales’ for the variables in each scale and reliability testing results.

**Acquisitive learning**

Acquisitive learning was introduced in the literature review as being aligned with the more formal, easily quantifiable learning which, for example, takes place during pre-planned sessions with a defined 'teacher' imparting information. As mentioned when discussing the third participatory dimension, responses to a direct question on whether developing existing skills via formal training helped respondents enjoy their job indicated that 57% felt it did. Although there was no statistically significant variation between the age groups, the youngest group (<30) showed the strongest support with 80% rating it as important or very important, see Figure 16 below.

![Figure 16. Importance of developing skills via formal training (single question)](image-url)
Almost 70% of the 40s group gave it a similar rating, whereas only 30% of the 30s rated it as important or very important. The reason for the lower score for the 30s is not clear. Respondents of any age who scored this question low also rated the opportunity for qualifications low but rated the importance of learning new things highly. They also rated on-the-job learning very highly, which shows that this is not a rejection of all learning, just perhaps this type. For example, 43% of all respondents said that developing existing skills via formal training was ‘nice to have’ or ‘not important’. The majority (83%) also regarded the opportunity to gain qualifications in the same way. However, 77% of the same group rated learning new things as ‘important’ or ‘very important’ factors in making their job enjoyable and 87% likewise rated developing existing skills on-the-job. This echoes the evidence in the previous section that although respondents place a lower value on formal training and qualifications they have a strong appetite for learning. Focusing in on 50+ respondents, just over half (56%) felt developing skills/abilities via formal training was important or very important. This group also contained the highest percentage of any group to consider it ‘very important’ with 31% of the group giving this response compared to 20% of <30 and 11% of 30s and 13% of 40s. This contradicts evidence that older workers do not favour formal training (Smith et al, 2010; Pool et al 2013b). It also provides contrary evidence to the proposition in this research that the expansive-restrictive framework is not suitable for older workers as it espouses formal training. However, the situation is more complex. It is argued that older learners respect formal interventions when they consider them appropriate for their needs but prefer alternative, on-the-job training methods, if available. Subsequent sections provide further evidence to support this argument.

To examine acquisitive learning more deeply, four questions were formed into a scale, using the works of Felstead et al (2005a and 2007a) as a template. Figure 17 shows the relative importance each age group assigned to acquisitive learning as revealed by the scale.
When considering a variety of acquisitive aspects together, 88% of the whole sample considered acquisitive learning an important way of learning for their job. In the case of the sample, reading and the internet were important. This suggests that acquisitive learning is a highly valued learning method and that options other than courses are highly regarded, emphasising how reliance on course attendance is a dangerously narrow proxy for workplace learning as it misses a lot of acquisitive learning taking place for all ages. The overall importance of the internet contrasts sharply with that reported in earlier research (Felstead et al 2007a). In the 2007 research, professional and associated professionals rated the internet the highest of all occupational groups but still only placed it barely in the ‘fairly important’ category. The overall rating, which incorporated all occupational groups, concluded the internet offered ‘a little help’ in improving job performance. However, as it is several years since the earlier work it could be argued that business use of the internet has increased significantly in that time and that is what is being reflected in the current research. From the scale it is apparent that all age groups placed high or very high importance on acquisitive learning except the 40 year old category. The <30 and 50+ placed the most importance on it with the whole of each group rating it as important or very important. This was followed by the 30s at almost 90%. This is a notable difference to the response to the single question mentioned above where almost 70% of the 30s reported that formal training was just a ‘nice to have’ as a factor that made their job enjoyable. The disparity is most likely due to the single question not measuring the same concept as the items used in the scale. The question was perhaps open to various interpretations by respondents.
When included in the scale, reliability tests with the other items gave a corrected item total correlation of 0.17 and reduced Cronbach Alpha to an unacceptable 0.65. It would therefore not be advisable to place great importance on comparing the results from the single question and those from the scale, as it appears that the two are considering different aspects of acquisitive learning.

Returning to the 40s group, only 60% considered acquisitive learning important or very important, which was statistically significant at the p<0.05 level F (3, 61) = 4.377, p = 0.007. The 40s age group (M=2.8, SD=1.08) was significantly different to the <30 age group (M=3.67, SD 0.488); 30s (M=3.47 SD=0.697) and also 50+ (M=3.56, SD=0.512). The reasons for the lower importance given by 40s is not immediately evident. They clearly have followed such courses to acquire degrees (73% of the 40s have at least one degree) but the importance of such a method of learning for their job is still lower than other age groups. Examination of each variable in the scale revealed a statistically significant variation at the p < 0.05 level for two of the four variables: the internet: F (3, 61) = 4.874, p = 0.004 and reading books: F (3, 61) = 4.874, p = 0.004. The 40s age group (M=1.6, SD=1.198) was significantly different to the <30 age group (M=2.6, SD 0.686); 30s (M=2.52 SD=0.716) and also 50+ (M=2.53, SD=0.718). The 40s group attached a far lower importance to both variables compared to all other age groups, demonstrating that their lower scale rating was not due to a dislike of just one feature. These respondents were also likely to remain in their current area of work, seek promotion/advancement and more demanding work. All of these seem at odds with not finding either the external internet or the organisation’s internal intranet of help. If the above had been the 50+ group it would have added weight to evidence of reduced learning with age (Felstead, 2011). However, it suggests that the whole picture may be far more complex and factors other than age are influencing learning activity. This implies that focusing on chronological age may be too simplistic an approach and consideration of other variables, such as experience, may be warranted. This is returned to towards the end of the chapter once all the themes have been examined.

The high rating for acquisitive learning demonstrates that this is an important method for all ages. Although the score for 40s was lower than the
other groups, their score was still relatively high with 60% of the group rating it in the two highest categories. When exploring attitudes towards qualifications by those over 50, any negative response should therefore not be assumed to be due to a lack of importance placed on this broad learning method. Evidence from this research shows that the 50+ group hold acquisitive learning in very high regard and, as explained a little later on, they are very engaged in qualification acquisition. Having examined the more traditional ‘standard paradigm of learning’ (Hager, 2004) above, features indicative of the more social ‘emerging paradigm of learning’ (ibid) will be analysed in the next section before returning to acquisitive learning and the issue of qualifications.

**Participative Learning**

In contrast to acquisitive learning, ‘participative’ learning was introduced in the literature review as being more complex. This is primarily because it cannot stand alone in the same way as a formal course: it is connected to the context in which it takes place. Additionally, participants do not always realise they are actually learning (Boud and Solomon, 2003). When respondents were asked directly about on-the-job training (did it help them enjoy work; do the job better and pick up skills) over 90% of the whole sample considered these features important or very important. When asked specifically about the importance of picking up skills on the job, not one respondent rated it as ‘not at all important’ and very few (6%) as ‘nice to have’. (See Figure 18). The 50+ group showed the strongest support with 56% rating it as ‘very important’.

![Figure 18. Importance of developing skills on the job (single question)](image)

The creation and analysis of a scale to explore the importance of
participative learning followed a similar route to that of acquisitive learning above. In this case, 18 questions were combined. They included getting advice from colleagues, pooling ideas, talking to customers and whether the job required the incumbent to help others learn. The full list is in Appendix H ‘Scales’. As can be seen from Figure 19, taking all respondents into account, 70% rated participative learning as important or very important. The 50+ group exhibited the highest scores on the participative learning scale and were the only group with members who assigned it a ‘very high’ overall importance. The other groups placed only slightly less importance on this type of learning with the 30s the lowest with 63% rating it as important. These findings again show the 50+ group to be highly supportive of learning. Their strong support for participative learning adds to the argument made earlier that using courses as a proxy for workplace learning does not capture everything and may be significantly underestimating learning activities.

![Participative Learning: level of importance by age](image)

Figure 19. Importance of participative learning (scale)

Examining the individual elements revealed that the variables used in the scale which respondents rated most highly were pooling ideas (97% of all respondents rated this highly) and also developing existing skills on the job (89%). The 50+ group rated the latter the highest of any age group (56% rated it as very important), demonstrating their commitment to learning but not via formal means. This concurs with previous research (Zwick, 2015) which concluded that ‘…training on the job is more effective for older employees than participation in formal seminars or training circles’ (p146). Some features received a mixed rating. For example, the <30s were least likely to feel their job required them to help others learn (80% felt this way). As the <30s contain the majority of the
newcomers to the profession and the employer it is perhaps expected that this group is least likely to be passing on expertise. However, the majority were already pooling knowledge, which reflects the constant learning amongst knowledge workers as newer members share the knowledge they brought with them as well as that acquired within the current workplace. Being shown by others was rated highest by the 50+ group (68% finding it ‘quite a lot of help’ which was the highest rating) but lowest by the <30 where only a third gave it this rating. This could indicate that the 50+ group prefer to be shown how to do something, which echoes observations in previous research (Smith et al 2010, Pool et al 2013b) and adds to the argument that formal qualifications are not the preferred learning method for this group (ibid). The results of the above two features do not indicate that the <30 were averse to working with their colleagues. The majority (86%) agreed they learned new things from colleagues and also gave the strongest agreement to the statement that ‘you can only learn this job by working closely with your colleagues’ (80% agreed compared to results in the 60% for all other age groups). Talking to customers was considered more important by the 50+ group as a method of learning to do the job better with 44% of them stating it was ‘quite a lot of help’ compared to similar responses between 20% - 37% in the other groups. Thus the 50+ demonstrated strong support for various participative methods and in some instances placed greater importance on participative aspects of their job than other age groups, showing that interaction with colleagues and customers is a key route for their learning and job enjoyment. However, as ANOVA did not reveal any statistically significant differences in the variations between age groups it cannot be concluded that these methods are valued more by older learners than younger workers.

