

# Literacy and numeracy demands and usage in the workplace

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# Abstract

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This research focuses on the demand for and use of literacy and numeracy skills in low paid work. The motivation for the research is to examine the assumption, widely espoused by policy makers, that literacy and numeracy skills are vital at all levels of the labour market and that deficiencies in these skills are the source of widespread economic problems. The primary aim of this study is to understand the extent to which employees in low paid occupations use literacy and numeracy skills in their work. Alongside this, the research considers the extent of mismatch between the skills of employees and the demands of their job, the extent of change in the demand for literacy and numeracy skills and the sources of demand for literacy and numeracy skill. Methodologically the research focuses on qualitative case studies of frontline work in two major low paying sectors, retail and residential care. Research took place in three Nursing Homes in England and three retail outlets in South Wales. This qualitative analysis is supplemented by a quantitative analysis of the Skills and Employment Surveys from 1997 to 2012, which provides a broader picture of the extent of and changes in the use of literacy and numeracy skills in low paid work. The research raises doubts about the extent of demand for literacy and numeracy skills in occupations at the lower end of the labour market and the incidence of deficiencies in the skills of employees. This in turn leads to questions about the viability of approaches to literacy and numeracy policy predicated on these assumptions.

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# 1 Introduction

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Over the last two decades, the literacy and numeracy skills of the workforce have been a major concern for UK policy makers. Politicians of both left and right have fixed on the idea that deficiencies in the literacy and numeracy skills of working age adults are the cause of major economic problems for individuals, firms and the country as a whole. However, despite this, the subject of the demand for literacy and numeracy skills has been under-researched, especially in relation to work at the lower end of the labour market in typically low paying occupations. This research seeks to fill this gap and in doing so, make contributions to both policy debates and the academic literature. This introductory chapter sets the scene for the research, firstly by giving a brief overview of recent approaches to adult literacy and numeracy policy and the assumptions underlying these approaches. The chapter then briefly touches on academic perspectives on the demand for literacy and numeracy skills before explaining the focus on low paid work. The chapter concludes by setting out the key research questions and providing an overview of the study.

Wolf and Evans (2011) trace rising concern about adult literacy and numeracy skills to the mid-1990s, especially the publication of results from the OECD's International Adult Literacy Survey (IALS) in 1996. Prior to this, Wolf and Evans argue, adult literacy and numeracy policy had been a relative political backwater. Until the mid-1990s literacy and numeracy provision for adults retained characteristics of "traditional" adult and community education – run by local authorities and heavily reliant on support from volunteers. However, the publication of results from the IALS survey launched adult literacy and numeracy up the policy agenda.

Amidst a policy background in which workforce skills were increasingly seen as central to the economic prospects of nation-states, the poor showing of the UK in this survey initiated a spasm of panic amongst policy makers about the literacy and numeracy skills of UK adults.

In response to these findings in England, the incoming Labour government commissioned Sir Claus Moser to produce a report on the problems of basic skills (Moser 1999). The report painted a bleak picture of the literacy and numeracy skills of the adult population, suggesting that 1 in 5 English adults were functionally illiterate, while around 40% of adults had some difficulties with numeracy. Moser called for significant efforts to tackle these apparent problems. The government answered Moser's call to action by instigating the *Skills*

*for Life* strategy in 2001 (DfEE 2001). The strategy promised free literacy and numeracy training for adults wishing to improve their skills with a focus on target groups such as the unemployed and low-skilled individuals in work. There was also an emphasis on the provision of workplace learning (Wolf and Evans 2011). The strategy aimed to improve the skills of 750,000 adults by 2004 (DfEE 2001) which was later expanded to 2.25 million by 2010 (DfES 2004). In addition to funding training, the strategy set out a number of measures to improve the quality of learning available including a set of national standards and a core curriculum for literacy and numeracy, along with qualification requirements for adult literacy and numeracy teachers (DfEE 2001). From 2001 to 2007, around £5 billion was spent on adult literacy and numeracy programmes, this was projected to rise to around £9 billion by 2011 (Public Accounts Committee 2009).

The change in government in 2010, combined with a much-altered economic environment and significant restrictions on government spending contributed to a shift in approach to skills policy (Keep 2014). Despite this, the government has remained willing to commit substantial resources to improving adult literacy and numeracy skills, notably by continuing to provide funding for training to all adults who leave school without a Level 2<sup>1</sup> qualification (BIS 2010, SFA 2015). It has been observed that, along with traineeships and apprenticeships, English and maths provision is one of the few areas which has been protected from the significant cuts to the adult skills budget (Whittaker and Offord 2015). Changes since 2010 have involved shifts in emphasis rather than reductions in effort. An early statement of aims by the coalition identified young people and the unemployed as key targets for literacy and numeracy learning (BIS 2010). A persistent theme has been integrating literacy and numeracy learning into vocational provision including apprenticeships and traineeships (DFE/BIS 2013, BIS 2013b). Furthermore, the government has claimed to be attempting to introduce greater “rigour” into the skills system, in the context of literacy and numeracy this has meant encouraging more post-16 learners

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<sup>1</sup> The adult literacy and numeracy core curricula set out five levels of literacy and numeracy skill Entry Level 1, Entry Level 2, Entry Level 3, Level 1 and Level 2. Level 2 is designed to be equivalent to a GCSE qualification at grades A-C.

undertake “academic” GCSE qualifications in English and maths as opposed to “vocational” Functional Skills qualifications (AELP 2014).

Over this period, major activity on literacy and numeracy policy was not limited to England. With the advent of devolution in 1999, skills policy in Wales came under the purview of the National Assembly for Wales (later the Welsh Assembly Government and, later still, the Welsh Government). However, despite the devolution of powers, policy in Wales has mirrored that found in England. Rhetorically, there were similar perceptions of a “chronic basic skills shortage” (WAG 2005:6). The Welsh *Basic Skills Strategy* (NAW/BSA 2001) promised the development of new qualifications and curricula for adult literacy and numeracy learners. Targets for improvements were also set, firstly that by 2004 90% and 60% of adults would have “functional” literacy and numeracy skills (NAW/BSA 2001). An update of the strategy in 2005 specified targets of 80% of adults to achieve Level 1 in literacy and 55% in numeracy by 2010 (WAG 2005). Workplace provision also played an important part in efforts to raise adult skills in Wales (NAW/BSA 2001, WAG 2005). To some extent, there has been a shift to tackle the problem of low skills in school, rather than through lifelong learning (Welsh Government 2014a). However, Level 2 Essential Skills qualifications are identified as the aim for all adults lacking qualifications in basic skills (literacy, numeracy and ICT). The recent *Skills Implementation Plan* (Welsh Government 2014b) included plans for a new adult employability programme aimed at raising literacy and numeracy skills in the workplace and promised an extension of the Essential Skills in the Workplace programme which provides employers with free literacy, numeracy and ICT training for their employees up to Level 2.

### Assumptions underlying literacy and numeracy policy

Since the mid-1990s, policy on literacy and numeracy skills has been governed by three major assumptions:

- That literacy and numeracy skills are essential to jobs across the economy
- That large numbers of adults lack the skills required by employers
- That investments in raising the literacy and numeracy skills of adults are essential and the primary objectives of this investment should be economic

Examples of this rhetoric are numerous. David Cameron (2013) has described English and maths as “the two most important vocational qualifications of all” suggesting that it is impossible to think of a job that does not require these skills. Likewise, former UK Skills Minister Matthew Hancock claimed “It does not matter whether you are studying vital skills like carpentry or studying at University to be a research scientist there is not a job in this country that does not need maths and English” (BIS 2013a). Elsewhere, Hancock suggested “employers now expect good maths and English as a bare minimum” (Hancock 2014). On the side of business, CBI Director General John Cridland argued that “having a solid foundation in basic skills, such as literacy and numeracy, is fundamental for work” (CBI 2011).

Policy makers and business leaders also acknowledge a “dynamic” element to demand for literacy and numeracy skills, drawing links between economic, social and organisational changes and a greater need for literacy and numeracy skills (e.g. DfEE 2001, NAO 2004, CIPD 2005, CBI 2006, Belt et al 2010, DFE/BIS 2013, CBI 2014, Hancock 2014). The 1997-2010 Labour Government’s *Skills for Life* policy was framed explicitly in terms of the emergence of a knowledge economy (Wolf and Evans 2011). For example, in the Department for Education and Employment’s strategy document launching the *Skills for Life* programme it was claimed that:

*We live, at the beginning of the twenty-first century, in a society of challenge and opportunity. The growth of the knowledge economy and the spread of information technology are having a more profound and more rapid effect on our work and home lives than any other social change since the Industrial Revolution. They are changing what jobs we do and how we do them.*

(DfEE 2001:2)

In addition, there is an argument that these changes will affect workers at all levels of the economy, including those in low paid jobs. For example, in 2004 the National Audit Office suggested:

*While there will be a large proportion of low-skilled service sector jobs in the foreseeable future, technical change and changes in working practices are leading to increasing literacy and numeracy requirements for these jobs*

NAO (2004:17)

Similarly, in a discussion of literacy and numeracy skills as an element of broader “employability” skills, a UKCES policy paper argued that while workers in low paid jobs might not need the kind of high-level skills required in “knowledge economy” jobs

*It is nevertheless anticipated that new sorts of skills will still be required by employers in these lower level jobs, not least because new ways of working demand it*

Belt et al (2010:6)

Policymakers have particularly fixated on the idea that Level 2 skills are crucial. As noted above, funding for adult literacy and numeracy learning is typically targeted at those with skills below Level 2. Rhetorically, “good” GCSE’s on English and maths are seen as essential (Hancock 2014), this is usually defined as A-C grade, again equivalent to Level 2 skills. The Leitch Review (2006) targeted increases in the proportion of individuals qualified to at least Level 2, however it also identified a slightly lower definition of “functional” skills at Level 1 for literacy and Entry Level 3 for numeracy.

A recurring feature of policy rhetoric is that significant proportions of the workforce lack the literacy and numeracy skills that are required in the workplace (e.g. Leitch 2006, BIS 2010, Davies 2014, CBI 2014). The primary concern has been the potential economic impact of these apparent deficits. The link between deficiencies in “basic” skills and economic problems comes in two varieties. Firstly, a “productivist” argument, that the performance and productivity of firms and, by extension, the economy as a whole suffers due to insufficient literacy and numeracy skills. Concerns that firms are being “held back” due to deficiencies in literacy and numeracy skills are common, for example the CBI’s Education and Skills Survey (2014) claimed that “All too often, employers are having to divert funding and resources into remedial education to make up for shortcomings in basic competencies” (CBI 2014:35). Literacy and numeracy skills have also been linked to the UKs global competitive position. In 2013, the Prime Minister commented “some people don’t enjoy doing their maths. But it is such an important skill, and if, as a country, we want to be a success story in the 21st century – we’re going to take on and win against the Chinese and the Indians and the French and the Germans – we’ve got to be as skilled or better skilled than they are” (Cameron 2013).

The second type of argument focuses on “social justice”, suggesting that the main victims of literacy and numeracy skill deficiencies are individuals themselves. It is argued that low levels of literacy and numeracy skills prevent individuals from finding work or being able to progress in work. A recent skills strategy document argued that individuals who fail to “achieve basic levels of English and maths... will struggle to find work of any kind in today’s demanding labour market” (DFE/BIS 2013:21).

The assumption that deficiencies in literacy and numeracy skills are at the heart of a range of economic problems leads, in turn, to the assumption that literacy and numeracy learning should be focussed on work and the economy. This has been one of the most consistent aspects of policy on literacy and numeracy since the late 1990s. The Labour government’s emphasis on workplace learning was based on the belief that literacy and numeracy policy should address “skill gaps” which were assumed to exist in the workplace (Wolf and Evans 2011). While work based provision appears to be less of a priority under the current and coalition governments, an economic focus remains. Most notably, the current government has been investigating the possibility of assessing the impact of Further Education in general (including literacy and numeracy provision) using “outcome based” measures, including the extent to which learners progress into and within work and whether learners earn higher wages following participation in learning. Also relevant is the current government’s efforts to integrate literacy and numeracy learning into vocational provision.

The evidence base for these assumptions is composed of three main sources. Firstly, surveys of adult skills, secondly, anecdotal and survey evidence from employers and employer organisations and thirdly econometric studies showing associations between measures of literacy and numeracy skill and a variety of economic outcomes. This evidence will be discussed in more detail in the next chapter. However, this evidence base has a number of limitations. There appears to be relatively little attention given to asking what skills are actually needed in the workplace or how employees use these skills. A recent review of literacy and numeracy skills commissioned by the Department for Business Innovation and Skills (Vorhaus et al 2011) observed that there remained ambiguity about the precise literacy and numeracy needs of the workplace and the importance of these skills relative to other generic “employability” skills. Furthermore, it was noted that much of the information on skill demands that does exist relies solely on employer rather than employee

perspectives. There are also pieces of contradictory evidence. For example, while surveys conducted by the CBI find that over half of employers surveyed had concerns about employees who lack literacy and numeracy skills (CBI 2014), the larger UK Employer Skills Survey finds much more limited evidence of either skill gaps amongst current employees or difficulties recruiting due to candidates lacking literacy or numeracy skills (Winterbotham et al 2014).

There is also ambiguity over the assumption that literacy and numeracy skills are growing in importance. As discussed above, mainstream narratives about the place of literacy and numeracy skills in the workplace typically link the notion that demand for these skills is increasing to a range of factors including changes to the organization of work, the introduction of new technologies and the demand for higher quality products and services. However, it is rare for those making these kind of claims to go into any detail regarding the nature and extent of these changes and how, precisely, they contribute to higher demands for literacy and numeracy skills.

## Academic Perspectives

In addition to the policy interest in the role of literacy and numeracy skills in the workplace the topics have, to an extent, been the subject of academic attention. This literature has focused particularly on the way that literacy and numeracy in the workplace have changed over time. Some authors strongly echo the policy narrative which links ideas such as the emergence of a knowledge economy, organizational changes and intensified competition to rising demand for literacy (e.g. Joliffe 1997, Mikulecky and Kirkley 1998) and numeracy (e.g. Hoyles et al 2002, 2010) skills. Others, focusing on literacy, have argued that broader socio-economic changes have led to increases in the amount of documentation in workplaces (especially for employees at lower levels of organisations) but question whether this implies demand for “higher” skills. Instead, these authors focus on the potential negative impact of the “textualisation” of workplaces (e.g. Jackson 2000, Belfiore et al 2004, Tusting 2009, 2010). Beyond this, however, some academic authors have raised questions about the extent to which either literacy or numeracy is really becoming more important in the workplace (e.g. Wolf and Evans 2011).



Alongside a focus on the demand for literacy and numeracy skills, academic authors have also looked at the contention that skill deficiencies amongst employees are a major problem for firms. In this area, much academic work has been critical of policy assumption of a “skills crisis” in the workplace. A number of authors have identified factors other than “insufficient skill” which may explain why employees are unwilling or unable to engage with literacy and numeracy tasks in the workplace (e.g. Brier and Sait 1996, Hull 1999, Belfiore et al 2004). Others have questioned whether the actual literacy or numeracy demands in many workplaces are necessarily beyond the capabilities of a significant number of employees (e.g. Wolf and Evans 2011). These issues will be discussed in greater detail in the literature review.

## Low Paid Work

This research focuses specifically on literacy and numeracy skills in low paid work, those jobs at the “bottom” of the labour market. Given that jobs in this area of the economy are typically seen as inherently low skilled, there may be reasonable questions asked about the utility of focussing on these kinds of jobs. However, consideration of low paid employment is important for a number of reasons.

Firstly, low paying sectors and occupations matter. These jobs make up a significant proportion of UK employment. According to the Low Pay Commission, in September 2014 there were around 9.6 million employee jobs in low paying sectors, making up roughly 34% of all employee jobs (LPC 2015). Furthermore, in recent years’ employment in low paying sectors has been growing at a faster rate than in non-low paying sectors. While the low paying and non-low paying sectors grew at a similar rate between 1999 and 2008, in the aftermath of the recession the growth rate of employment in low-paying sectors has been consistently stronger than in the rest of the economy (LPC 2015). By September 2014 employment in low paid sectors was 17.2% higher than in March 1999, while employment in non-low paying sectors was 11.2% higher (LPC 2015).

Given the scale of low paid work in the UK, any assessment of the skill demands of the workplace needs to include some consideration of these occupations. Policy makers have been fairly explicit in their assertion that literacy and numeracy skills are universally important in the workplace. If “good” literacy and numeracy skills are important for all jobs

and if a lack of these skills is liable to make certain individuals effectively unemployable, then these skills must be important in the significant proportion of the economy made up of low paid jobs. In addition to this, there are also explicit claims made about the importance of literacy and numeracy skills even in low paid work, for example the quotes from the NAO (2004) and Belt et al (2010) above. The Leitch Review (2006:33) argued that “even traditionally low skilled jobs are requiring an increased level of skill – these jobs are not immune from the rising demand for skills seen elsewhere”. Reports on the skill demands in sectors such as care and retail (the focus of the qualitative element of this research), emphasize the importance of literacy and numeracy skills for frontline workers (SfC 2014, Vokes and Limmer 2015). As such, the literacy and numeracy content of these jobs merits consideration.