Both acquisitive and participative learning would appear to be prevalent in The Organisation and highly regarded by respondents. The largely expansive environment explained earlier provides an appropriate culture and work organisation for learning by both these methods. It is difficult to determine whether one variant is more highly regarded than the other. The percentage (70%) of respondents giving a rating of important/very important on the participative scale is lower than that for the acquisitive scale (88%). Although it would add further information to the debate on preferences for acquisitive or
participative learning if the results from the two scales could be directly compared to one another, comparing the scales in this way has not been tested. Further work would be required to establish whether this was feasible. Each scale was designed to compare the level of importance given by different groups within the same scale, not to compare to another scale. Therefore it is not advisable to compare results between the scales. Having established the importance placed on acquisitive learning in the third theme above, analysis in the fourth theme probes deeper into qualifications, which are at the heart of the research question.

**Theme 4:** Do older workers place similar importance, compared to their younger colleagues, on acquisition of qualifications relating to their work?

The fourth theme builds on the first three. The first one showed that respondents needed to, and enjoyed, continually learning for their work, thus they are undertaking the activity being examined. The second theme showed all ages experienced a largely expansive environment indicating that the organisation, culture and pedagogy were commensurate with learning opportunities and support. The third theme showed that both acquisitive and participative learning were very important for all age groups. Throughout, the 50+ have shown enthusiasm for learning. Attention now turns to whether qualifications are an important element in their learning.

Qualifications are part of the third participatory dimension of the expansive-restrictive framework. The third dimension is: ‘...the opportunity to pursue knowledge-based courses and qualifications relating to work’ (Fuller and Unwin, 2004a, p126). Previous research suggests that content rather than certification is what is important to older learners (Fenwick et al, 2010; Pool et al, 2013b; Smith et al, 2010). The next section will examine this point. Qualifications acquired before starting full-time work were helpful to a larger proportion of the youngest group (40%) compared to the other groups (all under 20%). As this question covers a degree before joining the labour market, it is not surprising that the older groups, many of whom have been in work for over 10 years, some for over 30, may find their pre-work qualifications no longer helpful. It is possible that the youngest group may still be reaping the benefits from their
pre-work qualifications and not yet had the opportunity to acquire further qualifications. However, the helpfulness of qualifications since starting work was highest for the 50+ group (50% compared to 26% to 32% for the younger groups). This needs to be considered in light of the fact that 50+ were also the most likely to be in the process of acquiring a qualification (see below) and therefore more likely to value them.

A minority of the sample (19%) were working towards a qualification. The oldest age group had the largest proportion of those currently undertaking such study (over a third of the age group compared to 9% of <30s, 16% of 30s and 8% of 40s). This clearly demonstrates that qualification acquisition can be embraced by older workers and reinforces the findings that all varieties of learning are considered important. Although 10% of respondents did not answer this question, the quantity of older workers studying would still make them the largest group even if all those who chose not to respond to this question had also been studying. An explanation for the learning activity of this group could be that established employees were working towards Chartered Engineer status which internal literature indicated was available to employees (The Organisation, 2012). This would require obtaining qualifications, even if actual work was being used as part of the assessment. Additional questions regarding whether any qualifications had been acquired and the subject/level, would have been useful to ascertain whether the negative answers were due to not having done any qualifications or having done them and found they were not helpful. However, this omission does not adversely affect the focus of the research which is examining whether qualifications are an appropriate target for older workers or whether acquiring knowledge without necessarily certifying it is more appropriate. Despite the lack of this specific detail the above adds to the evidence of qualification learning activity by a significant proportion of the 50+ group.

Courses not leading to a qualification also scored highly for being helpful amongst the 50+ (50%) compared to only 26% to 34% of the other groups. This again demonstrates support for formal learning by the 50+ group. The 10% of the respondent group, covering a variety of age groups, who rated this ‘not helpful at all’ scored learning skills on-the-job very highly, thus indicating that they were
still acquiring skills and learning but found the non-qualification courses of little or no benefit. Again, knowing the general subject matter of the courses would have added to the understanding of the issue, for example, were they managerial, IT related or statutory health and safety ones. Notwithstanding this omission, the above provides evidence that rejecting courses, whether leading to a qualification or not, should not be equated with a lack of desire to develop. The following example demonstrates this point. One particular respondent (in the 40s age group) felt that qualifications before or since work and also courses not leading to a qualification were all of no help. However, they stated that their job required them to keep learning new things. This particular individual scored the participative learning questions higher than the acquisitive ones and in the questions directly asking about preferences for formal or less formal learning, the latter was preferred. This person intended to remain with their employer in a similar area of work but not seek advancement. An individual such as this would not embrace acquisition of a qualification as recommended by the expansive-restrictive framework yet they are aged below 50. This adds support to the proposition made earlier that another variable, such as worker experience, also needs to be examined. This is considered towards the end of the chapter, in light of analysis across all four themes.

Study which did lead to a qualification attracted a mixed response. Over half of each group found qualifications either not important or a ‘nice to have’. For the remaining half, most (47%) of the <30 age group felt they were important or very important. The other three age groups were considerably less enthusiastic (21% of 30s; and 33% of 40s) with the 50+ group showing the least support for this feature (19%). Bearing in mind that most respondents saw themselves staying with their current employer for the next two years, the sample may be considered less likely to be gaining qualifications to offer to a new employer. Those seeking promotion internally would similarly not require qualifications to prove their worth as their performance in The Organisation would be evident. Therefore this may reflect the previously reported (Friedberg, 2003; Fenwick, 2012b) preference amongst older workers for learning to be directly related to work and little importance is placed on ‘extraneous’ additions.

Courses and qualifications are the only incidence of any age group
seemingly giving very contradictory responses. Having placed importance on the opportunities to gain a qualification, the <30 placed the lowest importance (7%) of any age group on receiving a qualification after attending a course. A third of <30 felt it was ‘not important at all’ and 60% a ‘nice to have’. It is not clear why these responses are so contradictory. The other age groups did not give such different responses to these two questions.

Completing additional modules to get a qualification was supported by just under half of all respondents. The 50+ group were the least likely to undertake additional study (25%) and <30 the most likely (80%). This further supports the proposition that older workers prefer learning to be focused on current needs and do not value qualifications per se. This variation was significant at the p<0.05 level: F (3, 61) = 3.88, p = 0.013. The <30 age group (M=2.07, SD=0.7) was significantly different to the 50+ age group (M=1.25 SD=0.4) but not the 30s age group (M=1.79, SD 0.79) or the 40s age group (M=1.67, SD=0.72). When asked if the additional study had to be directly relevant to their work, the 50+ group were the most insistent that it did (75% compared to 53% of <30, 47% of 30s and 40% of 40s). They were also the most likely to ‘strongly agree’ with this statement as 42% of those who agreed chose the highest agreement rating compared to 13% of <30; 22% of 30s and 0% of 40s. The variation of the 50+ responses was again statistically significant at the p<0.05 level but this time only compared to the 40s: F (3, 61) = 3.01, p = 0.037. The 50+ group (M=2.06, SD=0.77) was significantly different to the 40 (M=1.3 SD=0.62) but not the <30s (M=1.6, SD 0.63) or the 30 (M=1.5, SD=0.77). This strongly supports the evidence above that older employees are more ‘discerning’ in their learning and are more likely to engage when it is directly relevant to their work (Friedberg, 2003, Armstrong-Strassen and Ursel, 2009 and Fenwick, 2012b). When exploring other reasons why individuals might not pursue a qualification, time, energy and money were obstacles for two thirds of all respondents.

Although the above demonstrates that the 50+ prefer additional study for a qualification to be relevant to their work, it does not necessarily follow that any study must be relevant to their work. The question was specifically phrased to obtain information to better understand a certain comment by Fuller and Unwin which seemed to go against the learning literature on older workers. Fuller and
Unwin (2003a) did not recommend bite sized pieces of targeted learning but pursuing a full qualification. One of the reasons they gave was that employees may not get the support to complete the qualification (ibid). They were assuming that all employees would want the whole qualification, which the evidence above shows is not necessarily the case, particularly where older workers are concerned.

Assigning a high value to acquisitive learning, rated as important by 88% of the entire sample and by 100% of the 50+ age group, as explained earlier in this chapter, does not appear to be associated with a desire to obtain qualifications per se. This could imply that acquisitive learning is valued but is undertaken for the content and not the certification. The following section discusses a scale for qualifications similar to those constructed earlier for acquisitive and participative learning. This scale was used as an example in the Methods chapter and information about its creation can be found there as well as in Appendix H ‘Scales’. Over half (53%) of the <30 thought qualifications were important but a far smaller proportion of the other groups thought likewise: (21% of 30s; 27% of 40s and 19% of 50+). None of the <30 rated them as ‘very important’ whereas some individuals in each of the other groups did. Taking all these responses together, the <30 were still the most supportive of qualifications (see Figure 20).

![Figure 20. Importance of qualifications (scale)](image)

This does not match previous research, (Felstead et al, 2005a, Executive summary – no page number) which found that: ‘One in four employees reported that training courses were of little or no value in improving work performance and around one in three thought that studying for qualifications had not helped them at work’. The earlier research was conducted on a far broader range of labour market sectors which may account for the difference in findings. The current research intentionally examines workers who constantly need to learn to do their
job. Also the population has an atypical number of degree holders (72%) who have already demonstrated their ability and commitment to acquire qualifications. These are features of ‘learner territory’ (Fuller and Unwin, 2004a) that not all learners possess. The 50+ group where, according to the scale above, almost 70% rated qualifications as being of low importance, were evidently undertaking qualifications as 37.5% of that group were working towards one. The individuals acquiring a qualification were not the same people who rated them highly on the scale. The majority (83%) of those working towards a qualification rated them ‘low’ and the remaining 17% rated them ‘very high’. Therefore, it cannot be presumed that 50+ have lost interest in qualifications and will not engage in them. This age group found both acquisitive and participative learning methods important. They attached low importance to gaining qualifications per se and did not support studying extra to make separate modules become a qualification. However, they were not averse to working towards a qualification as the above has demonstrated. The essential feature for this group is that any extra learning to acquire a qualification must be relevant to work. Acquisition of something in addition to the knowledge is just not highly valued. The implication of this for the application of the expansive-restrictive framework to older workers is summed up in the next section.

The expansive-restrictive framework and workers over 50

The four themes examined respondent attitudes to various learning approaches within an expansive learning environment. The following section will provide a response to the overall research question of whether the expansive-restrictive framework is applicable to older workers.

The Organisation has been shown to be suitable for this research in that it has a workforce that enjoys learning and needs to constantly learn to perform their jobs. In addition, a suitable sample was obtained to analyse attitudes towards various aspects of workplace learning. The environment, according to internal documentation (The Organisation, 2011 and 2012), and respondent experience, was largely expansive which ‘… will create a stronger and richer learning environment than one consisting of features associated with the restrictive end of the continuum’ (Fuller and Unwin, 2004a p129). There were some indications
of restrictive features but they were not experienced by everyone and thus may be pockets of poorer management or different organisational structures in certain sections. Neither of these possibilities could be investigated further because respondents were not asked for their work section. Within this context, attention turns to whether the 50+ workers take advantage of these opportunities.

The majority of the sample intended to stay at work with the same employer. They acknowledged that their job required constant learning and also felt that learning new things and being stimulated and challenged and having variety were extremely important factors. The 50+ group on the whole was not seeking advancement but still valued variety and challenge and constant learning as much as other age groups. Thus the 50+ were as committed to their development as other employees even though they were not seeking promotion.

Both acquisitive learning and participative learning methods were important to the 50+ group. Using the scales constructed for this research the oldest age group does not exhibit lower levels of support for either method of learning compared to their younger colleagues. Therefore, it could be argued that when a workforce is required to learn constantly to do their job, and there is a strong desire to have varied, stimulating work, both acquisitive and participative learning will be important for older workers. The preferences were not simply for or against courses. The prior evidence that courses were not viewed favourably (Smith et al 2010, Pool et al 2013b) requires several caveats. As shown in this research if the learning is work related then it is valued. This has been shown previously (for example, Friedberg, 2003 and Armstrong-Strassen and Ursel, 2009). Additionally, this research showed that there is limited support for qualifications per se as older workers were less inclined to undertake additional study just to obtain a qualification unless the extra effort was also related to work. A similar attitude has been noticed in relation to older workers in Australia where ‘The goals and outcomes of training and individuals’ learning efforts are those associated with attaining workplace outcomes, not those of educational certification, except when regulatory outcomes are required for employment’ (Billet et al, 2014 p24). This is not revealing a disinterest in workplace learning. It could be argued it is showing quite the contrary. The older workers are demonstrating a more focused approach to their learning. A similar attribute was
noted by Fenwick (2012a): ‘…far from withdrawing from learning, these older professionals are particularly strategic in what, when and how they engage.’ (p 203). They appear to be reflecting a greater maturity to be able to identify their own learning gaps and effective ways to maintain their skills, whether that be via participative or acquisitive learning activities and at times by undertaking courses and obtaining qualifications. It would appear to be the content that influences the decision to accept or reject a course or qualification, rather than the acquisitive nature of it.

Offering courses and qualifications appears to be contrary to the evidence put forward in this thesis regarding the way that some workers approach their learning requirements. For an organisation following the expansive-restrictive recommendation of aspiring to the expansive pole, there is a high likelihood of committing development resources and the productive time of a worker yet not obtaining a significant return. In addition it may result in the worker feeling negatively towards the employer for insisting they undertake something they do not feel is relevant to performing their job well. This could contribute to disengagement, lower productivity and even withdrawal from the employer (Van Dick et al, 2004). It was explained in the literature review that to implement the expansive-restrictive framework each person should be analysed to identify areas where an expansive environment could be provided (Hodkinson and Rainbird, 2006). Notwithstanding the resource requirement perhaps making this an unlikely scenario for some employers, it would uncover those for whom some features were inappropriate. However, it could be argued that individual managers might still propose features from the third participatory dimension, as participative methods of learning appear to be less well understood despite featuring very prominently as useful learning methods. Returning to the third participatory dimension of the expansive-restrictive framework - which encourages learning for future work roles, undertaking courses and acquiring qualifications - the analysis above demonstrates that there are questions concerning the applicability to the 50+ group. Evidence also suggested some learners below 50 may similarly be affected and experience may be an important consideration. The evidence for this is outlined below.
The Importance of Experience

It was mentioned above and alluded to in several places in this chapter that age may not be the only factor that is causing the potential mis-match between learning preference and the expansive-restrictive promotion of qualifications. A worker’s history includes not only their chronological years of existence but also their chronological years in their profession. This raises the proposition that differences could have been due to their level of experience rather than their age. ‘Experience’ is taken to mean ‘…the development of well-practiced work skills that a person can accumulate working in an occupation…’ (Avolio et al, 1990 p409), placing the worker in what Lave and Wenger (1991) would consider to be a ‘full participant’ in a community of practice. In the sample used for the empirical study, the older respondents were mostly highly experienced, having worked in IT for many years (see Figure 4). However, the data from the 50+ respondents was similar to many others in the sample in that they strongly supported learning but not qualifications per se. The youngest group, which contained the majority of junior levels and those with shorter tenure, were most likely to support qualification acquisition. Similarly, they were the most supportive of taking extra modules just to complete a qualification, even if the modules were not directly relevant to current work. These points lead to ‘experience’ being a potential factor creating the mismatch between workers and the framework. The individual mentioned previously, who was in the 40s group and shunned formal training but engaged in learning, was also experienced, thus adding evidence to this supposition. Experience can be a double-edged sword: it can be useful to determine what is relevant (Pool et al, 2013b) but it has also been found to be a barrier to undertaking learning (ibid). Previous research on older workers (eg Dymock et al, 2012) does not always indicate the experience level of the population studied. Thus it is difficult to judge whether earlier studies have identified an attitude towards learning that relates to potential learners’ disinterest in general or a lack of need due to the possession of the relevant skills, perhaps obtained via participative learning during performance of their work. As with age, industry sector may also influence the impact of experience on learner choices.

Although it requires additional research to clarify the effect of experience
on older workers’ attitudes to courses and qualifications, the potential importance of considering experience when applying the expansive-restrictive framework links back to the argument made in the literature review that the framework was heavily based on apprenticeship journeys. The argument made was that examples used by the authors (for example, Fuller and Unwin, 2004a) involved a pre-determined start and end point and the framework may not have moved from that scenario to the arena of an established worker who needs to maintain currency rather than learn a new trade or profession from scratch. This is despite the authors stating that ‘...the usefulness of the continuum is not confined to approaches to apprenticeship; it can also be applied more widely to analyse the learning opportunities available to older and more experienced workers and to different organisational contexts' (Fuller and Unwin, 2003b p51 – my emphasis).

There is no evidence that a debate on changes to the expansive-restrictive framework has been initiated although evidence which challenges it has been available since its inception. For example, in 2005 both Fuller and Unwin were authors in Felstead et al’s work where it was noted that ‘...course attendance and the acquisition of qualification [were] both lowly rated […] [a]ctivities more closely associated with the workplace – such as doing the job, being shown things […] were rated as more helpful sources of learning than attending training courses or acquiring qualifications’ (Felstead et al, 2005a, p8). However, changes to worker demographics as explained earlier and the consequent rise in older workers has increased the need for a closer examination of the concept. The overall finding that older, and some younger, experienced workers do not favour qualifications per se, yet do continually learn via other means, indicates that the third participatory dimension of the expansive-restrictive framework does need to be amended. Whether it requires a caveat regarding age, or experience, or even requires a redraft to place less emphasis on courses and qualifications, deserves additional research and debate. For example, having established the learning preferences and activities of older workers in one organisation, it now needs to be established whether it is similar elsewhere.