Furthermore, politicians’ responses to low paid work have typically centred on the idea that raising the skills of the workforce offers a “solution” to the problem. One version of this argument suggests that raising skill levels will enable employees to “escape” low paid work and progress in their career. Alternatively, there is a belief that if employers are able to call on a supply of better skilled labour they will be able to make use of these skills to improve the firm’s productivity and the quality of jobs on offer. This draws on the notions that it is common in the world of low paid work for both employees and firms are often held back by skill deficiencies. It is important to examine whether this is the case in relation to literacy and numeracy skills.

Finally, low paid occupations are typically seen as “entry level” jobs requiring lower levels of skill relative to other occupations, even amongst those who believe that skill levels in these jobs are rising. Looking at these occupations provides a useful test of the “extremes” of the policy argument. If, in these occupations, we find that literacy and numeracy use is widespread and growing in importance then then it would provide reasonably strong support for the notion that literacy and numeracy skills are of universal importance in the labour market. On the other hand, if we find limited use of literacy and numeracy skills it raises a number of issues for policy makers. At the very least it places limits on the idea that these skills are essential across the labour market and also raises questions about the idea that those without “good” literacy and numeracy skills are likely to be effectively unemployable.

A further point to note is that while there has been research on the role of skills in low paying occupations in general, very little of this literature has focussed specifically on literacy and numeracy skill. Studies of these low paid work typically either characterise them as demanding very little in terms of skill (e.g. Lloyd and Mayhew 2010), or focus on other kinds of, potentially underappreciated, skill such as “emotional”, “aesthetic” or “articulation” skills (e.g. Bolton 2004, Hampson and Junor 2005, Warhurst and Nickson 2007). On the other hand, studies of literacy and numeracy in the workplace have been heavily dominated by research in manufacturing environments rather than the low-level service work which is more typically low paid (e.g. Gee et al 1996, Brier and Sait 1996, Joliffe 1997, Hart-Landsberg and Reder 1997, Belfiore 2004, Folinsbee 2004, Defoe 2004, Farrell 2006, Hoyles et al 2010, Black et al 2013). Notably, such studies that do exist have largely been conducted outside of the UK (e.g. Marr and Hagston 2007a, Karlsson and Nikolaidou 2011, Hastwell et al 2013).

## Research aims

The research seeks to answer five main research questions. First and foremost, the research explores the extent to which employees in low paid work make use of literacy and numeracy skills and the level of skill required. This core question goes to the heart of debates about the importance of literacy and numeracy skills in the workplace. Secondly, given the idea that literacy and numeracy skills are becoming important, the research examines whether the demand for literacy and numeracy skills has changed over time. Thirdly, the research considers whether the literacy and numeracy skills of employees in these occupations are sufficient to meet the demands of the workplace. Is there evidence of employees struggling with literacy or numeracy tasks or, on the other hand, do employees have capabilities that exceed the demands of their job? Fourthly, the research asks what role literacy and numeracy play in recruitment and progression processes, given the assumption that these skills are vital in securing jobs and can help individuals move out of low paid work. Finally, the study also seeks to understand the sources of demand for literacy and numeracy skill. What factors can explain why some jobs demand higher levels of literacy and numeracy skill than others?

To answer these research questions, the research makes use of both qualitative case study evidence and analysis of quantitative survey data. The qualitative element of this research focuses on two major low paying sectors – retail and care. These sectors were chosen as “exemplary” cases of low paid work due to their substantial contribution to low-paid work and employment more broadly. Both sectors are defined as low paying sectors by the Low Pay Commission (LPC 2015). Retail is the largest of the LPC’s low paying sectors, with over 2.5 million jobs, Residential Care is the fifth largest with just under 700,000. In occupational terms, 23% of all low paid workers are in sales and customer service occupations, while 15% are in personal service occupations making these the second and third largest contributors to low paid work after Elementary Occupations with 34% of all low paid workers (Whittaker and Hurrell 2013). In terms of overall employment “sales and retail assistants” and “care workers and home carers” constituted the two largest categories at the minor SOC code level – in 2015 there were just over a million sales and retail assistants and around 784,000 care workers and home carers, constituting 3.5% and 2.5% of total employment (ONS 2015).

The quantitative element of the research involves secondary analysis of the UK Skills and Employment Surveys (SES), an ongoing series of cross-sectional surveys of British employees that focuses on the skills used by employees at work. The survey has been conducted four times, in 1997, 2001, 2006 and 2012. This combination of quantitative and qualitative data allows for both detailed examination of skill use in particular settings and an understanding of the extent of skill use more broadly. The two sets of data also contribute to answering different research questions, for example the SES is more suitable for analysing change over time but provides no information about topics such as mismatch between the skills of the individual and the skills required by their job.

## Conclusion

To recap, the literacy and numeracy skills of the workforce have received substantial attention from UK policy makers. Indeed, as public spending cuts bite, funding for literacy and numeracy learning appears to be one of the few areas that will be afforded relative protection. The underlying reason for this is the expectation that improving literacy and numeracy skills will lead to economic benefits for individuals, firms and the country as a whole. This expectation is, in turn, based on the assumption that literacy and numeracy

skills are widely used in the work place *and* that substantial proportions of the workforce lack the skills required. This research seeks to interrogate this argument by focussing on low paid work, in particular, work in the care and retail sectors.

The study proceeds as follows: Chapter 2 reviews the relevant literature in three areas.

Firstly, definitions and understandings of skill in general and literacy and numeracy skill in particular. This includes discussions of key perspectives from the sociology of work, notably Cockburn's (1983) distinction between skill in the person, skill in the job and skill as a social construct as well as a consideration of debates around how, if at all, skill can be measured.

The discussion of definitions of literacy and numeracy skills considers different perspectives on whether these should be seen as "abstract" skills or social practices, embedded in specific contexts. Secondly, the chapter looks at accounts of the demand for both literacy and numeracy skills and skills in general. This includes discussions of the idea that the demand for skills in general has increased over time due to changes associated with the knowledge economy along with critiques of this perspective. Similar arguments are traced specifically in relation to literacy and numeracy skill and three broad positions are identified – optimists, who argue demand for literacy and numeracy is rising, pessimists, who focus on literacy and argue that while texts are becoming more important in workplaces this is bad for workers and finally sceptic who question the extent of change. Finally, the literature review looks at debates regarding the extent of literacy and numeracy skill deficiencies, this section looks at both evidence used to support policy claims about the extent of skill deficiencies and other perspectives which offer alternative explanations for why some employees might struggle with literacy and numeracy tasks at work.

Chapter 3 outlines the methodology employed in the study, explaining and justifying the use of both quantitative and qualitative data. Broadly speaking it is argued that the combination of data means the disadvantages of each can be offset against the other, that different questions can be answered and that overall the findings will be more "useful". The thesis then moves on to considering empirical results.

Chapters 4, 5 and 6 focus on the findings from the qualitative case studies. Chapters 4 and 5 present accounts of the role of literacy and numeracy in the workplace in the care and retail cases respectively. This includes describing the different ways in which literacy and numeracy are used in the cases, considering what role they play in recruitment and

progression, looking at evidence of mismatch in the skills of employees and the demands of the job and considering whether the use of these skills might be expanded. Chapter 6 discusses these findings. It makes the argument that the literacy and numeracy demands found in the case studies can legitimately be seen as low and that it is more common for employees to have skills above, rather than below, the demands of the job. The chapter goes on to consider why employers do not attempt to make more use of the skills of their employees and why, against the expectations of policy makers and some academic writers, demand for these skills is not higher. Chapter 7 presents results from the quantitative analysis of the SES, this begins with a descriptive analysis of trends in the use of literacy and numeracy skills and then moves onto a multivariate analysis of the associations between literacy and numeracy use and certain key variables. Within this chapter, both sets of results are compared to the qualitative work to identify areas of agreement and divergence.

Chapter 8 summarizes the key findings and outlines the implications of these findings for both academic and policy perspectives on literacy and numeracy skills. A range of contributions to the academic literature are identified in relation to subject matter, methodology and findings of the research. In addition, the chapter uses the findings to suggest some alternative approaches to adult literacy and numeracy policy, arguing that large-scale programs which anticipate substantial direct improvements in economic outcomes are unlikely to succeed. Finally, Chapter 9 concludes the thesis with some ideas about further research in the area, a consideration of some of the limitations of the research along with a defence of the key findings.

## 2 Literature Review

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This literature review contains three parts. In order to understand the demand for literacy and numeracy skill we need to have some idea of how “skill” should be defined and some criteria for distinguishing between more or less skilled work. For this reason, the first part of this literature review considers a range of different perspectives on the definition of skill, drawing on literature from the sociology of work and research focussed specifically on literacy and numeracy skills. The section focuses on the idea of skill as a property of jobs and how the skill level demanded by a job might be assessed. Ultimately, it advocates a “multi-dimensional” approach to skill in the job as well as identifying the benefits of both qualitative and quantitative methods in studying skill.

Given that the main focus of this research is on the demand for literacy and numeracy skills, the second section deals with perspectives on the demand for both skills in general and literacy and numeracy skills. The chapter discusses arguments that the demand for skills has been rising due to the emergence of a knowledge economy, while also considering critiques of these arguments. The section also highlights some of the key factors thought to be associated with higher demand for skills, including new management practices, higher value product market strategies and the spread of new technologies.

Finally, a central plank of the argument made by policy makers is that substantial proportions of the UK workforce lack the literacy and numeracy skills required by employers. The third part of the literature review considers these arguments, looking at both the evidence underlying the claims of policy makers and critiques of the notion of widespread skill deficiencies. This section highlights the idea that skill deficiencies may not be the source of significant economic problems as policy makers suppose, while also drawing attention to the idea that many employees may have higher literacy or numeracy skills than their jobs demand.

### Definitions of skills

In order to understand the extent and nature of literacy and numeracy skills it is important to identify what we mean by skill. However, it is widely noted that “skill” is a deeply contested term. Debates over the meaning of skill encompass questions of what factors

determine different levels of skill, what can be considered a “skill” and appropriate methodological approaches for studying skills. This chapter gives an overview of the literature on defining skill, drawing on both approaches from the sociology of work and from specialist literature on literacy and numeracy.

The section begins with a discussion of the sociological literature on skill. This will first introduce Cockburn’s (1983) distinction between skill in the person, skill in the job and skill as a social construction. Following this is an overview of debates about the extent to which skill can be measured “objectively”, looking at what Attewell (1990) describes as “ethnomethodological” and “positivist” understandings of skill.

The discussion moves on to debates about defining literacy and numeracy, while drawing links between this literature and the wider literature on skills in the sociology of work. Broadly speaking, three perspectives are considered. Firstly, the “human capital” approach which conceptualises the literacy and numeracy skills of individuals as abstract abilities that can be measured. Secondly, a “functional literacy” approach, which considers both literacy skills in the job and skills in the individual but maintains a largely quantitative approach to both. A third set of approaches, which apply to both literacy and numeracy, suggest that literacy and numeracy need to be seen as social or cultural practices, which look at how literacy and numeracy activities are embedded in everyday practices.

### Sociological perspectives on skills

A common typology used in the sociological literature on skill (e.g. Cockburn 1983, Noon and Blyton 2002, Lloyd and Payne 2009, Hurrell et al 2013) distinguishes between skill on three levels –

- Skill in the person, which focuses on skill as an attribute of individuals
- Skill in the job, which focuses on the skills required by work
- Skill in the setting or skill as a social/political construction which identifies the social processes which lead to certain jobs (or individuals) being labelled as “skilled” or “unskilled”

Given that this research focuses on the demand for literacy and numeracy skills in the workplace, the section gives more attention to different understandings of skill in the job. However, the other elements of this typology remain important to this research. Skill in the person is relevant when evaluating claims that much of the workforce “lack” the skills



required by employers. While this research does not focus on the social construction of skills directly, the idea that jobs or individuals may be labelled as skilled or non-skilled due in part to social processes rather than their “real” skill level is important from a methodological point of view.

Skill in the person focuses on the idea that a person can be more or less skilled. However, a range of debates about how skills are developed and what makes an individual more or less skilled (Attewell 1990) can complicate this relatively simple idea. A major issue, discussed in more detail below, is the distinction between individual skill as an abstract property learnt in formal environments versus skill as something that develops in specific contexts and situations. Skill in the setting (Grugulis 2007) or skill as a social or political construction (Cockburn 1983) refers to the way that the attribution of “skilled” or “non-skilled” status can be determined by social processes rather than by the “real” content of jobs. Examples of these social processes include “social closure” (limiting access to certain occupations Attewell 1990) and gendered assumptions about the skill content of work, especially work which is traditionally seen as “female” employment (Steinberg 1990).

Skill in the job acknowledges that jobs can be organised differently to require different levels of skill from employees. A number of criteria have been used to distinguish between jobs requiring more or less skill in sociological work on skill. The first of these is complexity. While complexity can be roughly understood as how “difficult” a job is, the concept has been operationalised in a number of different ways. Surveys such as the UK SES and the US ONET develop hierarchies of complexity for different types of skill – for example, the SES distinguishes between reading forms, short documents and long documents. Alternative measures include “task range” (Fox 1974, Littler 1982), training time (Hallden et al 2012) and more developed definitions such as Spenner’s which looks at the level, scope and integration of mental, interpersonal and manipulative tasks in jobs to come up with an overall measure of job complexity. However, as discussed below, many authors, while not rejecting the idea of complexity entirely, question the possibility of determining an objective definition.

A second important concept in assessing the skill requirements of jobs is discretion or autonomy-control; this is associated with Braverman (1998)-inspired labour process theory, although it is not unique to this tradition (e.g. Fox 1974, Spenner 1983, 1990). The

underlying idea is that work that simply involves following rules is less skilled than work where individuals have to make their own decisions about how work should be done.

Braverman's archetypal skilled worker is the craft worker who decides what to produce and uses their knowledge of materials and tools along with their dexterity to carry out this plan. However, both Attewell (1990) and Adler (2007) raise concerns about the value of discretion/control as a measure of skill.

Both complexity and discretion are typically used to assess the overall skill content of work. Two other concepts for assessing the skill content of jobs have also been important in relation to efforts to objectively "measure" skill in the job: the "importance" of certain tasks and the frequency that tasks are carried out. These ideas are useful when considering the extent of specific "kinds" of skill use in work (for example literacy and numeracy) rather than the overall level of skill required by a job. Both also feature in surveys of job skills: The OECD Survey of Adult Skills includes questions on frequency of skill use while the UK SES and the US ONET survey both ask about the importance of certain skills in work (Felstead et al 2007).

Complexity, discretion, importance and frequency are not necessarily alternative ways of defining skill. Many writers on skill advocate a "multi-dimensional" approach to defining skill that includes both complexity and discretion (Spenner 1983, 1990, Vallas 1990, Fox 1974, Littler 1982). The importance of complexity is also acknowledged to an extent in Braverman-inspired labour process theory accounts of skill (Spenner 1983). As noted above, having control over work matters because it allows workers to choose how to apply their knowledge and dexterity in production. This implies that work must be complex enough to require some degree of knowledge in the first place.

A further question is whether the skill content of jobs or the skills of individuals can be judged "objectively" and measured. Attewell distinguishes between two positions – positivist and ethnomethodological approaches. Attewell defines positivist approaches to skill as those which "treat skill as an attribute that is amenable to quantitative measurement" (1990:423). This can involve attempts to measure both skill in the job and skill in the person. Among the benefits of this approach is the idea that by measuring skills through surveys it is possible to make general statements about either individual skills or

skill in the job, as well as making it easier to identify trends and patterns over time (Green 2013).

Criticisms of positivist approaches include both methodological critiques of specific measures (e.g. Attewell 1990, Braverman 1998, Grugulis and Lloyd 2010) and deeper, more theoretical concerns. For example, in relation to measuring skills in the job, Attewell points out that collecting data on job requirements means grouping a diverse range of tasks into single abstract categories, which runs the risk of treating very different tasks as the same. It has also been noted that judgements about complexity (along with other concepts such as importance or discretion) can be effected by subjective biases (Attewell 1990, Noon and Blyton 2002). Finally, the idea of measuring skills in the job assumes, to an extent, that the skills required by a job or occupation are relatively fixed. However, as Darrah (1997) notes skill requirements can be more fluid than this, perceptions about what a job requires may depend on the viewpoint of the person making the judgement.