This chapter has analysed responses using the four themes. In the concluding chapter the main findings and the potential for generalisation from this study are considered. Further research and activities which might be helpful to
progress this work are highlighted in the conclusions. The research has examined the applicability of aspects of the expansive-restrictive framework to older workers. It has taken a particular subset of workers – those in the high end of the knowledge economy – and also in a specific sector – the UK public service. This has provided information on part of the UK workforce which does not appear to have been analysed in this way before. The research had shown that older workers in this particular group place high importance on continuous learning via both acquisitive and participative means and they also enjoy having variety and stimulation in their work. Their younger colleagues also showed similar sentiments. However, the older workers placed relatively low importance on qualifications compared to younger employees even though several older workers were studying to obtain a qualification. The new knowledge created by the research concerns the Organisation as well as older workers. The actual organisation studied professed to offer an expansive environment and this is largely what respondents experienced. This does not imply that all UK Civil Service departments offer a similarly expansive learning environment. Research into other departments would be required to explore their position on the expansive-restrictive continuum. The high proportion of degree qualified employees in the respondent sample suggests it may not be typical of the general Civil Service, however, there may be similarities with other professional sectors such as accountancy, for example, which would complement research by Fenwick (2012a). The actual role of the respondents was not analysed as there were too few respondents, so a wider study would be required to ascertain whether the same results applied to all IT Engineering roles and indeed other roles within the same organisation but outside the IT specialism. It is therefore not possible to generalise the findings more widely to other Civil Service departments or other IT sections. Although the results hold true for the organisation studied, there remain too many factors which may influence the results but which require further examination. It is not known how ‘experience’ or the unusually high quantity of degree holders in the sample may affect the attitudes to the various learning approaches discussed in this research. Therefore any attempts to generalise findings to another organisation needs to be done very carefully by matching not only to an organisation with expansive traits but a workforce of highly educated and enthusiastic learners. Analysis of the four themes addressed in this chapter
could be used to assist future researchers with such a matching exercise.

Using the expansive-restrictive framework as it stands could result in the creation of learning environments with formal courses and qualifications which older workers would not necessarily take up. However, before suggesting what adjustments should be made to the framework, additional research is required to determine, inter alia, whether attention should remain on the chronological age of the learner, or whether experience should become the main focus. This thesis has not supplied a solution, however, it has identified that there is a problem that requires more attention. By examining what appeared to be a mis-match between the recommendations of a framework and earlier research on the way that older workers approach learning at work, it has been demonstrated that the expansive-restrictive framework requires adjustment for it to be applicable outside ‘apprentice-like’ scenarios.
CONCLUSIONS

This thesis investigated the perceived incompatibility between existing research on older learners and a framework which promotes the optimum conditions to facilitate workplace learning. This concluding chapter reviews the background to the research, the way it was conducted and results obtained. The value of the findings for academic research, HR practitioners and also government policies are outlined and suggestions for further work are given. The chapter concludes by assessing the research as a useful step forward along the road to better understanding older learners in the workplace and facilitating their longer, productive presence there.

The importance of older workers continues to rise due to the demographic bulge of ‘baby boomers’ having reached 50 and also changes in retirement and pension legislation meaning more older workers will be at work or seeking work. Therefore, examining whether a framework for creating optimum learning environments is appropriate for older workers is timely. The potential incompatibility of the expansive-restrictive framework arose from noting a feature suggested all workers should have access to formal course and qualifications (Fuller and Unwin, 2003b) and research showing that older learners preferred less formal learning (Fenwick, 2012b). It was subsequently surmised that the concept itself may have remained too close to its apprentice origins and not developed to account for the non-apprentice worker who already possessed experience.

To investigate the question the definition of 'old' needed to be determined. There are several possible definitions of 'old'. All focus on an aspect of age which also influences work activities. For example, life stage (Kooij et al, 2008), personal perception of age (Rioux and Mokounkolo, 2013) or mental acuity (Kanfer et al, 2004). For this research, older workers were defined as those aged 50 and over. Having selected to use chronological age, there was no agreement amongst researchers, or indeed it appeared, government departments, as to what age ‘old’ should be. The age ranged from 45 (for example Billett et al, 2011) to 55 (Niessen et al, 2010). To facilitate further work on the subject of older workers and learning there needs to be an agreement as to what chronological age
constitutes the start of ‘old’ for employees. Ideally it should be split by sector and occupation to account for jobs where age can have a greater impact on ability to continue, such as construction (Gibb et al, 2013). Coupled to this is a need for official agencies to provide their data on citizen activity with suitable age breakdowns to facilitate research into older people. Since the removal of the retirement age, UK official data does not always provide details of age brackets post state pension age, preferring to place all those over 65 into one group. Action to determine suitable age groupings and an approach to departments to publish their data and research using them would assist other researchers interested in this topic. A workplace ('The Organisation') was identified for the study that employed a wide age range. It also operated in the knowledge economy. This part of the economy was selected in order to acquire a population where workplace learning was an essential part of organisational life. A survey tool was prepared drawing on the few previous studies which had attempted to gather quantitative data on both acquisitive and the more difficult to define and measure participative learning (Felstead et al, 2005a and 2007a). The response rate was low, at 11%, but the composition of the respondent group was still suitable for addressing the research question.

The research question was broken into four themes. They were designed to explore the 50+ respondents’ preferences and experiences compared to their younger colleagues. The first theme showed that workers of all ages needed to continually learn new things to do their job and also enjoyed learning, stimulation and variety. The second theme examined the three participatory dimensions of the expansive-restrictive framework to place the environment experienced by respondents on the expansive-restrictive continuum. Documentary evidence from The Organisation suggested it sat towards the expansive pole (The Organisation, 2011, 2012). Survey evidence was inconclusive from the first participatory dimension of engaging with communities of practice both inside and outside. The second dimension, concerning the design and organisation of work, demonstrated a very expansive environment for acquiring and developing expertise for all age groups. The final dimension concerned courses and qualifications relating to work. It is central to the research question and was expanded into two further themes which are summarised below.
The third theme explored the importance placed on participative and acquisitive learning. From the construction of scales, it was evident that older workers placed a high value on participative learning which supports previous evidence (Pool et al, 2013b). This research found that acquisitive methods were also highly important, something which does not seem to have been brought out in previous studies. However, the preferred acquisitive methods were reading and use of the internet and intranet rather than formal courses. Surveys often only count course attendance as a proxy for learning and this may be resulting in much acquisitive learning remaining undetected. It also misses all participative learning which is a key method for all ages. Omitting this and not capturing the preferred acquisitive methods weakens the generalisability of such research.

The appropriateness of encouraging older workers to pursue qualifications and formal courses was the fourth theme and also at the heart of the research question. The first three themes have shown that respondents, including older workers, needed to, and enjoyed continually learning to do their jobs well; enjoyed challenge and variety; worked in a largely expansive environment with multiple opportunities to learn and develop; rated both participative and acquisitive learning methods as important and also obtained qualifications. The 50+ respondents gave qualifications a far lower importance rating than the youngest group. However, despite the lower rating, qualifications were not classed as totally unimportant and a number of the 50+ age group were actively engaged in working towards one. This demonstrates that although participative activities such as being shown or learning on the job were highly valued, over 50s do not shun qualifications. Examining attitudes towards qualifications more deeply revealed that the 50+ respondents were selective about what they learned. They wanted to learn what was required for the job and not seek a qualification for itself – they were not keen to undertake additional study to obtain a qualification unless the extra work was relevant to their job. This indicates that for the group studied, the third participatory dimension – which promotes work-related formal courses and qualifications - is not something that older workers would embrace. It contradicts their preferences and current learning activities and it is therefore unlikely that older workers would sign up to learn via these routes, especially if alternative options were offered. This could result in the employer incurring
expenditure without significant returns in terms of output or increased job satisfaction.

The ability to be selective about learning yet also continue to perform successfully requires an ability to determine what is useful for the job and what may not be. Consequently, it is argued that ‘experience’ may be an important factor when considering the incompatibility with the expansive-restrictive framework rather than just chronological age. Previous research has found that older workers, particularly those engaged in high end knowledge work where continuous learning is required, could demonstrate a less enthusiastic attitude towards qualifications and courses in general (Fenwick, 2012b). This study, where almost all of the older (and some younger) respondents were highly experienced and also highly motivated learners, has shown that this is not due to a lack of enthusiasm for learning. The prevalence of a younger worker with similar characteristics suggests over 50s are not the only ones demonstrating a more discerning attitude towards learning what is actually required for their job. This, along with engagement in activities which are often not recorded, such as participative learning and also using books, journals and the internet, may provide some explanation as to why older workers appear to undertake less training compared to other age groups. The question regarding volume of training and whether all employees should engage in a similar amount is one which is not addressed by this research. However, it is pertinent to correctly interpret whether older workers are being disadvantaged by the employer, or themselves, when results show less training. It needs to be considered that they may have selected fewer episodes and of shorter duration to fit their perceived needs.

The thesis therefore argues that the incompatibility of the expansive-restrictive framework and older workers stems from the concept being created from apprentice scenarios of learning from a low level to gain a wider understanding of work. It does not fully consider the position of experienced workers selectively adding to their skills and knowledge. This is despite the authors stating that the framework is suitable for both older and experienced learners (Fuller and Unwin 2003b). However, the framework may be suitable for some older participants. For example, those in apprentice schemes or relative novices in a trade or profession. Both of these scenarios are likely to increase as
older people find they need to re-skill in order to remain economically active to finance their life before reaching the rising state pension age.

This research has only examined one part of one organisation in the knowledge economy within the public sector. It needs to be ascertained whether similar scenarios regarding experienced older workers would be found if researching an organisation not only in other areas of the public sector and knowledge economy but also in a manufacturing or manual occupations. The findings from this research can be used as a starting point. Only as a result of subsequent work may it be possible to add some caveats or nuances to the way that the framework should be used for different groups. Further research is also required to examine the applicability to experienced workers of any age. The age of 50 is not a distinct boundary for different attitudes towards learning. The 50+ respondents in this research answered in a similar way to other age groups for many of the variables concerning the value of all types of learning. In contrast, the <30 group, who were less experienced, were significantly more supportive of qualification acquisition and also undertaking additional study to obtain a qualification. A further example which shows that the issue is not restricted to the 50+ category is the respondent in the 40s group who eschewed courses of any type but found learning important and preferred participative learning over acquisitive. Additional work is therefore required to understand whether the findings here are representative of other experienced workers. If they are, reducing specific emphasis on certification may be sufficient adjustment of the expansive-restrictive framework to make it broadly applicable to all, as intended by Fuller and Unwin (2003b).

The potential role of experience rather than chronological age raises the question of whether categorising workers by age is appropriate when considering learning. As outlined earlier in this thesis there is a multi-faceted interpretation of ‘age’. Added to this is the issue of ‘experience’ which does not necessarily coincide with chronological age brackets. On top of these two widely variable characteristics is a further layer of variation: what constitutes ‘old’ and ‘experienced’ in different trades and professions. Notwithstanding the three considerations above, as workers in their 70s and over become more numerous, the category of ‘over 50’ will increasingly contain more than one generation, each
of which may have their own idiosyncratic learner identities. Therefore caution should be exercised when examining issues relating to ‘older workers’. Research and policy documents should perhaps further identify the industry sector and broad level of experience they are addressing. This would avoid the confusion of referring to a varied and multi-faceted group is if it were an homogeneous whole.

This research has challenged several stereotypes of older workers' enthusiasm for learning which need to be verified by additional academic work. For example, the lack of desire for promotion is not necessarily matched by a lack of enthusiasm for constant learning and stimulating work. Similarly, a lack of participation in courses does not imply a lack of participation in other learning forms. A particular aspect which implies an unsatisfactory situation for older workers is the evidence that their learning is of shorter duration and of lower quality (Felstead, 2011). Bearing in mind the influence of experience mentioned above, this may not be a negative situation. Research investigating volumes of training undertaken need to also examine whether the amount meets the needs of the learner. Evidence in this research suggests that different amounts may be required.

The stereotypes of older workers’ negative association with learning may be influencing management decisions and prolonging the stereotype. Therefore the evidence that this is not the case – at least in the organisation studied here – needs to be shared. For example, examination for this research of the annual Civil Service survey revealed that the questions about learning were worded in such a way that older workers were likely to provide less positive responses, thus making older workers appear less interested in development. Although tangential to the research question, the research itself has enabled the creators of the Civil Service wide survey to become aware of how they were unintentionally prolonging a negative view of older learners by not being aware that their learning activities are not necessarily the same as those of younger colleagues.

Returning to the subject of experience, the level of work experience is not routinely reported in learning research. Its inclusion would help better understand its role and also contribute to debates around the amount of learning
done by older workers. It is proposed in this research that it is an important factor in understanding choices made. It could also be argued that when researching professions where there is considerable worker autonomy, such as the knowledge economy examined here, the worker is also likely to exercise that autonomy where learning options are concerned. Examination of various levels of experience and in different sectors would shed more light on these issues.

Finally, the core activities in learning research – the actual learning itself – could be improved to provide richer data. Examination of formal learning needs to consider attributes other than the easy to enumerate courses. Otherwise learning methods which are particularly popular with all ages are not being considered and may inadvertently prolong the message that older workers are not engaging in workplace learning. Collection of informal learning data also needs to be revisited. It can be difficult to gather due to its very nature (Boud and Solomon, 2003). However, creation of a set of questions which collectively form a scale, as in this research, would provide a method for increasing examination of this form of learning. This research has therefore not only added to the knowledge on workplace learning and also older workplace learners but identified areas where future academic research could be directed and improved.

This thesis can also contribute to current UK government initiatives. Due to the number of older workers destined to increase, the UK government is seeking ways to enable them to be actively engaged in the labour market. One example which seeks to take this aim forward is The Fuller Working Lives (FWL) initiative (DWP, 2014). It considers various aspects including pensions, health and also training. FWL looked at the whole labour market but it appears to concentrate on older workers seeking re-employment or entering self-employment. There is little acknowledgement of the wide spectrum of circumstances pertaining to older workers. In particular, there is little attention paid to those over 50s who are already leading a full working life and how this can be maintained. Particular comments are stated as if they are universal issues that need resolution. This research has shown that certain activities (or lack of) can be quite intentional and contribute to the maintenance of an engaged older employee. For example, the tendency for training ‘...to be more narrowly focused towards the employee’s current role rather than wider career development’ (DWP, 2014d p39) is not
necessarily a negative thing. The attempt to incorporate an investigation into learning for a future role in this research had to be abandoned as explained earlier. However, learning relating to a current role is exactly what the 50+ respondents in this research wanted. They were experiencing a stimulating and varied working life, learning new things and enjoying an expansive learning environment. They did not want to increase learning participation, undertake learning of longer duration or learn things extraneous to their role. Coupled with this is a further example where this research could inform the FWL agenda. FWL comments on the lower frequency of job changes, citing various reasons including reluctance to change. Although this statement may be true in itself there was no counterbalance mentioning those older workers who wished to remain in their chosen profession, such as the IT Engineers examined in this research, and how they can be supported to do so. The longer period between moving jobs is a time when the experience and tacit knowledge of the older worker could be passed on via mentoring schemes. Thus longer duration could make good business sense in more than one way. Although the FWL initiative focuses on preventing early exits from the labour market by older workers, most emphasis is placed on re-skilling for a different role and also re-entering work. By not paying attention to the needs of those already productively engaged it could lead to additional exits that had not been foreseen.

An additional example of how this research could inform UK policy is the recently concluded project, the Midlife career review (NIACE, 2013). It was associated with the FWL work and sought the most appropriate approach for developing different groups of people aged around 50. It concluded that workers of this age should have access to a career review where, inter alia, work after 50 could be discussed. It reported that over half of the clients in the pilot projects discussed development aspects (ibid). Therefore, it is important to understand the ways that various employees may be accustomed to addressing their workplace development needs. Those advising experienced workers having a Midlife career review need to take account of the learning preferences of their clients and not necessarily consider courses as the first solution to the skills gap when a book or a participative method may be more appropriate. Further research into the ‘experience’ issue is required to understand whether there are
differences across sectors. However, being aware that ‘the course’ approach is not necessarily the most appropriate may encourage advisers to consider a variety of options.

In conclusion, the thesis has determined that the concept of the expansive-restrictive learning does not fit knowledge workers aged over 50. The findings suggest that the issue may not be one of simple chronological age, although the effects are noticeable with older workers. It is proposed that the reason for the apparent incompatibility may lie in experience rather than age. The findings can be taken forward in several ways. The research has added to the knowledge of older employees’ workplace learning, in this case, for a specific group of learners - in the UK public sector working at the high-end of the knowledge economy – neither of which seem to have been recently examined in this way. It has also demonstrated that, in one organisation at least, the negative stereotypes of older learners are not evident and older learners do approach learning with enthusiasm and consider it an important and enjoyable part of their job. They also rate both acquisitive and participative learning highly and show a selective approach towards acquisition of qualifications, suggesting that content is more important than delivery method and formal certification. Stemming from this work, suggestions have been made for further academic research and also improvements in collection of aspects of learning data. Finally, the research offers timely information on workplace learning which may be useful to government initiatives aimed at equipping the growing older population to participate productively in the labour force.