On the other hand, ethnomethodological accounts of skill use primarily qualitative methods to focus on the “fine grain” of skill used in context, rather than attempting to measure the extent or complexity of skill use. One of the key insights from this approach is that activities that initially seem straightforward, actually involve considerable amounts of taken for granted knowledge and skill (Attewell 1990). Ethnomethodological research on skills draws attention to the fact that even apparently mundane, everyday activity such as walking or interacting with others can actually be incredibly complex (Attewell 1990, Bolton 2004). Hampson and Junor (2005) argue that “rational” accounts of work (we might also say “positivistic” accounts) which seek to reduce jobs to a list of atomised, formal and “objective” tasks miss the extent to which workers have to make use of broader emotional and articulation skills to link tasks and ensure the smooth running of the organisation.

However, it has also been argued that ethnomethodological approaches have their limits. For example, relying solely on small-scale qualitative studies limits what can be said about skill more generally (Green 2013). Furthermore, there is an “infinite regress problem” (Attewell 1990, Lloyd and Payne 2009), specifically, it is possible for more or less any activity to be seen as complex if you look at it closely enough (Payne 2009, Lloyd and Payne 2009). The risk is that if all activities, even those which are relatively easily accomplished by most

people, most of the time, become labelled as “skilled” or even “high skilled” then the notion of skill becomes rather meaningless (Payne 2009).

### Perspectives on literacy and numeracy skills

Having considered general approaches to skill, we can now look at perspectives that focus on literacy and numeracy. This literature has largely developed independently from debates about skill in the sociology of work and so does not map easily onto the concepts discussed above. However, wherever possible, links between the two bodies of literature are made. Four main perspectives are considered. Firstly, the “human capital” approach to literacy and numeracy skill focuses on the skill in the individual and takes a largely positivist approach to the definition of skill. Secondly functional literacy theorists, which apply a similarly positivist approach to literacy (primarily reading) but extend this to consider both skill in the individual and skill in the job. Finally, the discussion turns to social or cultural practice theories of literacy and numeracy, which have more in common with ethnomethodological approaches to skill.

The first “positivist” approach to numeracy and literacy might be usefully dubbed the human capital approach (Wolf and Evans 2011). This focuses on skill in the person and treats literacy and numeracy as a set of abstract technical skills, for example the ability to “decode” text or perform calculations, which are primarily learnt in formal settings and can be transferred across a range of contexts. Furthermore, these skills can be formally measured through tests. It is posited that having these skills enables individuals to be more productive, therefore earn more, and have a higher chance of being in employment (Wolf and Evans 2011). Human capital influenced understandings of skill are prevalent in the econometric literature on literacy and numeracy (e.g. Machin et al 2001, McIntosh & Vignoles 2001, Grinyer 2006, Vignoles et al 2011). This “abstract” conception of literacy and numeracy skills is often ascribed to policy makers (e.g. Hull 1999, Black et al 2013). As will be discussed below, this “abstract” concept of individual skills has been criticised for ignoring the way that literacy and numeracy are used in reality, in particular how social contexts shape the use and understandings of these skills in practice. There have been some attempts to develop more “socially situated” quantitative measures of literacy and numeracy skill (e.g. OECD 2013). However, questions have been raised over the extent to

which these kinds of tests can replicate the way that literacy and numeracy are applied in the real world (Hamilton and Barton 2000).

The second positivist position is functional literacy. Functional literacy theorists consider literacy (primarily reading) skills both in the job and skills in the individual. The approach of these authors can be largely considered “positivist” in that they attempt to quantify both individual skills through testing (e.g. Sticht 1975, Mikulecky 1982, Mikulecky & Winchester 1983) and skills used in the job using a “job requirement” type approach to assess the frequency of reading and the types of material read (e.g. Diehl & Mikulecky 1980, Mikulecky 1982). They also seek to assess the “complexity” of reading tasks objectively using “readability” measures (Hull 1999). However, within this framework, functional literacy authors attempt to take greater account of the importance of context to literacy skill, for example by producing tests of “job reading ability” (e.g. Mikulecky 1982) focussed on texts that employees actually use in the workplace and attempting to understand how employees make use of texts at work (Diehl & Mikulecky 1980, Mikulecky 1982). As such they depart somewhat from the idea that literacy skill is purely abstract. Some of the key ideas associated with functional literacy are that reading at work is different from reading in other contexts (for example, at school) and that being “literate” in the workplace is not necessarily the same as being “literate” in an abstract sense.

A final set of approaches to literacy and numeracy skill, which have most in common with Attewell’s category of “ethnomethodological” perspectives, see literacy (e.g. Gee et al 1996, Hull 1999, Black 2002, Searle 2002, Karlsson 2009) and numeracy (e.g. Pozzi et al 1998, Noss et al 1999, FitzSimmons et al 2005, Marr and Hagston 2007a, Hoyles et al 2010) as social practices. These researchers use qualitative methods to investigate the nature of literacy and numeracy use in “real” settings. One issue in comparing these approaches with the sociological literature on skill noted above is that these researchers do not discuss the distinction between skill in the job and skill in the individual. While much of this research centres on questions of what it means to be “literate” or “numerate”, as well as challenging labels of “illiteracy” or “innumeracy” (which is more focussed on skill in the individual), the importance placed on context means that considerations of individual skill and job skill are typically considered together.

Researchers who see literacy as a social practice make a number of claims. Firstly, texts are embedded in contexts or social practices which shape the meaning which individuals get from texts and, indeed, their ability to get any meaning from texts at all (Gee et al 1996). To become “literate” in any given context requires individuals to be socialised into that context (Gee et al 1996, Hart-Landsberg & Reder 1997, Searle 2002). Differences in literacy “ability” are attributed more to the extent to which individuals are socialised into the context in which texts are embedded (Hart-Landsberg & Reder 1997). In some respects, this appears similar to the functional literacy theory discussed above; however, there are some crucial distinctions. Firstly, as Hull (1999) notes, social practice approaches take a broader view of “context” than functional literacy theorists. Rather than being limited to factors such as “job related knowledge” or the availability of extra-textual “clues” to the meaning of texts, this broader definition of context might include the ways individuals interact around texts and the values and dispositions they hold (Gee et al 1996). Focussing specifically on the workplace, this can mean considering the structure of organisations and the position of individuals within that structure, the organisation of work and the biographies and broader identities of workers (Hull 1999). This view has a number of implications, for example, an individual may be “literate” in one context but not another and, furthermore, individuals embedded in different contexts might take different meanings from the same text.

Social practice approaches to literacy also often adopt broader definitions of “meaning” (Hunter 2004b). Understanding a text requires not only an ability to understand what the words mean but also the purpose of the text and how it fits into the broader environment (Farrell 2006). In a work context, for example, a document or writing task might be seen as important or unimportant and individuals may come to different conclusions about the importance certain texts.

Focussing more specifically on the idea of skill in the job, social literacy researchers are generally more interested in asking questions about how literacy fits into the workplace, about how employees use texts and interpret their meaning and purpose, than attempting to “count” and list the tasks that involve reading or writing (Hull 1997). It is argued that simply listing tasks involving reading and writing, abstracting them from their context may give a misleading picture of the challenges and complexities associated with literacy practices in the workplace. A number of authors emphasise the importance of examining in

detail the way literacy is used in the workplace and the extent to which this can reveal greater degrees of complexity in the use of skill than might be assumed by a casual observer (Hunter 2004b, Hastwell et al 2013).

Bringing these points together, one of the key arguments of workplace-focussed social literacy research is that “problems” with reading and writing in the workplace cannot be attributed to individual skill deficiencies on the part of employees (Hull, Jury and Zacher 2007). Instead, these researchers point out the ways that broader factors including workplace contexts and worker identities can inhibit or discourage employees from taking on literacy tasks. This issue will be developed further in following sections.

Some aspects of this theory have been criticised, especially for overplaying the importance of contexts in giving meaning to texts. For example, Brandt and Clinton (2002) argue that in many cases meanings of texts are not solely determined in specific local contexts. Additionally, Stephens (2000) and Lewis (1997) argue that some elements of literacy that can be developed outside of a specific context, suggesting that there is some kind of individual skill that can be transferred across contexts. To an extent, these arguments seem valid. While it appears undeniable that context can shape the ability of individuals to understand and use texts and that individuals who are capable of functioning in certain contexts might struggle in another, a strong version of social literacy theory, which implies that all meanings are entirely local, appears problematic. In relation to the workplace, this would seem to suggest that an employee entering a workplace for the first time or moving from one workplace to another effectively start from scratch in terms understanding texts in their new environment. It seems more plausible to think in terms of some combination between “abstract” individual skill and contextual knowledge determining proficiency in a specific context. Interestingly, this idea chimes with the research of Sticht (1975) that literacy proficiency in the workplace involves a combination of “abstract” skill and work-related knowledge.

The final set of perspectives are social practice approaches to numeracy, as noted above this perspective has some similarities with the social practice understandings of literacy. The key theme of these approaches to numeracy is the way that numeracy in the workplace is different from “school” mathematics. School mathematics is centred on abstract problem solving, using general rules to obtain precise and mathematically correct answers.

Numeracy in the workplace differs from this in a number of ways. Firstly, numeracy at work is embedded in workplace practices and contexts and structured by workplace-specific tools and artefacts such as graphs, charts and measuring devices (Pozzi et al 1998, FitzSimmons et al 2005, Hoyles et al 2010). Furthermore, the aims of numeracy in the workplace are more pragmatic, with a focus on getting work done rather than performing tasks in a mathematically correct manner (FitzSimmons et al 2005).

These themes have a number of consequences. Rather than using general rules and abstract knowledge, workplace numeracy often involves contextual knowledge and the use of work or task-specific informal methods. For example, interpreting numerical data might require non-mathematical contextual knowledge (Noss et al 2007, Hoyles et al 2010 Noss et al 1999). Additionally, the use of historical data and “common sense” based on experience can be important in assessing the “reasonableness” of calculations (Fitzsimmons et al 2005). Linked to this is the use of “informal” methods to tackle numerical problems, these are methods which may not adhere to mathematical rules used in schools but which are nonetheless useful and efficient for handling numeracy in the workplaces (e.g. Scribner 1984, Pozzi et al 1998, Noss et al 1999, Zevenbergen and Zevenbergen 2009). A broader point coming from the work of Zevenbergen and Zevenbergen (2009) and others (FitzSimmons et al 2005) is that in the workplace, the need for precision is not always absolute but can be determined by context. In some situations, it may be important that calculations are precise while in others rough estimates may be more appropriate. In common with social practice approaches to literacy, researchers in numeracy note that numeracy in the workplace is also typically a social activity rather than something undertaken by isolated individuals (FitzSimmons et al 2005, Hoyles et al 2010).

In contrast to social practice literacy theorists, those focussing on numeracy as a social practice suggest a greater importance for what might be called “abstract” notions of skill. For these researchers the important question is how “abstract” understanding can be made meaningful in a workplace context. Bakker et al (2006), for example, discuss the importance of “webbing” abstract and contextual knowledge and argue that while “informal” methods of handling numeracy in the workplace are often highly effective, work activities can be improved by bringing in a more formal approach and making use of abstract knowledge. Having said this, these writers emphasise that workplace numeracy needs to be about more



than a set of “disconnected” basic number skills. Being numerate requires an understanding of context as well as abstract skill (Fitzsimmons et al 2005).

### Implications for research

This discussion of definitions of skill has a number of implications for the rest of the study. This research will adopt a “multi-dimensional” approach to skill in the job for a number of reasons. The different criteria discussed for assessing the skill content of work – complexity, discretion, importance and frequency – all have a reasonable claim to being important elements of a definition of skilled work. It was noted that these elements are clearly not mutually exclusive and could reasonably be considered in combination. Understanding how these different elements interact may also assist in making judgements about the skill content of the work. For example, considering what it means for employees to have to undertake complex tasks infrequently or to have discretion over tasks that are unimportant. The expectation is that a multi-dimensional approach to skill in the job will provide a fuller understanding of skill than focussing on any single criteria.

In the discussion, it was also noted that there are difficulties in negotiating between two positions in judging the skill content of jobs. On the one hand, ethnomethodological and social constructionist approaches to skill highlight the problem of making common sense assumptions about what constitutes “easy” or “difficult” literacy and numeracy tasks. On the other hand, there is the problem of “infinite regress” which leads to everything being labelled complex. The multi-dimensional approach to defining skill in the job, also potentially helps here. By clearly setting out the criteria for making judgements about the skill levels required in jobs we reduce the potential for accusations that the conclusion was reached due to unwarranted assumptions about low paid work.

The discussion also highlighted that both quantitative and qualitative methods have strength and limitations as approaches to studying skill, providing support for a mixed methods approach. This subject will be discussed in more detail in the methodology chapter, however, amongst the main reasons why this research adopts a mixed methods approach is to “offset” the disadvantages of either methodology. Notably, the quantitative data provide greater scope for generalisations, while the qualitative data enable the study of literacy and numeracy use in detail and in context.

While the main focus of this research is skill in the job, skill in the person still matters. Many commentators have raised concerns that the literacy and numeracy skills of the workforce may be insufficient to meet the demands of the workplace. However, social practice approaches to literacy and numeracy theories make this claim problematic. They emphasise the extent to which context shapes literacy and numeracy, meaning “abstract” individual skill learned in a formal setting may be neither necessary nor sufficient for an individual to be proficient in a specific context. However, as noted above, there have been critiques of the extent to which meaning is always locally determined and that literacy proficiency cannot be developed out of context. As such, it does not seem viable to entirely reject the notion of general individual skill. For both, literacy and numeracy it seems more plausible to adopt an approach along the lines of what Bakker et al (2006) describe as a “webbing” of the abstract and contextual. The extent to which any “problems” encountered by employees in relation to literacy and numeracy can be attributed to deficiencies in individual skill or explained by broader factors will be one of the key themes of the analysis.

## Perspectives on the demand for skills

This section focuses on different perspectives on the demand for skill. Understanding the demand for literacy and numeracy skill in low paid work is the central question of this research. There are two distinct literatures to consider, firstly a broad literature on the demand for skill in general and secondly a literature which focuses specifically on literacy and numeracy.

The first part begins with an overview of the idea, promoted by both policy makers and academics, that developed economies have gone through a period of “upskilling” because of a transition to the “knowledge economy”. The discussion focuses on three factors that are held to be contributing to rising demand for skills – “new” management practices, changing product market strategies and the greater use of new technology in the workplace. The discussion then moves on to consider criticisms of the upskilling narrative.

The second part focuses more specifically on evidence on the demand for literacy and numeracy skills. It organises the literature into three main categories that are labelled the optimistic, pessimistic and sceptical. The optimistic perspective suggests that demand for literacy and numeracy skills is rising and to an extent becoming more complex. These claims

are tied to similar ideas about the emergence of a knowledge economy which informs the broader upskilling narrative. The pessimistic narrative focuses primarily on literacy in the workplace. In broad terms, it accords with the optimistic narrative that broad socio-economic changes have led to developments within firms (notably the adoption of new management practices) which in turn generate new literacy demands for employees. However, these authors are more pessimistic about the impact of new literacy demands on employees. Finally, sceptical authors are those who question the extent of any kind of change in the demands for literacy and numeracy skills raising questions about the “paradigm shift” approaches of both optimists and pessimists.

### The demand for skills in general

Over the last 20-30 years, a central narrative in the political and academic debate on skills has been the notion that we are undergoing a period of upskilling. The argument runs that due to a range of changes in the global economy, the demand for skills has risen and will continue to rise and skills have become increasingly important to the economic prospects of individuals, firms and nations. In one of the clearest statements of this view, the Leitch Review of Skills (2006), commissioned by the 1997-2010 Labour government, claimed that *“...where skills were once a key driver of prosperity and fairness, they are now the key driver. Achieving world class skills is the key to achieving economic success and social justice in the new global economy”*

- Leitch (2006:9)

Under the 1997-2010 New Labour government, this narrative was driven by the idea of the emergence of a “knowledge economy”. The underlying idea of the knowledge economy is that there has been a fundamental shift in the nature of contemporary economies – that knowledge and knowledge-based work have become more important to economic prosperity and that we have moved to an economy based on the use and manipulation of “knowledge” (Leadbeater 1999).

Much of the debate on skills in the knowledge economy has focussed on change at the top of the labour market. It is argued that these changes lead to a general shift towards higher skilled jobs in professional and managerial occupations (OECD 2013) and, in addition, to certain types of higher skilled work, for example what Reich (1992) describes as “symbolic

analytic” work – work which involves the analysis and manipulation of symbolic information and requires high levels of problem solving and innovative thinking. However, it is also argued that lower level jobs might be upskilled (Leitch 2006, Belt et al 2010). Reich (1992) suggests that while symbolic analysts will only ever be a minority of any nation’s workforce, the spread of new technology offers some scope for other occupational groups to move in the direction of symbolic analytic work. As Lloyd and Mayhew (2010) note, under the last Labour government work a central premise of skills policy was that low paid low skilled work can be “solved” by raising the skill levels of the workforce. This idea rests on the notion of a “supply-push” approach in which increasing the “supply” of skills will enable firms who currently rely on low skilled labour to design more highly skilled jobs allowing them to perform better in a more demanding competitive environment (HM Treasury 2002).