In sum this thesis has progressed the examination of the expansive-restrictive framework and its relevance to the current labour market; it has added to knowledge on older workers and their workplace learning, particularly in the knowledge economy and the UK Civil Service. These insights provide the basis for further research which can assist governments, employers and academics better understand development issues pertinent to this growing section of the labour market.
APPENDICES
Appendix A  Initial Features of the Expansive Restrictive Framework

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in multiple communities of practice inside and outside the workplace</td>
<td>Restricted participation in multiple communities of practice</td>
</tr>
<tr>
<td>Primary community of practice has shared 'participative memory': cultural inheritance of workforce development</td>
<td>Primary community of practice has little or no 'participative memory': no or little tradition of apprenticeship</td>
</tr>
<tr>
<td>Breadth: access to learning fostered by cross-company experiences.</td>
<td>Narrows: access to learning restricted in terms of tasks/knowledge/location</td>
</tr>
<tr>
<td>Access to range of qualifications including knowledge-based vocational qualifications</td>
<td>Access to competence-based qualifications only</td>
</tr>
<tr>
<td>Planned time off-the-job including for knowledge based courses and for reflection</td>
<td>Virtually all on-the-job: limited opportunities for reflection</td>
</tr>
<tr>
<td>Post apprenticeship vision: progression for career</td>
<td>Post apprenticeship vision: static for job</td>
</tr>
<tr>
<td>Explicit institutional recognition of, and support for, apprentices' status as learner</td>
<td>Ambivalent institutional recognition of, and support for, apprentices's status as learner</td>
</tr>
<tr>
<td>Named individual acts as dedicated support to apprentices</td>
<td>No dedicated individual ad-hoc support</td>
</tr>
<tr>
<td>Apprenticeship is used as a vehicle for aligning the goals of developing the individual and organisational capability</td>
<td>Apprenticeship is used to tailor individual capability to organisational need</td>
</tr>
<tr>
<td>Apprenticeship design fosters opportunities to extend identity through boundary crossing</td>
<td>Apprenticeship design limits opportunities to extend identity: little boundary crossing experienced</td>
</tr>
<tr>
<td>Reification of apprenticeship highly developed (eg through documents, symbols, language, tools) and accessible to apprentices</td>
<td>Limited reification of apprenticeship, patchy access to reificatory aspects of practice</td>
</tr>
</tbody>
</table>

From Fuller, A. & Unwin, L. (2003c): "Learning as Apprentices in the Contemporary UK Workplace: creating and managing expansive and restrictive participation", Journal of Education and Work, 16:4, p411 'Fig.1. The expansive-restrictive continuum.'
## Appendix B  Features of the Expansive Restrictive Framework

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Widely distributed skills</td>
<td>Polarised distribution of skills</td>
</tr>
<tr>
<td>Technical skills valued</td>
<td>Technical skills taken for granted</td>
</tr>
<tr>
<td>Knowledge and skills of whole workforce developed and valued</td>
<td>Knowledge and skills of key workers/groups developed and valued</td>
</tr>
<tr>
<td>Team work valued</td>
<td>Rigid specialist roles</td>
</tr>
<tr>
<td>Cross-disciplinary groups / communication encouraged</td>
<td>Bounded communication and work</td>
</tr>
<tr>
<td>Manager /supervisor as enabler</td>
<td>Manager as controller</td>
</tr>
<tr>
<td>Pursuit of formal qualifications valued / supported</td>
<td>Pursuit of formal qualifications not valued or supported / or seen as tangential to business need - may be supported for personal motivation</td>
</tr>
<tr>
<td>Chances to learn new jobs/skills</td>
<td>Lack of workplace mobility</td>
</tr>
<tr>
<td>Expanded job design</td>
<td>Restricted job design</td>
</tr>
<tr>
<td>Bottom-up approach to innovation</td>
<td>Top down approach to innovation</td>
</tr>
<tr>
<td>Formative approach to evaluation</td>
<td>Summative approach to evaluation</td>
</tr>
<tr>
<td>Individual progression encouraged - strong internal labour market</td>
<td>Weak internal labour market - recruitment usually from outside to meet skill needs</td>
</tr>
</tbody>
</table>

From Fuller, A. & Unwin, L. (2003b): "Fostering Workplace Learning: looking through the lens of apprenticeship.", European Educational Research Journal 2:1, p52  'Figure 2. Organisational Learning Culture'.
Appendix C The Three Participatory Dimensions

Detailed breakdown of the expansive - restrictive features in each of the three participatory dimension categories.

1. Opportunities for engaging in multiple (and overlapping) communities of practice at and beyond the workplace;

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in multiple communities of practice inside and outside the workplace</td>
<td>Restricted participation in multiple communities of practice</td>
</tr>
<tr>
<td>Breadth: access to learning fostered by cross-company experiences.</td>
<td>Narrows: access to learning restricted in terms of tasks/knowledge/location</td>
</tr>
<tr>
<td>Workforce development fosters opportunities to extend identity through boundary crossing</td>
<td>Workforce development limits opportunities to extend identity: little boundary crossing experienced</td>
</tr>
<tr>
<td>Cross-boundary communication encouraged</td>
<td>Bounded communication</td>
</tr>
</tbody>
</table>

2. Access to a multidimensional approach to the acquisition of expertise though the organisation of work and design

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary community of practice has shared 'participative memory': cultural inheritance of workforce development</td>
<td>Primary community of practice has little or no 'participative memory': no or little tradition of apprenticeship</td>
</tr>
<tr>
<td>Gradual transition to full, rounded participation.</td>
<td>Fast - transition as quick as possible.</td>
</tr>
<tr>
<td>Vision of workplace learning: progression for career</td>
<td>Vision of workplace learning: static for job</td>
</tr>
<tr>
<td>Organizational recognition of, and support for employees as learner</td>
<td>Lack of organizational recognition of, and support for employees as learner</td>
</tr>
<tr>
<td>Workforce development is used as a vehicle for aligning the goals of developing the individual and organizational capability</td>
<td>Workforce development is used to tailor individual capability to organisational need</td>
</tr>
<tr>
<td>Reification of ‘workplace curriculum’ highly developed (eg through documents, symbols, language, tools) and accessible to apprentices</td>
<td>Limited reification of ‘workplace curriculum’ patchy access to reificatory aspects of practice</td>
</tr>
<tr>
<td>Widely distributed skills</td>
<td>Polarized distribution of skills</td>
</tr>
<tr>
<td>Technical skills valued</td>
<td>Technical skills taken for granted</td>
</tr>
<tr>
<td>Knowledge and skills of whole</td>
<td>Knowledge and skills of key</td>
</tr>
<tr>
<td>workforce developed and valued</td>
<td>workers/groups developed and valued</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Team work valued</td>
<td>Rigid specialist roles</td>
</tr>
<tr>
<td>Managers as facilitators of workforce and individual development</td>
<td>Managers as controllers of workforce and individual development</td>
</tr>
<tr>
<td>Innovation important</td>
<td>Innovation not important</td>
</tr>
<tr>
<td>Multidimensional view of expertise</td>
<td>Uni-dimensional top-down view of expertise</td>
</tr>
<tr>
<td>#Expanded job design</td>
<td>#Restricted job design</td>
</tr>
<tr>
<td>#Formative approach to evaluation</td>
<td>#Summative approach to evaluation</td>
</tr>
<tr>
<td>#Individual progression encouraged - strong internal labour market</td>
<td>#Weak internal labour market - recruitment usually from outside to meet skill needs</td>
</tr>
</tbody>
</table>

3. The opportunity to pursue knowledge-based courses and qualifications relating to work.

<table>
<thead>
<tr>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to range of qualifications including knowledge-based vocational qualifications</td>
<td>Little or no access to qualifications</td>
</tr>
<tr>
<td>Planned time off-the-job including for knowledge based courses and for reflection</td>
<td>Virtually all on-the-job: limited opportunities for reflection</td>
</tr>
<tr>
<td>Chances to learn new skills/jobs</td>
<td>Barriers to learning new skills/jobs</td>
</tr>
<tr>
<td>#Pursuit of formal qualifications valued / supported</td>
<td>#Pursuit of formal qualifications not valued or supported / or seen as tangential to business need - may be supported for personal motivation</td>
</tr>
</tbody>
</table>

The tables above are adapted from Fuller, A. and Unwin, L. (2004a) 'Expansive learning environments: Integrating organizational and personal development' Chapter 8 in H. Rainbird, A. Fuller and A. Munro (eds). Workplace Learning in Context. London: Routledge, pp. 126-144. Figure 8.1 ‘Expansive restrictive continuum’ p 130

# = item not incorporated in the table in Fuller and Unwin 2004a, but is present in Fuller and Unwin 2003b p52 (see Appendix B). They have been included here to provide additional information regarding the interpretation of the three participatory dimensions.
Appendix D  HPWP Features

Realistic job previews
Psychometric tests for selection
Well developed induction training
Provision of extensive training for experienced employees
Regular appraisals
Regular feedback on performance from many sources
Individual performance-related pay
Profit-related bonuses
Flexible job descriptions
Multi-skilling
Presence of work-improvement teams
Presence of problem-solving groups
Information provided on the firm’s business plan
Information provided on the firm’s performance targets
No compulsory redundancies
Avoidance of voluntary redundancies
Commitment to single status
Harmonized holiday entitlement

Appendix E  Chart of Questions. How the survey questions mapped to the four themes

<table>
<thead>
<tr>
<th>Theme one</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to continually learn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme Two</th>
<th>EXPANSIVE</th>
<th>RESTRICTIVE</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E Widely distributed skills</td>
<td>1R Polarised distribution of skills</td>
<td>a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2E Technical skills valued</td>
<td>2R Technical skills taken for granted</td>
<td>a</td>
<td>d</td>
<td>e</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3E Knowledge and skills of whole workforce developed and valued</td>
<td>3R Knowledge and skills of key workers/groups developed and valued</td>
<td>a</td>
<td>f</td>
<td>k</td>
<td>l</td>
<td>a</td>
<td>g</td>
</tr>
<tr>
<td>4E Team work valued</td>
<td>4R Rigid specialist roles</td>
<td>b</td>
<td>b</td>
<td>c</td>
<td>m</td>
<td>o</td>
<td>k</td>
</tr>
<tr>
<td>5E Cross-disciplinary groups/comms encouraged</td>
<td>5R Bounded communication and work</td>
<td>b</td>
<td>e</td>
<td>f</td>
<td>c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6E Manager /supervisor as enabler</td>
<td>6R Manager as controller</td>
<td>d</td>
<td>g</td>
<td>i</td>
<td>j</td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>9E Expanded job design</td>
<td>9R Restricted job design</td>
<td>c</td>
<td>d</td>
<td>e</td>
<td>f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10E Bottom-up approach to innovation</td>
<td>10R Top down approach to innovation</td>
<td>f</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11E Formative approach to evaluation</td>
<td>11R Summative approach to evaluation</td>
<td>h</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12E Individual progression encouraged - strong internal labour market</td>
<td>12R Weak internal labour market - recruitment usually from outside to meet skill needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme Three</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>7E Pursuit of formal qualifications valued / supported</td>
<td>7R Pursuit of formal qualifications not valued or supported / or seen as tangential to business need – may be supported for personal motivation</td>
<td>j</td>
<td>k</td>
<td></td>
<td>d</td>
</tr>
<tr>
<td>8E Chances to learn new jobs/skills Learning by Acquisition</td>
<td>8R Lack of workplace mobility</td>
<td>f</td>
<td>g</td>
<td>h</td>
<td>i</td>
</tr>
<tr>
<td>Learning by Participation</td>
<td></td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>e</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme Four</th>
<th>Q11</th>
<th>Q12</th>
<th>Q13</th>
<th>Q14</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifications (also 7E and 7R above)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Qs15, 16, 17, 18, 19</td>
</tr>
</tbody>
</table>
Appendix F Survey Tool

The survey used for the research did not have A,B,C etc next to the elements of each question and nor did it have the annotations after the question. These are to indicate the origin of the question if it first appeared in previous research and indicate which feature of the expansive-restrictive framework or learning type it mainly addresses.

Note on annotations (not included in survey sent out):
LAWS = Learning at Work survey 2007 – question derived from this survey
COP = Communities of Practice Survey 2004 – question derived from this survey
Acquis – learning by acquisition element
Partic – learning by participation element
Digits = refers to the element of the expansive-restrictive concept as used in Fig X

About you

Q1 How old are you (to the nearest whole year)

Q2 Please mark one of the following: Are you
   Male
   Female

About work

Q3 (COP Q6) How long have you been working in IT Engineering? (approximate number of years)

Q4 (COP Q5) How long have you been working in IT Engineering with your current employer (approximate number of years)?

Q5 How would you describe your current role?

Q6 (COP Q4) How long have you been in your current role (approximate number of years)?

Q7 What is your current grade?

Q8 How long have you been at your current grade (approximate number of years)

Q9 Have you held any other grades/levels with this employer?
   No
Yes

If yes, please write the grades here:

For the next set of questions please mark the most appropriate box to indicate your answer.

**Future plans**

**Q10** In the next 2 years how likely are you to do any of the following?

<table>
<thead>
<tr>
<th></th>
<th>Highly likely</th>
<th>Likely</th>
<th>Not very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Remain in this area of work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B Move to a related area of work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Move to a completely different type of work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Remain with the same employer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Move to another employer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Become self employed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Retire/leave work completely</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H Seek promotion/advancement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I Seek to reduce my contracted hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J Seek to increase my contracted hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K Seek a less demanding job</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L Seek a more demanding job</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Training/development/learning for the current job

**Q11 (LAWS Q3)** In order to perform your job well, how important are the following:

<table>
<thead>
<tr>
<th>Having the relevant knowledge and skills (1, 2, 3)</th>
<th>Very Important</th>
<th>Fairly important</th>
<th>Not important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting advice from colleagues working in the same organisation (4, 5, partic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding the organisation in which you work (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing your own ways of working (9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keeping in touch with people doing similar work in other organisations (5, 9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing good relationships with customers (5, 9)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Q12 (COP Q15 and LAWS Q4)** The following table lists activities that may help someone learn how to do their job better. Please indicate how helpful each one is for you.

<table>
<thead>
<tr>
<th>Actually doing the job (partic)</th>
<th>Quite a lot of help</th>
<th>Of some help</th>
<th>Of no help at all</th>
<th>Not appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being shown by others how to do certain activities or tasks (4 partic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking to your customers (5, partic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting advice/guidance from your technical lead (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviewing your own performance (partic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using the intranet and/or internet (acquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading books, manuals and trade/professional magazines (acquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attending trade shows / exhibitions / conferences (acquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using skills and abilities acquired outside of work (acquis, quali)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
J Drawing on skills you picked up whilst studying for a qualification before starting full-time work (acquis, quali)

K Drawing on skills you picked up whilst studying for a qualification since starting full-time work (3, 7, acquis, quali)

L Training courses attended since starting full-time work which did not lead to a qualification (acquis)

Q13 (LAWS Q5 plus elements of LAWS Q7, COP Q13, COP Q14) How much do you agree/disagree with the following statements:

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>My job requires me to keep learning new things</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>I have picked up most of my skills through on the job experience (partic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>My job requires me to help others learn new things (4) (partic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>I feel valued by my peers for my skills/experience (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>I feel valued by my employer for my skills/experience (2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>I feel I will be listened to if I have an idea which will improve something (10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>My supervisor/manager discusses my development needs with me (6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>I receive and discuss feedback on my performance (6, 11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>I feel I have been denied development opportunities due to my age (3, 6) (reverse coded)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>I feel I have been offered development opportunities due to my age (3, 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>COP Q13 I often learn new things from the people I work with (4, partic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>COP Q13 My colleagues and I willingly pool ideas about how to get the work done (4, partic)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>COP 14 I keep what I know about how to do the job to myself (4, partic) (Reverse coded)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>COP 14 It is a problem when people leave because they take with them what they know (partic) (Reverse coded)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>COP 14 You can only learn this job</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
by working closely with your colleagues (4, partic)

- P LAWS 7 I decide how to tackle a problem given to me (9)
- Q LAWS 7 I organise my own work ie decide which tasks to do when (9)

Q14 (Atkinson) The following table lists some aspects of work that people find make their work enjoyable. Please indicate how important they are in helping you to enjoy your work.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Very important</th>
<th>Important</th>
<th>Not important at all</th>
<th>This feature is currently available to me</th>
<th>This feature is NOT currently available to me</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Having variety in the work you do (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B Having stimulating/challenging work (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Learning new things (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D Having the opportunity to gain externally recognised qualifications (3, 7, acquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E Developing your existing skills/abilities via formal training (3, 7, acquis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Developing your existing skills/abilities on the job (3, partic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q 15 (COP Q16)  Where does the responsibility lie for your personal learning and development at work? Please mark ONE box only.

<table>
<thead>
<tr>
<th>Mainly with me</th>
<th>Mainly with my employer</th>
<th>Equally between me and my employer</th>
<th>I don't know</th>
</tr>
</thead>
</table>

**Qualifications**

Q16 Which of these qualification do you hold?

<table>
<thead>
<tr>
<th>Masters degree or higher</th>
<th>Bachelors degree</th>
<th>Certificate/Diploma etc higher than A level</th>
<th>A level</th>
<th>O level / GCSE</th>
<th>Lower than O level / GCSE</th>
<th>Externally recognised IT certification/qualification</th>
</tr>
</thead>
</table>

Q17 Are you currently working towards any externally recognised qualification?

<table>
<thead>
<tr>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
</table>

Q18 After attending a course, how important is it to you that it counts towards a recognised qualification?

<table>
<thead>
<tr>
<th>Very important</th>
<th>Important</th>
<th>It is nice to have</th>
<th>Not important at all</th>
<th>It used to be important to me but is not any more</th>
</tr>
</thead>
</table>

Q19 This question is asking for your views about doing additional study in order to gain an externally recognised qualification (or official certification etc). Consider a scenario where your immediate training needs could be met by completing just part of a larger course. By studying additional modules you could obtain a qualification.  Bearing the above in mind… (7) (acquis)

<table>
<thead>
<tr>
<th>A I'd look for a way to complete additional modules, even if they are not directly related to my work, to acquire a qualification</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
</table>

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B I am only interested in extra study if the content is directly relevant to my work.

C I would like a qualification but I’ve not got the time/energy for study on top of other commitments (eg work, home, family)

D I would like the qualification but the monetary cost would put me off if I had to pay for it myself

Finally…
Would be willing to take part in any follow-up work to help me better understand the information I obtain from these questions?

<table>
<thead>
<tr>
<th>Yes, I give permission for you to contact me</th>
</tr>
</thead>
</table>

Do you have any additional comments on anything you feel may be relevant? If it relates to a specific question, please remember to include the question number.