Three major factors have been identified as mechanisms for rising skill demand. Firstly, the shift to a “new” economy has been associated with the development of “new” management practices and changes in work organisation (DTI 1998, NSTF 2000, Belt et al 2010, OECD 2013). Secondly, in the face of competition from developing economies and increasingly sophisticated domestic consumers, it is argued that UK firms increasingly need to compete on a “high value added” basis. Producing high quality products and services, it is claimed, requires employees with higher-level skills (Leitch 2006, BIS 2009). Finally, the spread of new technology requires new skills to enable employees to make use of that technology as well as technological change being complementary to other skills (Leitch 2006, OECD 2013).

A broader literature provides some support for the notion that new management practices, higher value product market strategies and new technologies might contribute to higher demand for skills. The literature on what constitutes “new” management practices is broad and includes systems such as lean production and total quality management along with a more diffuse range of practices often labelled as high performance work systems or practices (HPWP/HPWS). These include things like team working, multi-skilling, job rotation, quality circles and other problem solving groups, opportunities for participating in decision making, de-layering and flatter organisational structures (Boxall and Purcell 2007, Cox et al 2011). A number of studies have identified relationships between the implementation of these practices and demand for skill (e.g. Ashton and Felstead 2000, Caroli and Van Reenan 2001, Felstead and Gallie 2004, Green 2012). The theory underlying this relationship is that

these practices “decentralise” workplaces, offering employees greater discretion over their work and more involvement in making workplace decisions. This requires employees to do more in terms of understanding and processing information, solving problems independently and potentially gives employees scope to identify different ways to apply their skills (OECD 2012). Furthermore, certain practices such as team working and job rotation imply generally broader job roles.

A number of authors have posited a link between higher value product market strategies and higher demand for skills. Much of this literature draws on the idea that pursuing a higher value product market strategy requires the adoption of HR practices, such as those mentioned above, which in turn demand greater levels of skills (Appelbaum et al 2000, Batt 2000, Boxall 2003). Ashton and Sung (2011) suggest that the link may not be entirely straightforward, even in firms competing based on differentiated products it may be possible to organise work in a way that minimises the use of skill by employees. However, Ashton and Sung suggest that a skill intensive form of work organisation is more likely in firms pursuing higher value product market strategies. Mason (2004, 2011), using data from the Employer Skills Surveys of 2001 and 2009 finds that firms adopting high-end product strategies tend to have more highly qualified employees. Mason notes that there is evidence of causation in both directions; firms adopting high end product market strategies may demand more skilled staff but having more skilled staff also enables firms to adopt high end product market strategies.

The notion that technological change might be raising demand for skills comes strongly from the theory of “skill biased technological change”. Broadly speaking this theory argues that new technology enhances the productivity of high skill workers to a greater extent than low skilled workers, as new technologies have become better and more widely available this has led to rising demand for the former and falling demand for the latter (Violante 2008, Acemoglu and Autor 2012). Researchers have presented a range of evidence supporting the skill biased technological change thesis. Berman et al (1994) and Machin and Van Reenen (1998) find an association between measures of technological change and increases in the proportion of more highly skilled employees within manufacturing industries while Breshanan et al (2002) provide similar findings at the firm level.

Upskilling narratives have, however, been questioned. One of the most influential accounts is Braverman's (1998) deskilling thesis. Braverman argued that over the 20<sup>th</sup> Century work was increasingly deskilled through the application of "Taylorist" management techniques and the spread of mechanization. However, Braverman's theory has in turn been criticised. While case study evidence has been able to demonstrate deskilling within specific occupations, it has been harder to show a general economy-wide process of deskilling (Vallas 1990, Green 2013).

More recent critiques of upskilling fall more into the category of skills polarisation (Gallie 1991). These authors suggest that while there has been growth in high skill occupations, there are reasons to be sceptical about the proportion of workers who will find work in these occupations (Crouch et al 1999, Brinkley 2009). In the UK employment growth in higher level occupations has been accompanied by a substantial growth in employment in low skilled, low paid occupations (Holmes 2014). Since the recession job growth in low paid sectors and occupations appears to have outstripped job growth elsewhere (Elston et al 2014, LPC 2015).

Despite the claim that even lower level jobs might be subject to upskilling, qualitative studies of low paying occupations provide little evidence of this process, in terms of technical skill (Lloyd et al 2008, Lloyd and Mayhew 2010). Neither is there strong evidence of employers being "held back" from introducing more innovative competitive strategies or new ways of working by the low-level skills of their employees. In their overview of multiple case studies from low paying work Lloyd and Mayhew (2010) note that in call centres and low level hospital roles there was significant evidence of employees being overqualified for their role with employers doing little to capitalise on these "excess" skills. In general, at the bottom end of the labour market, employers appear to have little interest in the technical skills and qualifications of their employees (Lloyd et al 2008, Lloyd and Mayhew 2010). More important appear to be qualities such as "attitude" and "work ethic" and in service jobs personality and appearance (Lloyd and Mayhew 2010, Nickson et al 2011).

In addition to this, there are questions over the extent of some of the changes that the optimistic account of upskilling describes. Notably, there is continuing evidence of firms pursuing competitive strategies that do not rely on differentiation and innovation along with limited evidence of a general trend towards transformative work practices (Keep and

Mayhew 2001, Lloyd and Payne 2002, Keep 2013). For example, the 2013 Employer Skills Survey (Winterbotham et al 2014) found only 12% of firms had adopted 14 or more of the 21 “high performance” work practices covered by the survey. Other evidence suggests that practices such as semi-autonomous teams and job discretion generally have been either in decline or relatively static since 1992 (Inanc et al 2013).

Finally, doubts have been expressed over the relationships between upskilling and new management practices, higher value product market strategies and new technologies. For example, studies of fitness instructors (Lloyd 2005) and hotels (Lloyd et al 2013) have found that the aim of providing a quality service in these industries may be achieved more through the fixtures, fittings and other physical amenities than through the skills of staff. In a similar vein, Lloyd and Mayhew (2010) note that the production of “premium” ready meals in the food processing industry may generate additional skill requirements in certain areas of the organisation, it made very little difference to staff on the factory floor.

Scepticism has been expressed regarding the potential for high performance work practices to raise demand for skills (Lloyd and Payne 2006). A critical literature on “high performance” practices along with systems such as TQM and lean suggests that they may result in greater levels of managerial control and intensified working conditions rather than discretion, involvement and a greater demand for skill (Delbridge et al 1992, Barker 1993, McCardle et al 1995, Sewell 1998, Godard 2004, Holman et al 2005, Carter et al 2011). Of particular interest to this research is the idea that these practices might have either a less positive or even detrimental impact on workers in lower level jobs (Bailey and Bernhardt 1997, Bacon and Blyton 2003, Mulholland 2011).

Questions have also been raised about the impacts of technology on skill. One of Braverman’s (1998) key arguments was that technology and automation actually contributed to the deskilling of work. While there appears to be little evidence of a general trend towards technological deskilling, there have been suggestions that new technology might have a variable impact across the labour market – deskilling in some cases while upskilling in others (Zuboff 1988, Autor et al 2003, Goos and Manning 2007).

## The demand for literacy and numeracy skills

Moving on to consider arguments more specifically about demand for literacy and numeracy skills, it is possible to identify three main positions, the optimistic, pessimistic and sceptical. Given that this study centres on low paid work, the focus of this review is on studies of occupations towards the middle and lower end of the labour market, rather than, for example, professional and managerial work.

### Optimistic

The introduction described the broadly 'optimistic' view of policy makers in relation to demand for literacy and numeracy skills, the idea that literacy and numeracy skills are becoming increasingly important at all levels of the labour market and that those who lack these skills will find it exceedingly difficult to find and hold down a job. However, it is also possible to identify broadly "optimistic" perspectives from academic authors who go into greater detail regarding the factors that may be encouraging growing demand for literacy and numeracy skills. These accounts, to an extent, draw on themes which are familiar from the discussion of the idea of the knowledge economy discussed above. These include the impact of intensified, global competition, which encourages firms to adopt higher value product market strategies and more skill-intensive approaches to work organisation along with the adoption of new technologies in the workplace.

Mikulecky and Kirkley (1998) discuss how these changes affect the workplace literacy demands placed on mid and lower level employees. They suggest that in response to intensified global competition and more sophisticated customer demand, firms are pushed towards making a number of changes to work organisation such as stripping out layers of middle management, adopting quality standards, requiring employees to work "flexibly" across a number of roles and "democratising" the workplace to enable frontline workers to have a greater role in decision making and problem solving at work. These practices imply increases in literacy skill use for a number of reasons. Removing layers of management implies lower level workers taking on tasks previously done by management, quality standards are associated with increased levels of workplace documentation. Flexible workers and workers empowered to make decisions need to make use of written sources of information to help them understand their various roles and to provide information to support decision making processes. In addition, Mikulecky and Kirkley note the way that the



introduction of new information and communication technologies complement and facilitate these changes to work organisation, by making written information much more available to employees in the workplace.

Hart-Landsberg and Reder (1997) and Joliffe (1997) echo these arguments about new forms of work organisation in relation to factory floor jobs in manufacturing. Joliffe (1997) argues that the need to produce more customised and value added goods and services is linked to changes in work organisation and the adoption of new technologies. Workers, Joliffe argues, can no longer rely on physical demonstrations of how to perform their jobs and cannot expect to be doing the same job for an extended period, requiring greater reliance on written materials. Hart-Landsberg & Reder (1997) discuss the way that the adoption of team working contributes to raising the literacy demands placed on frontline employees in manufacturing. They argue that this “high performance” model of working requires employees to engage in more sophisticated and diverse literacy practices.

Farrell (2006) makes a slightly different argument, linking the increasing importance of texts as a source of knowledge to ICT-enabled globalisation. Farrell argues that economic activity has become increasingly geographically dispersed, based around networks of different firms and different work sites within firms. In this context, knowledge frequently needs to be “textualised” to allow it to travel around the network. This process is facilitated by ICTs that speed up and expand the extent to which knowledge can be transferred across different sites. Often these texts aim at the dissemination of “standard” knowledge intended to ensure consistency across these globally distributed work sites. However, for a variety of reasons these texts are limited in what they can achieve, for example they cannot be comprehensive and cover all local eventualities. The authors of these texts cannot be sure how the texts will be used in local circumstances. In order to make texts useful, employees need to be able to contextualise texts, using their own local (often tacit) knowledge. Farrell claims that this process constitutes “knowledge work” and argues that an increasing number of workers can be characterised as “symbolic analysts” (Farrell 2006:12-13).

Hoyles et al (2010, 2002) and Marr and Hagston (2007a) make similar arguments in relation to numeracy. Hoyles et al (2002:3) argue that what they describe as “mathematical literacy” is becoming more important for number of reasons including the use of data to improve efficiency and quality as well as performing “mundane” operations. Furthermore, they

suggest that mathematical literacy is becoming more important for employees at all levels of organisations due to a tendency to delegate responsibility for monitoring workplace activity to employees at lower levels and because of the need to communicate mathematical information to others both colleagues and customers. Hoyles et al (2010) take this argument further and focus on a specific type of skill that they call techno-mathematical literacy, which involves understanding data embedded in computer systems, the models that underlie it and their relation to workplace practices. They argue that techno-mathematical literacy has become increasingly important in contemporary workplaces, particularly for employees in intermediate roles due to a shift towards high quality products and “mass customisation” (Hoyles et al 2010:3). The greater availability of IT systems also leads companies to adopt practices that require employees to understand the mathematical models embedded in technological systems. Examples include process improvement and statistical process control systems in manufacturing which enable employees to identify faults in the production process and develop ways to improve processes. In financial services, it is argued that call centre workers need to understand the mathematical models underlying the products they sell to be able to answer questions from increasingly demanding customers. As with Farrell on literacy, Hoyles et al suggest this implies a shift toward employees at lower levels of organisations becoming “symbolic analysts” (Hoyles et al 2010:12-13).

Similarly, Marr and Hagston (2007a) draw on case study evidence from a nursing home and two manufacturing sites to argue that data is becoming increasingly important to firms seeking to monitor costs and work practices, and as such, employees at multiple levels of organisations need to be able to understand, interpret and act on data. While the use of data (as opposed to the collection of data) is sometimes seen as the preserve of managers, Marr and Hagston argue that the need to interpret data is increasingly being delegated to lower level workers. Furthermore, they suggest that there is an increasing requirement for employees to make judgements and use data to solve problems, to go beyond routine working and to think in a way that “contributes to critique and thus innovation in the workplace” (Marr and Hagston 2007a:23). In addition, Marr and Hagston suggest that the use of numeracy in more “routine” situations may be declining, in their studies of manufacturing workers and care workers they find evidence that increased use of

automation in manufacturing and the greater use of pre-packaged medicinal doses in care reduce the need for tasks like taking measurements and counting.

While there is general agreement amongst “optimistic” authors that literacy and numeracy are important, and becoming more so over time, they do not necessarily all agree on the nature of the skills that are required. As noted in the previous section, policy makers tend to adhere to the notion that literacy and numeracy are best seen as “abstract” individual skills that can be developed and certified through formal education and applied in a range of different contexts. However, a number of the more academic optimistic accounts adopt approaches to literacy and numeracy that are closer to the social practice literacy and numeracy perspectives discussed previously (Hart-Landsberg and Reder 1997, Hoyles et al 2002, Marr and Hagston 2007a, Hoyles et al 2010). Furthermore, one feature of many “optimistic” accounts is the idea that literacy and numeracy become increasingly associated with the need to “think” at work. For example using data or documents to make decisions and identify ways of improving processes (Hoyles et al 2010, Marr and Hagston 2007a, Hart-Landsberg and Reder 1997), to understand how to do increasingly varied jobs (Mikulecky and Kirkley 1998) and to translate global texts into the specific context of the workplace (Farrell 2006). Both Hoyles et al (2010) and Farrell (2006) argue that the changes they identify mean that an increasing proportion of employees are engaged in “symbolic analytic” work identified by Reich (1992). However, this theme is largely absent from mainstream policy documents.

One issue with these studies is the sectors from which they draw their data. These studies largely focus on manufacturing firms and, inasmuch as they do consider the service sector, the examples they choose are typically from call centres (e.g. Mikulecky and Kirkley 1998, Farrell 2006, Hoyles et al 2010). Given the focus of this research on typically low paid work, this is somewhat problematic, as low paid work tends to be concentrated in the service sector (Mason and Osbourne 2008). Marr and Hagston (2007a, 2007b) and Hoyles et al (2002) do include non-manufacturing, non-call centre cases (for example a nursing home and workplaces in the tourism sector respectively), however their focus is not necessarily on employees at the lower levels of these organisations.

Academic optimists have varying views about the extent of the workforce affected by these changes. There are academic authors who appear to concur with the idea that upskilling is

more or less universal. For example, Farrell (2006:13) argues that economic changes reframe “virtually *all* work as knowledge work”. Hoyles et al (2002:13) suggest, “the need for mathematical skills is being progressively extended throughout the workforce”. The major caveat to this are their case studies from the tourism sector, where they find that many low level jobs require minimal numeracy skills. On the other hand, Hart-Landsberg and Reder (1997) restrict themselves to commenting on manufacturing. Hoyles et al (2010) focus on “intermediate” level occupations (those that require more than basic skills but are below degree level), note caution in overstating the extent to which firms have adopted “mass customisation” approaches to production. Noss (1998) (one of the co-authors of Hoyles et al 2010) notes that the choices of employers might affect the need for employees to understand mathematical information at work. Noss distinguishes between a “Taylorist” option in which firms prefer to limit their employees’ interactions with the mathematical models underlying their work and a “post-Fordist” option in which employers actively seek to upskill their employees. Noss argues that the post-Fordist option is economically and socially beneficial but not inevitable. Mikulecky and Kirkley (1998) also note the existence of “minimum wage” jobs that are de-skilled and require little numeracy or literacy skill.

One broadly optimistic study which does focus explicitly on low paid workers comes from Hastwell et al (2013). They argue that migrant supermarket workers in New Zealand, contrary to the views of managers, actually operate in “literacy rich” (Hastwell et al 2013:92) environments. Hastwell et al argue that while these jobs did not involve extended periods of reading and writing, employees did engage in a range of literacy practices which were both short and heavily embedded in the context but, nonetheless, vital to the job. For example, Hastwell et al note the importance of literacy in developing a knowledge of the products being sold and where they should go on shelves. Similarly, the role could be seen to involve highly embedded maths in the form of the spatial awareness required to judge how many products could be placed on shelves. Hastwell et al’s assessment of the demands of supermarket work have an ethnomethodological orientation, with an emphasis on looking in detail at apparently simple or minor aspects of work. However, the kinds of literacy practices identified by Hastwell et al seem rather more mundane than those posited by the grander optimistic narratives. These include tasks like reading the labels on packets of pasta to distinguish between different varieties. This kind of literacy activity cannot

plausibly be linked to broad economic changes, the adoption of new work practices or the introduction of new technologies. Thus, while Hastwell et al concur with the notion that literacy is a crucial part of the job for frontline supermarket workers they do not link this argument to the knowledge economy themes seen elsewhere.