Thank you very much for taking the time to complete these questions.
Appendix G Coding

Q1 Figure for years as given
Q2 Male 1  Female 2
Q3 Figure for years as given
Q4 Figure for years as given
Q5 Free text
Q6 Figure for years as given
Q7 Free text
Q8 Figure for years as given
Q9 No 1 Yes 2  plus free text
Q10 Highly likely 2  Likely 1  Not very likely 0
Q11 Very Important 2  Fairly Important 1  Not Important 0
Q12 Quite a lot of help 2  Of some help 1  Of no help at all 0
Q13 Strongly agree 3  Agree 2  Disagree 1 Strongly disagree 0
Note elements M and N and I of this question were reverse coded
Q14 Very important 3  Important 2  It is nice to have 1  Not important at all 0
(This feature is/is NOT currently available - used in manual/visual analysis but not
coded for use in SPSS)
Q15 Used in manual/visual analysis but not coded for use in SPSS
Q16 Used in manual/visual analysis but not coded for use in SPSS
Q17 Used in manual/visual analysis but not coded for use in SPSS
Q18 Very important 3  Important 2  It is nice to have 1  Not important at all 0
It used to be important to me but is not any more - used in manual/visual analysis but
not coded for use in SPSS
Q19 Strongly agree 3  Agree 2  Disagree 1 Strongly disagree 0
Appendix H – Scales

Acquisitive Learning Scale

The elements used in the earlier research (Felstead et al, 2005a and 2007a) were: ‘training courses paid for by your employer or yourself’; ‘drawing on skills you picked up whilst studying for a qualification’; ‘using skills and abilities acquired outside work’; ‘reading books, manuals and work-related magazines’; ‘using the internet’. The scale for importance of acquisitive learning was therefore initially prepared with similar variables from the survey used in this research namely: ‘using skills and abilities acquired outside work’; ‘reading books, manuals and work-related magazines’ and ‘using the internet.’ To this was added the variable ‘attending trade shows/exhibits’ which was suggested by the pilot respondents as a factor worth including. To these four I needed to add acquisition of skills/knowledge from qualifications as per the earlier scale. I had split this particular issue into those skills obtained before and since starting work. However, when testing for scale reliability, neither of these appeared to be measuring the same concept as the other four items as both had a corrected item-total correlation of below 0.3 and inclusion in the scale suppressed the Cronbach alpha to below 0.7. Therefore the above variables were not appropriate for this scale.

The four elements finally selected for the scale all showed a corrected item total correlation of between 0.357 (attending shows) and 0.686 (reading and internet), as listed in the table below. Removing any of them would have reduced the overall Cronbach alpha to an unacceptable level. Thus the four variables selected were all measuring the same concept and contributing to a scale that was as reliable as possible from the variables and responses available. These final four, although slightly different, are very close to the items used in the studies mentioned above. The only omission is a variable concerning acquisition of skills from qualifications. In retrospect, the variable ‘using skills and abilities acquired outside work’ is not necessarily an indication of acquisitive learning. Skills could have been picked up by a more participative method. However, the intention was to replicate the scale used in the earlier research. In a similar manner, the benefits of attending trade shows could also be construed as being more participative than acquisitive – however, this variable was left in the scale. A separate scale was
devised to examine qualifications and it is presented in response to theme four in the Analysis chapter and the creation of the scale is included in this appendix.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach’s Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend shows</td>
<td>6.5077</td>
<td>5.293</td>
<td>.357</td>
<td>.746</td>
</tr>
<tr>
<td>Use internet</td>
<td>5.7462</td>
<td>4.048</td>
<td>.686</td>
<td>.556</td>
</tr>
<tr>
<td>Read books</td>
<td>5.7462</td>
<td>4.048</td>
<td>.686</td>
<td>.556</td>
</tr>
<tr>
<td>Use skills/abilities acquired outside work</td>
<td>6.2308</td>
<td>4.868</td>
<td>.367</td>
<td>.753</td>
</tr>
</tbody>
</table>

Figure X. SPSS Output showing variables used and reliability for the Acquisitive Learning Scale (Cronbach Alpha = 0.725)

Participative Learning Scale

For this scale none of the variables used in the previous studies (Felstead 2005a and 2007a) appeared to provide a basis for the creation of the scale. ‘doing the job’, ‘reflecting on performance’ and ‘being shown by others’ all returned very low corrected item-total correlations of below 0.3. The overall Cronbach alpha of -0.97 also indicated that something was amiss. The same result was achieved when using the variables pre- and post-transformation of the scale as described in a footnote in the analysis chapter, so that was ruled out as the cause. Similarly, erroneous coding was discounted and it remains unknown why these three were not capturing a similar theme. Using a small quantity of variables can produce a lower Cronbach alpha (Pallant, 2007) and this may have been the case here. Including additional variables from the survey which were features of participative learning did result in a scale with good validity (0.732). The variables entered and their corrected item-total correlation can be seen in the table below.

The original three variables used by Felstead et al (2005a and 2007a) were reinserted alongside the ones used for the scale mentioned above but two returned a particularly low corrected item-total correlation - ‘being shown by others’ (0.154) and ‘actually doing the job’ (0.241), indicating they were not measuring the same concept as the other variables. However, excluding both would only raise the Cronbach alpha by 0.003. As they were not suppressing the Cronbach significantly they were left in. Although the final scale
does not match the one used previously, the items all relate to participative learning and they do score well as a scale. Therefore they have been deemed a suitable alternative instrument to detect support for participative learning amongst the sample used for this research.

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get advice frm colleagues in same org</td>
<td>36.5846</td>
<td>29.926</td>
<td>.228</td>
<td>.727</td>
</tr>
<tr>
<td>Keep in touch with people in other orgs</td>
<td>37.6231</td>
<td>27.610</td>
<td>.329</td>
<td>.720</td>
</tr>
<tr>
<td>Establish good rels with customers</td>
<td>36.6538</td>
<td>28.726</td>
<td>.316</td>
<td>.720</td>
</tr>
<tr>
<td>Actually doing job</td>
<td>36.3308</td>
<td>30.080</td>
<td>.241</td>
<td>.726</td>
</tr>
<tr>
<td>Being shown by others how to do smthg</td>
<td>36.9077</td>
<td>30.116</td>
<td>.154</td>
<td>.735</td>
</tr>
<tr>
<td>Talking to customers</td>
<td>37.2538</td>
<td>27.985</td>
<td>.379</td>
<td>.713</td>
</tr>
<tr>
<td>Advice from tech lead</td>
<td>36.9308</td>
<td>27.741</td>
<td>.386</td>
<td>.713</td>
</tr>
<tr>
<td>Reviewing own performance</td>
<td>37.0462</td>
<td>27.053</td>
<td>.422</td>
<td>.708</td>
</tr>
<tr>
<td>Picked up skills thru ojt</td>
<td>36.7000</td>
<td>29.420</td>
<td>.273</td>
<td>.724</td>
</tr>
<tr>
<td>My job requires me to help others learn</td>
<td>36.8385</td>
<td>28.673</td>
<td>.496</td>
<td>.708</td>
</tr>
<tr>
<td>Supervisor/manager discusses dev needs</td>
<td>37.1923</td>
<td>28.849</td>
<td>.358</td>
<td>.716</td>
</tr>
<tr>
<td>Receive/discuss feedback on performance</td>
<td>37.1154</td>
<td>29.983</td>
<td>.234</td>
<td>.727</td>
</tr>
<tr>
<td>Often learn new things from colleagues</td>
<td>36.7154</td>
<td>28.570</td>
<td>.403</td>
<td>.712</td>
</tr>
<tr>
<td>Often pool ideas with colleagues</td>
<td>36.7769</td>
<td>29.211</td>
<td>.391</td>
<td>.715</td>
</tr>
<tr>
<td>Keep what I know to myself</td>
<td>36.5615</td>
<td>30.051</td>
<td>.309</td>
<td>.722</td>
</tr>
<tr>
<td>Prob when people leave knowledge goes</td>
<td>38.1154</td>
<td>30.092</td>
<td>.178</td>
<td>.732</td>
</tr>
<tr>
<td>Only learn job working closely w colleagues</td>
<td>37.3308</td>
<td>30.635</td>
<td>.134</td>
<td>.735</td>
</tr>
<tr>
<td>Develop existing skills / abilities on job</td>
<td>36.8077</td>
<td>29.037</td>
<td>.426</td>
<td>.712</td>
</tr>
</tbody>
</table>

Figure X. SPSS Output showing variables used and reliability for the Participative Learning Scale (Cronbach Alpha = 0.732)
Qualifications Scale

These figures are in the body of the text at the end of the Methods chapter but reproduced here so that information on all the scales is together.

The qualifications scale had a Cronbach Alpha of 0.72

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>How important is opportunity for qualifications in helping you enjoy work</td>
<td>3.646</td>
<td>2.920</td>
<td>.673</td>
<td>.532</td>
<td>.534</td>
</tr>
<tr>
<td>How important is developing existing skills / abilities via formal training in helping you enjoy work</td>
<td>3.123</td>
<td>3.828</td>
<td>.464</td>
<td>.353</td>
<td>.675</td>
</tr>
<tr>
<td>How important is qualifications after attending course</td>
<td>4.031</td>
<td>3.593</td>
<td>.505</td>
<td>.378</td>
<td>.651</td>
</tr>
<tr>
<td>drawing on skills etc from qualification since starting work</td>
<td>3.785</td>
<td>4.047</td>
<td>.381</td>
<td>.155</td>
<td>.720</td>
</tr>
</tbody>
</table>

Figure X. SPSS Output showing variables used and reliability for the Qualification acquisition Scale (Cronbach Alpha = 0.72)
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