These accounts of literacy and numeracy skill upgrading share much with the broader knowledge economy narrative regarding demand for skills. However, it is worth noting that the literature on factors such as product market strategy, technological change and changes in management practices is limited in what it says specifically about literacy and numeracy. Green's (2012) study is an exception, which suggests evidence of a causal relationship between computer use and both literacy and numeracy. In addition, Green considers the role that practices such as employee discretion and involvement have on literacy and numeracy use and identifies evidence which suggests a causal relationship between practices encouraging employee involvement and literacy use. Green suggests this is may be because workplaces with higher levels of involvement require greater levels of communication between workers, including written communication. However, while there is an association between involvement and numeracy, task discretion and literacy and numeracy use and lower level computer use and literacy, Green is not able to identify a causal relationship between these variables.

Literacy and numeracy also feature in passing in other studies of "new" management practices. For example, Appelbaum et al (2000) cite "basic skills", along with "technically and occupationally specific skills and leadership and social skills", as important for employees in HPWS (Appelbaum et al 2000:41). Both Friel (2005) and Sterling and Boxall (2013) find evidence that low levels of literacy can interfere with the implementation of lean practices in factory environments. Also indicative is Lynch and Black's (1998) finding that organisations using TQM are more likely to offer "basic skills" training to their employees. On the other hand, Felstead and Gallie (2004) note that the literature on HPWP seems to support the idea that these practices will primarily support demand for problem solving, checking and planning skills rather than literacy and numeracy.

With the exception of Green (2012), much of the evidence discussed above comes from qualitative work, however there is also survey evidence which supports the notion that literacy and numeracy skill demands are increasing. Felstead et al (2007) using data from

the SES in 1997, 2001 and 2006 find that employees report these skills are becoming increasingly important. Furthermore, the more formally complex literacy and numeracy tasks have increased in importance to a greater extent than more basic tasks. A second source supporting the importance of literacy and numeracy skills in the workplace are econometric studies showing a relationship between these skills and labour market outcomes (e.g. Machin et al 2001, McIntosh and Vignoles 2001, Grinyer 2005, Vignoles et al 2010). Broadly speaking these studies indicate that higher levels of literacy and numeracy skills are associated with higher pay and a higher probability of employment, which these authors take as evidence that these skills are in demand in the labour market. These studies are worth taking note of because they are often cited as evidence of the importance of literacy and numeracy skills by policy makers. Of particular interest concerning the argument that demand for these skills has increased over time is Vignoles et al's (2010) finding that the wage premium for literacy and numeracy skills remained constant between 1995 and 2004 despite evidence that levels of literacy and numeracy skills increased over this time. Vignoles et al suggest that this is evidence that demand for these skills has increased over time, if the demand had stayed constant while the supply of skills had increased it would be expected that the premium associated with the skills would fall.

However, there are also some issues and ambiguities with these studies. Controlling for qualifications substantially reduces the size of associations and in some circumstances cause them to become insignificant. This raises questions about whether the benefits of literacy and numeracy skills come via direct use in the workplace or through helping individuals obtain higher-level qualifications (McIntosh et al 2001, for example, conclude the latter). Furthermore, the size and pattern of relationships can vary substantially depending on the literacy and numeracy measures used (McIntosh and Vignoles 2001). Finally, it is not always clear how these findings translate in terms of identifying a level that is "required" in the workplace. Grinyer's (2005) study sheds some light on this as it uses the UK government defined literacy and numeracy levels. The pattern of results in Grinyer's study suggests that the main benefits come from having skills up to Level 1, there is limited evidence of wage or employment premiums for those with skills above Level 1 compared to those with skills at Level 1.

## Pessimistic

In opposition to the optimistic narrative discussed above, a number of authors have a more pessimistic interpretation of the role of literacy (and to a lesser extent, numeracy) in the contemporary workplace. These authors largely agree with the optimistic view that documents and texts have become increasingly important in the workplace and link this growing importance to similar factors. However, for these pessimistic authors, the implications of what is described as the “textualisation” (Jackson 2000, Tusting 2009) of the workplace are rather different. Rather than seeing new literacy requirements as examples of upskilling or opportunities to engage in “symbolic analytic” work, these authors emphasise the way documentation forms part of managerial efforts to control the work of employees. These authors are often sceptical of arguments that suggest these new literacy practices require “higher level” skills, noting that many of the literacy tasks which employees undertake are relatively simple in literacy terms.

Some of these authors, in a similar way to optimists, argue that new management practices, loosely bracketed under the heading of HPWP (Hull et al 1996, Jackson 2000, Jackson and Slade 2008) contribute to growing literacy requirements. Of particular interest are quality management systems based around documentation, such as ISO standards (Jackson 2004). These authors also echo the optimistic view that broader economic conditions, for example intensified global competition and the need to compete on quality rather than cost, encourage the adoption of these practices by employers. However, they raise questions about the characteristics of the new literacy requirements that workers encounter.

Pessimistic authors dispute the assumption that there has been a shift towards employee empowerment and “symbolic analytic” work. Instead, they suggest, managerial control remains important and employees are more likely to be required to follow instructions than think to for themselves. The conception of new forms of management practices echoes, and to some extent draws on (Jackson 2000), a broader critical literature on the “dark side” of a range of such practices arguing that rather than enhancing employee empowerment and involvement these practices actually heighten managerial control over front line workers through mechanisms such as “management by stress”, standardisation of work processes and increased surveillance (e.g. Parker and Slaughter 1990, Delbridge et al 1992, McArdle et

al 1995, Delbridge 1998, Carter et al 2011). Literacy practices, in turn reflect these workplace realities.

Nikolaidou and Karlsson (2012) and Tusting (2009, 2010) discuss the impact of regulation and reporting requirements in traditionally public services Swedish care homes, UK child care centres and among literacy and numeracy tutors. This is a slightly different argument to that made by the likes of Jackson (2000) who focus on practices adopted voluntarily (albeit under pressure from competition and customers) by mainly private sector employers. However, Nikolaidou and Karlsson (2012) and Tusting (2009, 2010) emphasise the way the processes they identify can be linked to factors such as privatisation, marketisation and a neo-liberal “audit culture”. This provides a link with the other studies mentioned above, Tusting (2010), for example, argues that her findings should be seen as part of a broader move towards the “textualisation” of workplaces.

These authors argue that documentation plays a role in both the monitoring of employees and the exercise of managerial control over the work of employees. Jackson (2000) argues that documentation associated with quality assurance processes which ask employees to record aspects of their work (for example signing to say a task has been completed) allows managers to single out and discipline individual workers when errors occur. Jackson (2000) suggests that the novelty of this form of monitoring is that it requires employees themselves to take responsibility for the policing of their work, they must provide the “evidence” that managers can use against them should problems occur. These documentary requirements are often not explicitly introduced as a method of monitoring employees. They are typically justified as a way of tracking quality generally, rather than employee performance, with managers emphasising the importance of a “no blame” culture in which individuals are not held responsible for failures of quality control. These authors argue, however, that this “no blame” culture is largely mythical and the typical experience of employees is that engaging in the literacy practices linked to quality management schemes is risky (Jackson 2000, Belfiore 2004, Folinsbee 2004).

It is also argued that documentation contributes to managerial control over the aims of work and how it is carried out. For example, the documentation associated with quality assurance programmes can determine how work must be done to meet “quality” requirements (Belfiore 2004, Folinsbee 2004 Hunter 2004a, 2007, Jackson and Slade 2008).



The introduction of this documentation into work environments which were previously free of texts can lead to significant restrictions on autonomy for employees who had been able to develop their own work routines (Belfiore 2004, Folinsbee 2004). On occasions, this can lead to employees undertaking work in a manner they know to be inefficient simply because they are not permitted to deviate from documented procedure (Jackson and Slade 2008). Karlsson and Nikolaidou (2011) discuss how documentation in the care sector shapes the “substance and meaning” of care work towards providing standardised services. In addition to controlling what employees do, attention has also been drawn to the way in which texts might be used to shape “identities” at work, to ensure employees attitudes and behaviours are in accordance with company requirements. Hunter (2004a, 2007) and Karlsson (2009) both give examples of workplace documentation aimed at trying to encourage employees to “buy in” to organisational cultures.

A further issue is that documentation requirements can add to pressures on employees and lead to the intensification of working conditions (Jackson 2000, Folinsbee 2004, Tusting 2009, 2010). Tusting (2009, 2010) notes that both literacy and numeracy teachers and childcare workers face difficulties getting paperwork completed alongside their other tasks and responsibilities. Folinsbee (2004) gives the example of the introduction of a new checklist for setting up equipment at a textile plant which took a considerable amount of time to complete. Despite this, employees were not given extra time to complete the paperwork.

Pessimists have also argued that employees have limited control over documentation. Documentation used by frontline workers is often designed by others further up the organisational hierarchy with little input from frontline workers themselves (Folinsbee 2004). Frontline employees are frequently limited in the extent to which they can customise documents, generate their own useful documents and express their views in writing. Gee et al (1996) note examples of employees being prevented from editing manufacturing process diagrams even when they were aware these diagrams were inaccurate. Nikolaidou and Karlsson (2012) discuss how care workers are required to write accounts of resident’s activities in an institutionally determined manner, which prevents them from including details and language they would like. A knock on effect is that these accounts become less useful as resources to help carers do their work, as a consequence the information that

employees would like to include in these documents has to be communicated orally. Belfiore (2004), Folinsbee (2004) and Defoe (2004) all point to the phenomenon of “document control” under quality assurance systems such as ISO. This is the idea that only approved and official documents can be used in a workplace, potentially acting as a barrier to employees developing their own notes and documents to help them in their work.

There are some variations in the arguments of these authors. While there is a general view that documentation has increased in the workplace, not all authors argue that there has been an expansion of literacy across all areas of work or that changes are always bad for employees. Karlsson (2009) argues that many occupations remain in transition towards a “new work order”. Processes observed in some areas of the economy may not be fully present in others, although she does imply there is a relatively clear direction of travel. Furthermore, she suggests that there is no way of knowing in advance whether the changes that are occurring will necessarily be good or bad for employees. Hunter (2004a) finds that while documentation had become more important generally in her study of a hotel, some managers limited the need for certain employees to read in their day-to-day activities due to concerns about their literacy skills. A number of authors also note the way that certain front line employees are able to use documentation to their advantage (Gee et al 1996, Belfiore 2004, Tusting 2009). However, these individuals tend to be treated as exceptions.

These authors have less to say about numeracy. However, numerical data does surface in the work of these authors, the purposes of these data appear to be very similar to the purposes of documentation, surveillance and control. For example, much of the information that employees have to record is numerical in form, for example productivity figures (Gee et al 1996). Other authors mention the display of data in the workplace, for example Hunter (2004a) notes that hotel managers used graphs displaying the performance of the hotel on measures of “quality” as part of the material used to encourage employees to buy in to the organisations’ culture.

One thing to note about the pessimistic narrative is the extent to which, like the optimists discussed above, much of the strongest evidence comes from studies of manufacturing. Studies from service industries, such as those of Hunter (2004a), Karlsson (2009) and Nikolaidou and Karlsson (2012) provide evidence that is more ambiguous. For example,

Hunter focusses on documentation in the form of text on employee ID cards and posters, while Karlsson discusses company newsletters read by shop workers. Both of these seem rather more peripheral to the work of employees than the documentation found in manufacturing case studies. Nikolaidou and Karlsson's (2012) study of care workers in Sweden finds evidence of documentation that looks more like that found in manufacturing but it is interesting to note that this appears to be more to do with formal regulation than something which is voluntarily adopted by firms in response to changing economic conditions. There are reasonable questions to be asked about the extent to which trends most strongly identified in manufacturing environments can be extrapolated to other forms of work.

### Sceptical

Both the optimistic and pessimistic narratives suggest that, to varying degrees, the workplace has changed and that this, in turn, has led to the rising literacy and/or numeracy demands being placed on employees. However, there is a third position, which is simply that literacy, and numeracy may not be important for many employees and the demand for these skills may not have changed a great deal. It is possible to link this view to some of the criticisms of the broader knowledge economy narrative discussed above, notably the idea that many jobs remain untouched by the changes associated with the knowledge economy and continue to demand relatively low levels of skill.

Wolf and Evans (2011) found that while there was some evidence of increasing demands on literacy skill in their study of adult learners they also note that these changes were not universal. Some learners had experienced changes such as increased reporting requirements related to regulation and the levelling out of organisational hierarchies which increased their use of literacy skills at work. However, they also found that in many cases, demand for literacy skills was "negligible" (Wolf and Evans 2011:110). In addition, they identified instances where the introduction of new technology reduced the need for either literacy or numeracy skills.

Smith (1999) critiques the notion that changing technology is leading to universal upgrading of the demand for numeracy for production workers in manufacturing. He notes two factors, firstly while all the plants in his study faced similar pressures to increase quality and lower costs, not all of the plants decided to adopt more sophisticated forms of technology.

Furthermore, where new technologies were adopted their impact on the level of numeracy required by employees was mediated by the kinds of working practices implemented by managers. For example, in some instances Statistical Process Analyses were entirely the preserve of specialists while in others these tasks were devolved to some extent to production workers.

Black (2002) notes evidence that even where new work practices are being introduced, literacy use may be limited. In his study of the introduction of team working amongst council maintenance workers, Black found little evidence of new literacy practices for front line workers, communication was largely oral and tasks such as report writing were undertaken by administrators. Black found more evidence of a need for numeracy use but notes that the kinds of numeracy required were not simple applications of school maths and needed to be developed on the job. Similarly, Black et al (2013) find mixed evidence of the introduction of lean manufacturing practices on the demand for literacy and numeracy. Employees in firms where lean practices had been introduced did encounter more documentation and data in certain contexts, especially in team meetings. However, for the most part, literacy use in direct production remained limited to simple “job cards” detailing orders.

It has been noted that studies of low paid work have generally not focussed on literacy and numeracy skill. However, these skills are not entirely absent from the literature, and the evidence available indicates relatively low demand. For example, Wickham et al (2009) find migrant workers opting to work in hotels after failing to find employment in secretarial or administrative jobs due to the lower level of literacy requirements in the former. Dutton et al (2008) describe how hotels colour code cleaning products to reduce the need for literacy skills amongst employees. A number of studies mention literacy and numeracy as a factor in recruitment however there is limited evidence on whether literacy and numeracy requirements set relate to actual job tasks or whether they are purely selection criteria. Grimshaw and Carroll (2008) find that HR managers in UK hospitals claim that it is desirable for cleaners to have basic literacy and numeracy and for assistant nurses to have GCSE-level English and maths skills, but it is not clear how, if at all, these skills are utilised in work. Lloyd et al (2008) find more evidence of literacy use in call centres, however it is not clear how complex these types of text are. Additionally, while call centre managers often claimed

GCSE maths and English at A\*-C was a requirement for all recruits, in practice this was often waived if potential recruits had the right kind of “personality”.

Mason and Osbourne (2008) find that some (but not all) food retailers include literacy and numeracy requirements in their recruitment criteria; however, this is not the case with their comparison group of electrical retailers. This is interesting because it might be expected that electrical retailers, who require employees to develop detailed product knowledge would place greater literacy demands on their employees. Additionally, the two food retailers who do have literacy and numeracy recruitment criteria are at opposite ends of the product market scale (one selling high quality food aimed at affluent customers, the other a discount retailer). As in the case of Grimshaw and Carroll, there is little evidence of how these skills are actually used in work. Additionally, Nickson et al (2011) find that some fashion retailers mention a “basic level” of education as being required of new shop floor recruits, which would presumably include literacy and numeracy. However educational requirements generally appeared to be less important than other factors such as personal characteristics. Finally, literacy and numeracy did not feature when the same employers were asked about the types of skill important to actually do the job.

There is also evidence from quantitative research. Peters and King (2000) report the results of a survey of Scottish employers’ perspectives on literacy and numeracy. The survey asked directly about the skills employers felt were necessary for staff to have, 13% stated numeracy, 7% reading and 7% writing. Employers were also asked about the skills they felt were *most* important for new recruits 3% mentioned numeracy, 1% reading and 1% writing. The report notes that these questions were unprompted and so employers may be taking these skills for granted. A follow up question asked about skills that were essential for all newly recruited staff, this time offering respondents a menu of options – 42% felt numeracy skills were essential for all new staff, 72% reading and 57% writing. Although these figures suggest a somewhat greater importance for literacy and numeracy skills it is worth noting that for each skill a sizeable proportion of employers did not feel these skills were essential. The survey also asked about the importance of reading and writing tasks in the workplace. Only a minority of employers felt that that any of these tasks were important for *all* their staff. Perhaps most pertinently for the debate over the growing demand for literacy and numeracy skills, the survey also found that a majority of employers felt that literacy and

numeracy skill needs had not changed in the last five years and would not change in the next five years. Interestingly 10% of those surveyed felt that demand for writing had decreased and the same percentage felt it would decrease over the next five years.

While the SES (Felstead et al 2007) suggest that the use of literacy and numeracy skills grew between 1997 and 2006, when we focus on actual levels of skill use a different picture emerges, literacy is considered either “very important” or “essential” in 40% of jobs while for numeracy the figure is only 28%. By contrast, other generic skills are found to be at least very important in a much broader range of jobs. Literacy and numeracy ranked 9<sup>th</sup> and 10<sup>th</sup> respectively from a list of twelve generic skills. In addition, there are wide disparities in the importance of these skills between sectors and occupations.

### Implications for the research

The section has offered an overview of, firstly, perspectives on the demand for skill in general and secondly views more directly related to literacy and numeracy skill use. In broad terms, ideas about the emergence of a “knowledge economy” have been utilised by both academics and policy makers to argue that broad socio-economic changes require firms to change in ways that demand higher skills from their employees. The discussion, however, highlighted a number of criticisms of this upskilling perspective, notably the strong growth of low paid work that does not appear to have been radically upskilled. In relation to literacy and numeracy, the discussion identified three contrasting perspectives on the demand for literacy and numeracy skill and the impact on workers

The discussion identified some gaps in this research. It was noted that much of the research in this area has been driven by studies in manufacturing workplaces or certain very specific areas of services such as call centres. While there have been studies of literacy and numeracy in care work, retails and hotels this typically comes from non-UK contexts. For example, Nikolaidou and Karlsson’s (2012) and Marr and Hagston’s (2007a) studies of care work come from Sweden and Australia respectively, Hastwell et al’s (2013) study of retail from New Zealand and Hunter’s (2004a) study of hotel workers from Canada. By contrast, much of the research on low paid work in the UK has not given much direct consideration to literacy and numeracy skills. In addition, much of this work has been based solely on case study evidence, which leads to some questions about the basis for some of the generalisations made.

This discussion of the evidence highlights a number of tasks for the present study. Firstly, it highlights the importance of the subject matter, specifically the lack of evidence on literacy and numeracy skills in low paid work. Secondly, it suggests there is potential value that can be added by bringing both quantitative and qualitative data to the study of literacy and numeracy in workplace. Finally, it helps inform and frame some of the questions around the demand for literacy and numeracy skill. One of the aims of the analysis will be to identify which of the three “narratives” most accurately fits the data and why. Consideration will be given to the extent to which literacy and numeracy demand looks more like the “symbolic analytic” work described by some optimists or whether tasks actually contribute to managerial efforts to control and monitor employees. Attention will also be paid to whether the drivers of skill demand identified in the discussion can be seen as contributing to literacy and numeracy demand at the bottom end of the labour market.

## Challenges with literacy and numeracy in the workplace

The final part of the literature review deals with the perception, common amongst policymakers, that a substantial proportion of the workforce lack the literacy and numeracy skills required in the workplace. The evidence typically cited to support this view – surveys of adult skills and the views of employers - is detailed. Broadly speaking, the view of policy makers is that relatively high proportions of UK adults scoring “low” marks in surveys combined with complaints from employers about skill gaps and shortages implies skills deficits are a major economic problem. However, the section goes on to consider critiques and alternatives to this depiction of a skills crisis. Firstly, there are issues with the evidence used to support the narrative. Secondly, data is presented offering a different picture of the extent of skill deficits. Finally, the section details alternative explanations of why employees may have difficulties with tasks involving literacy and numeracy in the workplace that go beyond skill “deficiencies”.

### The skills “crisis” narrative

In the introduction, it was mentioned that while the mainstream policy narrative is “optimistic” about the demand for literacy and numeracy skills, it is rather more pessimistic about the supply of those skills. The rhetoric of policy makers and business leaders suggests a persistent “skills crisis” (Black 2002, Black et al 2013) in which the supply of individual skills is insufficient to meet the demand from employers. Support for this view comes from two sources. Firstly, surveys of literacy and numeracy skill levels which indicate that a substantial proportion of the population have “low level” skills (e.g. Miller and Lewis 2011, Harding et al 2012, OECD 2013). Secondly, surveys produced by employer organisations suggesting that their members are concerned about levels of literacy and numeracy skill.

To begin with the first set of evidence, surveys seeking to assess the skill levels of the population have been central to the development of policy on literacy and numeracy skill. Results from these surveys often attract significant media attention, leading to pressure on politicians to “do something” about low levels of literacy (Payne 2006). The 2011 *Skills for Life Survey* (Harding et al 2012) found 14.9% of those surveyed fell below Level 1 for literacy and 23.7% fell below Entry Level 3 for numeracy, equivalent to 5.1 million and 8.1 million adults below the official definition of “functional” skills. This was largely unchanged since 2003. The OECD’s (2013) *Survey of Adult Skills* found that literacy scores in England &



Northern Ireland were not significantly different from the OECD average, while numeracy scores were somewhat below. However, much attention was given to the poor performance of young adults, those aged 16-24 performed significantly below the OECD average in both literacy and numeracy. Focussing on England, Wheeler et al (2013) note that in contrast to most other participating nations, those in the youngest groups (16-18) had lower scores than those in the oldest age groups. Overall, Wheeler et al (2013) estimate that 16.6% of the UK population has “low proficiency” in literacy skills and 24.4% with “low” proficiency in numeracy, with the former in line with the OECD average and the latter some way below. The 2010 Welsh Adult Skills Survey (Miller and Lewis 2011) found that adult literacy skills had improved somewhat between 2004 and 2010 with 12% of the population scoring below Level 1, down from 25% in 2004. There had been less change in numeracy skills, 53% scored below Level 1 in 2004 and 51% did the same in 2010. In 2010, 22% of the adult population had scores below Entry Level 3 for numeracy.

A second source of support for the policy narrative are surveys conducted by employer associations, for example the Confederation of British Industry and Federation of Small Business these generally show relatively high levels of concern amongst employers about the literacy and numeracy skills of the population. For example, the CBI’s 2014 Skill Survey (CBI 2014) found that 54% of companies surveyed identified weaknesses in the literacy skills of some staff and 53% reported the same for numeracy. Furthermore, consistent with the argument that literacy and numeracy skills are becoming more important, concern about both skills appears to have increased since 2009, when only 40% of those surveyed reported problems with either literacy or numeracy. Similar findings appear in FSB surveys. For example, 41% of FSB members reported that young people applying for jobs tended to lack necessary literacy skills and 37% reported the same for numeracy (FSB 2013). Literacy and numeracy skills were the second and fourth most commonly identified skill sets lacking in young recruits.

## Critiques

Despite the arguments from policy makers and business leaders that low levels of literacy and numeracy skills are the cause of significant labour market and workplace problems, a number of authors have advanced critiques of these arguments.

## The survey evidence

Some authors have questioned whether the definitions of “low” skills used in surveys give an accurate depiction of the number of adults who face genuine difficulties in using literacy and numeracy skills in their everyday lives. A common complaint relates to the tendency to draw parallels between the survey test scores and school curriculum levels. For example, the BIS press release for the *Skills for Life* survey claimed that “around a quarter of adults have the numeracy skills of a 7 to 9-year-old or below” (BIS 2012) based on the idea that Entry Level 3 is equivalent to the expected attainment of 9-11 year olds (Harding et al 2012). This arguably gives the misleading impression that these adults are only able to function at the level of a 7 to 9-year-old, ignoring the fact that adults are at a very different developmental stage (BIS Committee 2014b). Payne (2006) has raised questions about figures from the 1996 Adult Literacy Survey (ALS) suggesting that 22% of the UK population lacked functional literacy. Payne notes, for example, that significant proportions of those classified as functionally illiterate had achieved GCSE level qualifications or were in medium or higher skilled jobs, facts which appear incompatible with the idea that these individuals had problems with literacy skills that prevent them from fully participating in society.

When surveys ask respondents whether they feel they have difficulties with either literacy or numeracy, the proportion with difficulties is typically much lower than the estimates based on testing alone. For example, analysing data from the 2004 British Cohort Survey, Bynner and Parsons (2006) find that 8% of those surveyed reported difficulties with reading and 11% had difficulties with numeracy. The figure for writing was notably higher at 25%, mainly due to people reporting that they sometimes had difficulties in spelling words.

However very few respondents felt they had difficulties with other writing tasks, for example 7% reported difficulties with putting down in writing what they wanted to say and only 2% felt they would struggle with writing a letter to a friend. Similarly, the 2011 Skills for Life Survey found only 5% of adults rating their reading skills as poor, 9% writing and 8% numeracy. Furthermore, not all of those who rated their skills poorly felt this had an impact on their job prospects, more of those with self-assessed difficulties with reading problems felt these difficulties had a negative impact on their job prospects (60%) than writing (51%) or numeracy (42%) problems.

There are of course issues with these data. Respondents might not be willing to “admit” difficulties with literacy and numeracy skills in a survey. Bynner and Parsons (2006) suggest that many individuals might not be aware of their problems because they find ways of coping with any difficulties. However, this in itself is suggestive of the idea that “objective” measures of literacy and numeracy skill might not tell us everything about the capacity to cope with literacy and numeracy tasks in work and wider life.

The validity of information from business surveys can also be questioned. For example, Cappelli (2015) notes that the design and conduct of business surveys is often less than transparent. This appears to be a reasonable criticism of the CBI *Education and Skills Survey*, details of the methodology used are somewhat obscure. The 2014 report notes that they received 291 responses from employers but there is no discussion of the sampling frame used, how employers were sampled or the response rate to the survey. The data that is provided on the characteristics of respondents suggests that the sample used may not offer a wholly representative picture of the wider business community.

In addition to questions about the quality of the data used to underpin policy assumptions, there is also a range of research that suggests that a different picture. Using a larger and more representative sample than the FSB and CBI surveys, the 2013 UKCES Employer Skills Survey (Winterbotham et al 2014) finds that only 15% of firms report any skill gaps amongst their current employees and of those skill gaps that are reported 23% relate to numeracy, 25% relate to literacy and 36% relate to written communication. This contrasts markedly with the CBI claim that 54% of all firms are concerned with literacy skills alone. In addition, while 71% of firms expect that some of their staff will need to upgrade skills in general over the next 12 months, out of 13 skills written communication (18%), numeracy (13%) and literacy (12%) are the tenth, eleventh and twelfth most commonly cited skills needing to be upgraded.

In relation to recruitment 4% of UK firms report having vacancies they are unable to fill due to a lack of applicants with the right skills (Skills Shortage Vacancies – SSVs) (Winterbotham et al 2014). Of these firms, 38% report a lack of written communication skills, 34% a lack of literacy skills and 26% a lack of numeracy skills. In other words, fewer than 2% of all firms reported having difficulty recruiting due to a lack of literacy or numeracy skills amongst applicants. In Scotland, Peters and King (2000) also find minimal evidence of substantial skill

shortages. Most employers rated the literacy and numeracy skills of their current employees as good or excellent<sup>2</sup> and very few ranked them as poor<sup>3</sup>. Furthermore, of those that did feel skills were poor or moderate only a minority felt these poor skills were a barrier to productivity<sup>4</sup>.

The OECD (2013) attempts to measure the extent to which employees have skills above or below the level demanded by their job using direct measures of skills. With regards to literacy, a higher proportion of employees are over-skilled<sup>5</sup> (8.1%) than under skilled (6.5%), although this is a common feature of most countries included in the survey. In relation to numeracy, the proportion of under (6.9%) and over skilled (6.6%) workers is roughly similar, which is somewhat unusual - for most countries we see a higher proportion of over-skilled workers. For both literacy and numeracy, the proportion of over skilled workers is slightly lower than the all-country average and the proportion of under-skilled workers is higher. These results suggest that compared to other countries the UK may have a slightly more significant problem with under-skilled workers. However, the results still suggest that under-skilling affects a fairly small proportion of the work force and that over-skilling is either equally or more prevalent for both literacy and numeracy.

### Do deficiencies cause problems at work?

Other research on literacy and numeracy skills in the workplace also raises questions about the extent to which individual skill deficiencies cause widespread problems. In some circumstances, this might simply be down to the fact, noted in the previous section, that often literacy and numeracy requirements of jobs are relatively straightforward or minimal (Wolf and Evans 2011, Black et al 2013). A further point, made in relation to literacy, is that

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<sup>2</sup> 72% for maths, 77% for reading and 73% for writing

<sup>3</sup> 3% for maths , 1% for reading and 2% for writing

<sup>4</sup> 22% for maths, 21% for reading and 21% for writing

<sup>5</sup> Over-skilled workers are defined as those whose literacy or numeracy score is higher than the 95<sup>th</sup> percentile of other workers in their country and occupation who regard themselves as well matched with their job.

Under-skilled workers are those whose literacy or numeracy scores are below the 5<sup>th</sup> percentile of the same comparison group.

while some jobs might benefit from employees using their literacy skills, the use of these skills is not always essential. Diehl and Mikulecky (1980) find while reading in the workplace is widespread, it is rarely essential to task completion. Diehl and Mikulecky (1980) suggest it is better to think in terms of “literacy availability” rather than “literacy demands” in the workplace, the idea that many texts in the workplace are helpful but not essential for employees with the implication that the information contained in a text might be available from elsewhere, for example from colleagues. One implication of this is that, in many circumstances, employees who have difficulties with reading might be able to find different ways to do their jobs that avoid reading. Darrah (1997) expands this to critique the notion of “skill requirements” of jobs more generally. Darrah argues that not all jobs require employees to undertake the same tasks in the same way. For example, while information can be shared via texts, Darrah notes the ongoing importance of an “oral tradition” in work which is preferred by many employees. Another point is that workers might lack the skills to do certain aspects of work, while still being valuable employees overall. In his study of a computer manufacturing plant, Darrah observed that while there was a formal requirement for employees to be able to write notes to colleagues, many struggled to do so due to difficulties stemming from the fact that they did not speak English as a first language. Despite this, they remained productive employees and the plant remained economically viable.

Uncertainty about the extent of demand for literacy and numeracy skills also raises questions about whether low levels of literacy and numeracy skills is actually a *result* of low levels of use of these skills in the labour market. Practice engagement theory (Reder 2009) posits that proficiency in literacy is developed by engaging in literacy practices. Reder (2009) uses the US Longitudinal Survey of Adult literacy to present evidence of a link between literacy practices and proficiency although there is less evidence of the same link for numeracy. However, it is important to note that this includes practices both in and out of work. Bynner et al (2010) find evidence that both time in employment in general and the use of ICT in work are associated with increases in literacy proficiency. Wolf and Evans (2011) find that sustained improvements in literacy proficiency following workplace courses are rare, however where improvements were sustained an important factor appeared to be changes in participants’ jobs which led to them making more use of literacy skills.

## Conception of skills

A further set of criticisms centres on the conception of workplace literacy and numeracy. As noted in the previous section, policy makers tend to emphasise the importance of “abstract”, testable skills learnt in formal settings. However, the ideas associated with social practice views of literacy and numeracy (and, to a lesser extent, functional literacy theory), suggest that proficiency in either literacy or numeracy is to some extent contextually bound.

Firstly, individuals who might be considered to have low levels of literacy or numeracy skills in an “abstract” sense can actually perform tasks involving literacy and numeracy perfectly adequately in specific contexts. For example, Evans and Wolf (2011) report that many of the adult learners in their study were able to cope with the literacy requirements of their jobs by learning how to undertake tasks in an informal manner on the job (for example through observing others, mentoring or coaching and focussed workplace discussions). However, they do note some instances of workers still having difficulties with some specific aspects of literacy tasks. Waterhouse and Virgona (2005) also note the example of a care worker who was able to cope with literacy demands despite difficulties due to her “strong learning skills”.

Other authors note how a combination of contextual knowledge and various forms of context-specific and “informal” strategies can assist in the performance of workplace tasks. Sticht (1988) discusses evidence that specialist work related knowledge can raise an individual’s job reading ability above the level of their general reading ability. Gibson (1996) describes how “unschooled” farmworkers are able to carry out various mathematical and literacy related tasks based on their “working intelligence”, rather than in a formal manner. In addition, because work is typically “social”, skills lacking in one individual may be found elsewhere in the group (Darrah 1997). This might be as simple as calling on the support of co-workers when faced with difficulties (Waterhouse & Virgona 2004, Waterhouse and Virgona 2005 Sticht 1988, Brier & Sait 1996). However, many aspects of jobs that involve literacy and numeracy might be inherently collaborative (Hart-Landsberg and Reder 1997). Furthermore, the capacity to be literate and numerate in a “school” context may not be sufficient to manage in the workplace and individuals with higher “levels” of literacy ability may not perform better in work. A useful illustration of this is given by Hunter (2004b) who discusses how much workplace documentation is unintelligible to individuals who do not

have an understanding of the workplace context. She notes instances where she and other researchers were unable to make sense of documents that were readily understandable to apparently less qualified and less literate employees. Hoyles et al (2010) make a similar point in relation to graphical displays of data. More generally, Mikulecky and Winchester (1983) found no evidence of a link between the reading scores of nurses and ratings of their performance by supervisors and other observers. Sticht (1988) reporting on research undertaken in the US military (Sticht 1975) that in job sample tests, the evidence suggests that higher level literacy skills only have an impact on productivity where those with higher “academic” skills have an opportunity to use those skills.

Finally, suggesting that proficiency is, to some extent, determined by context also highlights the importance of opportunities to learn in a particular context. Those taking a social practice approach to literacy, for example, emphasise the need to ensure employees are properly socialized into the literacy practices of the organisation (Hart-Landsberg and Reder 1997, Searle 2002). The opportunities to learn can be restricted by choices about work organisation. For example in relation to numeracy, Hoyles et al (2010 also Noss 1998) argue that understanding the mathematical models underpinning workplaces is complicated by the design of the systems in which these models are embedded. The designers of these systems typically assume that users do not need to understand the underlying model or are unable to do so, and so “hide” the model behind a user-friendly interface. Hoyles et al explore various ways of opening up these mathematical models in a way that is understandable to a wide range of employees.

### Other explanations for “problems”

A number of authors have offered alternative interpretations for workplace “problems” with literacy and numeracy that focus on factors other than the skill of the individual. Nikolaidou and Karlsson (2012 also Karlsson and Nikolaidou 2011) discuss the way that restrictions on how employees express themselves in writing can create difficulties in literacy activities. In their research in the writing practices of care workers, Nikolaidou and Karlsson suggest that employees are forced to write in an “institutional” style emphasising objectivity and avoiding any language that might be interpreted as critical of residents (for example not describing residents as “angry”) which does not accord with either their

professional or individual identities. Consequently, carers found it difficult to express themselves in what is deemed an “appropriate” way.

Employees may not see certain aspects of work as relevant to them. In their study of a South African factory, Brier and Sait (1996) question managerial assumptions that employees do not read workplace notices due to a lack of literacy skill. Instead, they argue that the issue is “apathy” - employees simply did not regard the content of messages as relevant to them. Hunter (2004a) makes a similar point in relation to notices aimed at encouraging employees to buy in to the “quality culture” of a multinational hotel. Hoyles et al (2010) note that some machine operatives at a packaging manufacturer saw certain charts as irrelevant to their work and “something for management” due to a lack of understanding about how the charts related to work processes.

Much research on workplace literacy has focussed on the way that the workplace shapes the meanings that workers attach to texts. Employees might come to see aspects of texts as unimportant for a variety of reasons. For example, Hull (1999) and Belfiore (2004) both note the way that in workplaces organised along hierarchical lines in which employees are expected to follow instructions rather than think for themselves, employees may not understand the significance of certain tasks leading to errors. An interesting contrast is Defoe’s (2004) study of a metal processing plant where managers focussed on explaining the purposes of documentation to employees and where, consequently, completion of paperwork was generally not a major issue. Mixed messages and competing pressures from managers might also cause employees to consider texts unimportant. Where employees have other tasks to complete alongside paperwork, pressures from managers to “get work done” can lead to the interpretation that the paperwork is less important (Jackson 2000, Folinsbee 2004).

On the other hand, Jackson (2000, 2004) emphasises the extent to which employees might “resist” certain tasks that they perceive as hostile to them. Again these perceptions are influenced by the workplace context and link back to the idea discussed in the previous section that documentation can be linked to managerial efforts to control and monitor employees. Folinsbee (2004) discusses a number of examples of this in her study of a textile factory. For example, she found employees reluctant to fill in suggestions on Research and



Development paperwork because they were concerned their suggestions would be used “against them” if there was a problem with the product later on.

Finally, practical conditions can have an impact on employee’s ability to complete tasks. In relation to literacy, where employees have other competing priorities in addition to paperwork managing these demands can be challenging (Jackson 2000, Folinsbee 2004). Tusting (2010) points to the way that the “material and mundane” aspects of work can contribute to employees having difficulties with writing in the workplace. In her study of childcare work, Tusting noted the way that employees had difficulty fitting in paperwork requirements around other tasks, for example, having to complete paperwork on “observations” of children in the nursery itself leading to frequent interruptions.

### Implications for research

This section has given an overview of debates about the extent to which significant proportions of the UK workforce “lack” the skill required in the workplace. As noted in the introduction, this proposition has been central to the belief amongst policy makers that investing in literacy and numeracy learning is an economic imperative. The discussion has highlighted the limitations of some of the data used to make the case that large proportions of the workforce lack the skills demanded by the workforce. A major issue is that without clearer evidence on the demand for literacy and numeracy skills, adult skills surveys are not sufficient to prove the existence of large-scale work-related deficiencies and there are reasons to be sceptical about the validity of some evidence from employers. This suggests a need to both gather greater data on the demand for these skills and to investigate the extent and nature of skill deficiencies in greater detail. The section also highlighted research that suggested that the use of literacy and numeracy skills might contribute to their development and maintenance. As such, it is also important to consider the idea that employees might be underutilising their skills.

Finally, attention was also paid to arguments that not all “difficulties” with literacy and numeracy in the workplace can necessarily be attributed to deficiencies in skills of employees. Other reasons, for example employees resisting or ignoring tasks they see as problematic or unimportant might explain these difficulties. When it comes to analysing data from this research, it will be important to consider not just whether difficulties with

literacy and numeracy can be identified but also whether these can plausibly be attributed to deficiencies in the skills of employees.

## Conclusion

This review of the literature has raised a number of points of importance for this research. Perhaps most importantly, the review has identified a number of gaps in the literature. Much of the evidence for both optimistic and pessimistic perspectives comes from studies of either manufacturing or call centres. While some more typically low paying sectors do feature, these are less common and generally come from overseas. On the other hand, general studies of low paid work have rarely had a specific focus on literacy and numeracy skills.

Furthermore, in terms of methodology, most previous studies have relied on qualitative case study data. While qualitative data has offered a range of insights into workplace literacy and numeracy, it does appear that there is scope to use quantitative data to better understand the demand for literacy and numeracy in the workplace. The discussion of the definition of skills concluded, among other things, that while there are undeniable limitations to the use of quantitative data in understanding the demand for skill it does also have clear advantages over qualitative data. In particular, if we wish to make general claims about the demand for literacy and numeracy skills, quantitative data is invaluable.

The literature review has also identified key theoretical tools and debates of importance to the topic. In relation to definitions of skills, the discussion has highlighted the potential value of adopting a multi-dimensional definition of skill in the job which includes consideration of complexity, discretion, frequency and importance. In addition, it highlighted the risks of both making assumptions about the demand for skill without considering tasks in detail along with the problem of “infinite regress” over analysing the detail of tasks and coming to the conclusion that all work is equally complex. Engaging with this debate will form an important part of analysing the data for this research.

The discussion of different perspectives on the demand for skills helps frame the central question of the extent of demand for skills. On one side are authors categorised as “optimists” who argue that demand for literacy and numeracy skills is growing, largely due to changes associated with the purported shift to a “knowledge economy”. Taking a more

critical perspective are more pessimistic authors who accept aspects of the optimistic argument but argue that the growing importance of texts in the workplace is problematic for workers. Finally, the sceptical position, which has parallels with critiques of broader knowledge economy rhetoric, questions the overall extent of change. This sceptical position is less well developed in the literature on literacy and numeracy. This research will aim to make a contribution by identifying which of these narratives more plausibly fits the data collected and analysed in this research.

Two new lines of enquiry emerged from the literature review. Firstly, questions about the “character” of literacy and numeracy in the workplace are important to consider. Many of the authors classified as optimists make the argument that the new literacy and numeracy skill demands they identify constitute “symbolic analytic” work, the notion that texts and data are bound up with processes of problem solving and “thinking” at work. On the other hand, pessimistic authors present an almost diametrically opposed argument, suggesting that workplace texts are increasingly implicated in the controlling and monitoring of employees. The extent to which either of these narratives appears plausible will be a question considered in the analysis.

A further area of interest arising from the literature review relates to ideas around skill deficiencies. The discussion highlighted a number of authors who challenge the common sense assumption that if an individual has difficulties with reading, writing or numeracy in the workplace the problem must be deficiencies in skills requiring correction through learning. These authors suggest a range of other factors that may explain difficulties with literacy and numeracy. As a result, this research will ask not only whether there is evidence of employees having difficulties with the literacy and numeracy demands of the workplace but also whether any difficulties which are identified can plausibly be seen as a product of deficiencies in skill or other factors.

# 3 Methodology

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Methodologically, this study combines qualitative data taken from case studies of front line work in the care and retail sectors with quantitative data from the Skills and Employment Survey (SES). This chapter sets out and justifies the appropriateness of this approach. Firstly, explaining the choice of a mixed methods design before detailing the quantitative and qualitative strands of the research.

As noted previously, this research focuses on the nature and extent of demand for literacy and numeracy skills in low paid work. By bringing both qualitative case study data and quantitative survey data to the topic, the research offers both a detailed view of tasks in specific kinds of low paid work and a broader view of skill use in low paid work more generally. The multiple waves of the SES are also exploited to provide evidence on whether the demand for literacy and numeracy skills in low paid work has changed in recent years, a question which is harder to answer with the non-longitudinal case study data. The use of qualitative case studies does, however, enable investigation of the extent of skill deficiencies and underutilisation, the character and purpose of literacy and numeracy in low paid workplaces and the role of literacy and numeracy in recruitment and progression. Finally, both the quantitative and qualitative data can be brought to bear on the final research question, namely, what factors contribute to the demand for literacy and numeracy skills? The qualitative data allows comparisons across case study organisations to identify what factors contribute to any variations in skill use. In addition, a multivariate analysis of the SES permits the examination of the relationships between literacy and numeracy skill use and key variables identified in the literature review, specifically management practices and technology use. The chapter finishes by explaining how the ethical issues were dealt with during the research.

## Mixed methods

### Why mixed methods?

One of the main reasons for using mixed methods is what Bryman (2006) describes as “offset” – the idea that mixing qualitative and quantitative methods enables the researcher

to compensate for the disadvantages of either approach by using the other. This relates to the respective critiques of “ethnomethodological” and “positivist” approaches to skill discussed in the literature review. The aim is to compensate for the problems of generalizability associated with qualitative methods by using quantitative methods while also mitigating the lack of depth provided by quantitative methods by collection of qualitative data. This can also be applied to understanding the factors associated with demand for literacy and numeracy skills in low paid work. The aim of the multivariate analysis of the SES (discussed below) is to identify characteristics of workplaces and work that are associated with higher demand for literacy and numeracy skill. However, while this may identify certain regularities – for example a general relationship between demand for skill and computer use – it cannot say much about how this relationship works in practice. By contrast, qualitative methods can enable the understanding of “mechanisms” by which higher demands for literacy or numeracy skill are generated but not the extent to which these mechanisms exist more generally. Related to this is another of Bryman’s categories, “illustration”, which refers to the idea that quantitative findings can be fleshed out by the use of qualitative methods. By using qualitative methods, the aim is to develop a better idea of what the categories of literacy and numeracy skill “measured” in the SES actually mean and to develop a fuller picture of the role that literacy and numeracy skills play in low paid work.

A second justification is to answer different research questions (Bryman 2006). Because the SES includes multiple waves of data it is more useful in answering questions about change over time than the qualitative case studies which have to rely on interviewee recall for evidence on change. On the other hand, the SES provides limited data on the character of literacy and numeracy use in low paid work and cannot provide information on either skill deficiencies and underutilisation or recruitment and progression.

A further widely cited reason for using mixed methods is the idea of “triangulation”, the idea of using one method to corroborate findings from another (Bryman 2006). For this study, this is relevant in assessing whether findings from the qualitative data on the types and extent of literacy and numeracy task undertaken by employees in low paid occupations fit with broader quantitative data on the use of these skills by low paid workers. The aim of using mixed methods is to make some kind of judgements about the extent to which the

qualitative findings reflect the broader picture of literacy and numeracy skill use in low paid work.

Finally, underpinning the justifications discussed above is a belief in what Bryman (2006) describes as the “utility” of mixed methods, essentially using mixed methods makes research more “useful” to interested parties. As noted previously, workplace literacy and numeracy skills are a live policy issue. To develop appropriate policy responses, we need to look at the issue from a number of different angles. Simply “counting” how many workers in low paying occupations make use of literacy and numeracy skills does not give us much insight into relevant policy questions such as what, if any, difficulties employees face in undertaking these tasks and what contribution government backed literacy and numeracy training schemes might make. However, without some idea of the broader extent of literacy and numeracy use it can be difficult to assess the relevance of the findings from the qualitative research.

### Mixed methods design

The specific choice of research design can be characterised as “convergent parallel” (Creswell & Plano Clark 2011) or “concurrent” (Small 2011) in that quantitative and qualitative data is collected separately and not in a particular sequence. In addition, the study can be seen as a “partially” mixed study in that the “point of interface” between the two methods comes after the two sets of data have been separately analysed and the findings are interpreted, rather than the data being mixed throughout the study (Leech and Onwuegbuzie 2009). To an extent, this choice of research design has been necessitated by the decision to undertake secondary analysis of the SES rather than collecting primary quantitative data. The advantages and disadvantages of the SES are discussed below. Beyond this, the convergent parallel design has a number of advantages, notably it is relatively efficient to carry out and makes intuitive sense (Creswell & Plano Clark 2011). However, there are some disadvantages. Creswell & Plano Clark (2011) note that when using a “convergent parallel” design it can be difficult to marry up the two strands of data, especially if the findings from the two strands conflict. This is certainly an issue for this research. While the SES provides information on the use of literacy and numeracy skills in low paid occupations in general, the qualitative data focusses on two specific kinds of low paid work (frontline care and retail work) and, furthermore, on specific organisations within

those two areas. The sample sizes of the SES are not sufficient to focus on the two occupations, which might mitigate this problem.

## Qualitative strand

The qualitative strand of the research involved six case studies with three organisations each in the care and retail sectors. Detailed descriptions of the cases are provided at the start of each of the qualitative findings chapters, however, the cases are briefly described below with the dates of the fieldwork

- Southwest Home – A home with above average fees, part of a local for-profit chain in the South West of England (October 2013)
- Southeast Home – A home with average fees, part of a local for-profit chain in the South East of England (December 2013)
- Charity Home – A home with average fees, part of a national not-for profit chain in the South West of England (March 2014)
- Home & Gardens (H&G) – A low price retailer of home and associated goods, part of a national chain in South Wales (May 2014)
- ClothesCo – A low price retailer of clothing, part of a national chain in South Wales (July-August 2014)
- Department Store – A high-end department store, part of a national chain in South Wales. The case study focussed on the Home and Fashion departments. (March-August 2014)

## Why case studies?

The choice of case studies for the qualitative element of the research was driven by a need to understand the demand for and use of literacy and numeracy skills within a specific context. One of the key insights of “social” approaches to workplace literacy and numeracy is that it is important not to treat literacy and numeracy as isolated tasks, but to place them within the context in which they are used (e.g. Gee et al 1996, Fitzsimmons et al 2005).

Being able to study phenomena in context is a key advantage of case study methods (Fitzgerald and Dopson 2009, Yin 2009, Kessler and Bach 2014). A second advantage of using case studies is that they offer the scope to collect data from different individuals and sources within the organisation on the importance and use of literacy and numeracy skills. In particular, comparing the views of employees with the views of managers. Finally, case studies are a useful way of identifying causal mechanisms within organisations (Ackroyd

2009, Kessler and Bach 2014). This is important in trying to understand what workplace characteristics generate literacy and numeracy demands for employees.

The broad idea behind undertaking multiple case studies is the “logic of comparison” (Bryman 2012), in other words that the object of a study can be better understood if it is compared in two or more meaningfully comparable cases. The research seeks to make comparisons both between organisations within each sector as well as between the two sectors.

The care and retail sectors were chosen on the basis that frontline occupations in these sectors are “exemplary” cases (Bryman 2012) of low paid work. As noted in the introduction, these sectors make a sizeable contribution to both low-paid work and overall employment. Furthermore, the low paying occupations within the two sectors are similar enough to make comparisons worthwhile. Both sectors are examples of interactive service work involving direct contact with service recipients as part of work (Korczynski & Macdonald 2009). Entry requirements for front line roles in both sectors are typically low. Employers in both sectors appear to have similar criteria for recruiting new workers into frontline positions, emphasising communications skills, appearance and attitude (Green et al 2014). Qualifications and experience can sometimes be more of a consideration in social care but in general, qualifications do not appear to be essential for frontline roles in either sector (Green et al 2014). In terms of the profile of the workforce both sectors make relatively high use of female and part time workers, although the care sector has a slightly older workforce than the retail sector, with a notably higher proportion of workers aged 45-59 and a lower proportion aged below 25 (SfC 2012, Mosley et al 2012).

Cases were also selected on the basis that “comparisons of differences” might be possible. In particular, case studies were selected to enable comparisons between low paid workplaces where skill use might be expected to be higher and those where it might be expected to be lower. At the sector level, there are reasons to suppose that literacy use might be relatively high in the care sector. Work in the care sector is much more heavily regulated than work in the retail sector. The care sector, in effect, has a sector-wide legally mandated quality assurance system in which providers are required to meet certain standards in the provision of care. As noted in the literature review, many writers have argued that these kinds of quality assurance schemes are a major factor associated with the



intensification of documentary requirements in the workplace. There is some evidence to suggest that, for a sector that is generally seen as low paid and low skilled, care work might be reasonably demanding in terms of literacy skill. For example, Warmington et al (2014) raise concerns about the level of paperwork encountered by employees in the care sector. Wolf and Evans (2011) found care sector organisations were among the only employers to cite a need to improve “job-specific skills” as a factor in participating in workplace learning programmes, indicating that literacy skills might be of more importance to everyday work in the sector.

Within each sector, organisations were also chosen according to expectations about where demand for skills might be higher or lower. One of the main criteria used was product market strategy, as noted in the literature review higher value product market strategies are assumed to be associated with higher demand for skill. In retail, it was relatively easy to identify organisations with higher value product market strategies based on pricing strategies, market reports and managers’ comments but this was somewhat more complicated in the care sector. For example, Eaton (2000) places the majority of homes in a “low-quality care” category but develops her typology by looking in some depth at the type of care offered in different homes. There was limited scope to do this kind of investigation prior to undertaking fieldwork. Selection was made on managers’ views of where their fees lay in relation to other homes in the area – Southwest Home had above average fees, while Southeast Home and Charity Home were around average for their area. A further issue in retail is that sub-sector can have a significant impact on the nature of work (Grugulis and Bozkurt 2011). Conversations with the HR department at Department Store suggested that both literacy and numeracy use might be more common in the Home Department and potentially lowest in Fashion. These recommendations informed the choice of H&G and ClothesCo as comparison cases.

The decision to conduct six case studies was made for a number of reasons. Firstly, the idea of undertaking a single case in depth was rejected. This is a method that has been used repeatedly in studies of literacy and numeracy in the workplace, and there appeared to be limited value in providing a further single workplace account. Furthermore, while it has been argued that it is possible to generalise from a single case (Silverman 2010, Flyvbjerg 2006), as noted above, it was felt that the study would be on stronger ground and offer a

greater level of insight if it was based on multiple cases. Having made the decision to use multiple cases, it is also important to explain why the research “stopped” at six. It was felt that six cases would provide a solid basis to identify general patterns in the extent and type of literacy and numeracy use. The careful selection of case studies has been identified as a key factor in establishing their wider validity (Silverman 2010, Flyvbjerg 2006). As noted above, the selection of cases was made using theoretical expectations about where demand for skill might be higher or lower, as well as drawing on existing research evidence and the opinions of knowledgeable parties. This provides us with a reasonably diverse range of organisations from which some generalisations might be made.

There were practical considerations as well. One of these was the challenge of persuading employers to allow access. A further point was to ensure that the research did not spread itself too thinly over multiple cases or generate more data than could be reasonably analysed. Given the resources available, conducting more than six cases may have become unmanageable.

### Data collection

Data was primarily collected via semi-structured interviews with employees and managers. On average, the former lasted between 30-40 minutes while the latter lasted between 60-90 minutes. Semi-structured interviews were chosen to allow a relatively free and open conversation while ensuring similar information was collected from each case (Bryman 2012). Each case aimed for a minimum of three frontline employee interviews (carers and retail assistants) and one manager interview. Forty interviews were conducted and the number of interviews per case ranged from four to eleven. In addition, an interview was carried out with a manager from a different home within the same chain as Charity Home (Charity Home 2). In two cases, only the minimum quota of three employee interviewees and a managerial interview was achieved (Southeast Home and H&G). While it may have been preferable to have secured more interviews in these cases, in general the number of interviews appeared at least adequate. Furthermore, in Southeast Home, interviews were supplemented with observations and informal conversations with employees. Furthermore, even in cases with a greater number of interviews, it was found that employee interviews typically covered very similar material. As such, it seems unlikely that extending the number

of interviews would have led to a radically different picture of literacy and numeracy use emerging from the research.

**Table 1 Care sector interviews**

Southwest Home	<b>Carer Interviews</b>
	Carer 1 – Female, White British, 60+, 11 years in home
	Carer 2 – Female, White Eastern European, 30-39, 3 months in home
	Carer 3 – Female, White British, 20-29, 3 years in home
	Carer 4 – Female, White British, 16-20, 16 months in home
	Carer 5 – Female, White British, 60+, 11 Years in home
	<b>Other interviewees</b>
	Home manager, Chairman & Senior Carer (unrecorded)
Southeast Home	<b>Carer interviews</b>
	Carer 1 – Female, White British, 20-29, 3 years in home
	Carer 2 – Female, White British, 50-59, 4 years in home
	Carer 3 – Female, East Asian, 20-29, 6 years in home
	<b>Other interviewees</b>
	Home manager
Charity Home	<b>Carer interviews</b>
	Carer 1 – Female, White British, 50-59, 8 months in home
	Carer 2 – Female, White British, 50-59, 5 years in home
	Carer 3 – Female, White British, 30-39, 5 months in home
	<b>Other interviewees</b>
	Home manager, Nurse & Senior carer (unrecorded)
	Manager Charity Home 2 (different home in the same chain as Charity Home 2)

**Table 2 Retail sector interviews**

H&G	<b>Employee Interviews</b>
	Employee 1 – Female, White British, 20-29, 7 months in store
	Employee 2 – Female, White British, 20-29, 3 years in store
	Employee 3 – Male, White British, 20-29, 1 year in store
	<b>Other Interviews</b>
	Store Manager
ClothesCo	<b>Employee Interviews</b>
	Employee 1 – Female, British Asian, 30-39, 1 and a half years in store
	Employee 2 – Female, White British, 40-49, 4 years in store
	Employee 3 – Female, White British, 50-59, 6 years in store
	Employee 4 - Female, White British, 20-29, 1 year in store
	Employee 5 – Female, White British, 20-29, 9 years in store
	<b>Other Interviews</b>
	Assistant Manager
Department Store	<b>Employee Interviews (Home)</b>
	Employee 1 – Female, White British, 30-39, 2 years in store
	Employee 2 – Male, White British, 30-39, 1 year in store
	Employee 3 - Female, White British, 20-29, 5 years in store
	Employee 4 – Male, White British, 20-29, 5 years in store
	<b>Employee Interviews (Fashion)</b>
	Employee 1 – Female, White British, 20-29, 9 months in store
	Employee 2 – Male, White British, 20-29, 4 years in store
	Employee 3 – Male, White British, 16-20, 1 year and 8 months in store
	Employee 4 – Male, White British, 16-20, 8 months in store
	<b>Other Interviews</b>
	Section Manager (Home), Section Manager (Fashion), HR manager

The employee interview guide covered three main areas: Individual background and work context, literacy and numeracy tasks and educational background and literacy and numeracy use outside of work – schooling and qualifications, the extent to which employees read, write or use maths outside of work. The manager interview guide covered the manager's background, work and business context views on literacy and numeracy skills in everyday work and the role of literacy and numeracy skills in progression and recruitment. Full details of the interview guides used can be found in the appendix.

These interview guides worked well, although there were some issues. The main challenge was that the interviews sought to identify the kinds of literacy and numeracy tasks employees undertook and probe questions around their complexity and importance. While managerial interviews and observations did provide a reasonable overview of literacy and numeracy tasks, in interviews employees also brought up tasks that had not been previously mentioned or observed. Understanding precisely what these tasks involved and then going on to discuss the challenges and importance of these tasks required a certain amount of agility in the interview situation.

In addition, there was a risk that employees would take aspects of their jobs for granted and neglect to mention certain tasks, especially those that did not involve “formal” maths or “extended” reading or writing. To counteract this, the interview guide included a list of prompts based on observations, the literature and previous interviews. These prompts were effective in several interviews in jogging the memory of employees.

A day of observation was also undertaken in each of the care settings, this involved shadowing an employee. Managers in each setting were happy for this to occur, although in each case I was asked to wait outside rooms while carers were providing care such as dressing, washing and toileting. The motivation for undertaking observations was threefold. Firstly, to identify the literacy and numeracy skills that were in regular use in each case on the basis that interviewees might take for granted certain literacy or numeracy tasks and neglect to mention them in interviews, secondly to see how literacy and numeracy tasks were undertaken in practice and third to understand the workplace context to a greater extent. The latter was especially important in care due to my limited prior experience of care settings.

Undertaking formal observations in retail proved more difficult to organise. Managers generally were less willing to grant access than in the care sector and had concerns about the impact the research would have on staffing levels. While conducting observations would have been preferable, the lack of observations did not substantially undermine the data collection. In the care sector, there was no discrepancy between the literacy and numeracy activities noted in the observations and those discussed in the interviews. In addition, I was able to get some idea of the context and nature of work from visiting the store prior to my formal fieldwork although this was limited to “front of house” activities.

Alternative methods of data collection were considered. One option was an ethnographic study involving extended observation or participant observation. However, it was unclear how much would be gained from participant observation. One issue was that participating in work might not provide much insight into how current employees experienced the literacy and numeracy demands of their jobs. Furthermore, if literacy or numeracy demands were low, there was a risk that I would spend a lot of time in the field collecting data that was not pertinent to the research. Secondly there were practical concerns, extended observation would be resource intensive and would certainly reduce the number of cases. Alongside this access would potentially be much harder to arrange. Ultimately, it was decided that it was not worth trading off the greater practicality of interviews for the ambiguous benefits of extended observation.

Aside from the problem of arranging observations in the retail cases, access was relatively unproblematic in five of the six case study organisations. In each case, managers were supportive of the study and allowed interviews to take place without conditions attached. The exception to this was Department Store, where the HR manager took exception to some aspects of the interview guide. After a period of negotiation, a compromise was reached which largely involved the removal of one line of questioning (the extent to which employees could identify ways they might make more use of literacy and numeracy skills). Ultimately this had little impact on the study overall. There were some difficulties with persuading organisations to participate in the research. Particularly in retail, a number of organisations either ignored or rejected invitations to participate in the research. This raises some concern about the final sample being skewed if the characteristics of the organisations who participated were markedly different from those who did not. For

example, it might be the case literacy and numeracy skills were a more prominent issue for those organisations who participated. However, while it is not entirely possible to say non-participation had no impact, it is reasonable to suggest that this impact may be limited. One of the key differences between participants and non-participants in retail was the method by which organisations were contacted. The method of approaching organisations evolved over time from attempting to go via head offices to contacting unit managers with the latter being more successful. Consequently, it is not necessarily the case that non-participants had radically different characteristics from participants. In addition, in both sectors, but especially in retail, case study organisations were far from homogenous, as will be seen when we move on to the findings.

Employee interviewees were largely selected by managers or supervisors. There is a possibility that managers deliberately selected employees who would offer a “management approved” view of their work. However, in practice this did not appear to be a problem. The subject of the research was not taken as controversial by the managers responsible for arranging the interviews, there was no reason for them to send “model” employees. Secondly, managers were asked to provide interviewees with a range of different demographic characteristics (e.g. different ages, genders, qualification levels) and all facilitated this to some extent.

In the home department in Department Store, the manager did appear to select “good” interviewees; particularly eloquent employees who were either undergraduates or degree holders. Given that these employees are perhaps less likely to have difficulties relating to literacy and numeracy, this may have some impact on findings. However, it was not uncommon for undergraduates and graduates to work at Department Store. Additionally, it was possible to capture some information about staff more generally by asking employees about their colleagues and managers about their staff.

Analysis of the qualitative data involved thematic manual coding of interview transcripts using the research questions as a framework. At the first stage, this involved identifying what interviewees said under several main themes – technical descriptions of tasks, accounts of the purpose of tasks, accounts of difficulties and skill mismatch, accounts of changes to tasks and attitudes to expanding skill use. A second stage involved the development of categories within these themes, for example additional categories within

the theme of difficulties included difficulties caused by lack of literacy skill, difficulties caused by lack of other knowledge or skill and difficulties caused by work environment or other factors. Finally, these categories were compared across transcripts to identify patterns both within and between cases.

## Quantitative strand

The quantitative strand consists, firstly, of an analysis of the extent of and trends in the use of literacy and numeracy skills by those in low paying occupations. Secondly, a multivariate analysis, which seeks to assess the extent to which certain workplace characteristics are, associated with the use of literacy and numeracy skills.

### The Skills and Employment Surveys (SES) 1997-2012

The SES is an ongoing series of cross-sectional surveys of British employees, focussing on the skills used by employees at work. Surveys were conducted in 1997, 2001, 2006 and 2012.

The decision to use the SES over either alternative surveys or the collection of primary quantitative data was made for a number of reasons. The main alternative to the SES is the OECDs *Survey of Adult Skills*, which asks similar questions about the use of literacy and numeracy skills. However, while previous OECD surveys have covered the skills of individuals, only the most recent includes data on skill usage in the UK. Given the interest in change over time, the SES was preferred. Collecting primary quantitative data was ruled out due to resource and time constraints, it was felt the SES is substantially richer and more extensive than anything that would have been feasible to collect in the context of this project.

All four surveys utilised the Postal Address File as a sampling frame, in each case smaller geographical areas (postal sectors) were chosen on the basis of stratified random probability which were then used as the primary sampling units for the surveys (Felstead et al 2015). Postcode sectors were stratified by geographical sub-regions, within each sub-region postcode sectors were ordered by the proportion of household heads categorised as being in non-manual operational categories according to the National Statistics Socio-Economic Classification. Following this the sectors were cut into three bands of roughly equal size which were themselves sorted by the percentage of unemployed working age males in each sector. From this list, specific postcode sectors were chosen by a fixed interval



process with a random start point (GfK 2013). In common with many social surveys, response rates to the SES have declined over time, from 67.1% in 1997 to 48.7% in 2012 (Felstead et al 2015).

Certain observations were removed for a number of reasons. Firstly, the interest of this research is in employees so the self-employed are removed. Additionally, there were some variations in the sample across different years. In 2006 and 2012, those aged 61-65 were included (in previous years the sample had been 20-60) and in 2006 the survey covered additional geographical areas (the Highlands and Islands and Northern Ireland). To ensure comparability between the surveys, these observations were removed meaning only British workers aged 20-60 are included. Finally, because of the need to focus on workers in low paid occupations, all those with missing occupational data were removed. The final sample size for each year is shown below.

**Table 3 SES sample sizes by year**

Dataset	Sample size
1997	2,195
2001	4,005
2006	5,647
2012	2,533
Total	14,380

### Defining employees in low paid work

Two options for defining low paid workers were considered, either using the pay data within the SES to select those earning a below a low pay threshold or using an occupational definition based on “typical” low paying occupations. In the analysis, the latter was adopted for a number of reasons. The focus of this research is not so much on workers paid below a certain threshold, but rather occupations that are typically low paid. Adopting this definition fits more closely with the qualitative work. In addition, there are relatively high levels of missing data on the pay variables, from 7.62% in 2006 to 13.78% in 2012.

To define low pay occupations, the Low Pay Commission's list of low paying occupations was used (Low Pay Commission 2010, 2013). The Commission uses the Annual Survey of Hours and Earnings to identify occupations (defined by four digit SOC codes) with an above average proportion of workers who earn within 10% of the National Minimum Wage for their age category. In 2013, The Low Pay Commission updated their categorisation of low paying occupations according to the new SOC 2010 occupational classification. However, as SOC 2010 is not available for all waves of the SES, so the previous list using SOC 2000 was used.

### Choice of variables (Tasks/Indices)

The SES asks nine questions relevant to literacy and numeracy skills, respondents are asked the importance of:

- Reading written information such as forms, notices or signs
- Reading short documents such as short reports, letters or memos
- Reading long documents such as long reports, manuals, articles or books
- Writing material such as forms, notices or signs
- Writing short documents such as short reports, letters or memos
- Writing long documents such as long reports, manuals, articles or books
- Adding, subtracting, multiplying or dividing numbers
- Calculations using decimals, percentages or fractions (Using a calculator or computer if necessary)
- Calculations using more advanced mathematical or statistical procedures

Respondents are asked to rate the importance of these tasks on a five-point scale ranging from "Essential" to "Not at all important". Within each skill category each question is intended to represent a "higher" level of skill use than the last, so reading short documents is a higher level skill than reading forms and so on (Felstead et al 2007). However, as noted in the literature review, it may be misleading to interpret the "complexity" of literacy and numeracy tasks purely in terms of the formal characteristics of the task. Apparently "simple" tasks – such as filling in a form or adding and subtracting numbers - can be made "complex" depending on factors such as the workplace context. While this does not necessarily generate major problems, it does need to be borne in mind when interpreting results. Additionally, it is important to reiterate that one of the main reasons for adopting a mixed methods research design is to allow scope to offset these kind of difficulties with survey data.

Three other issues need to be considered in relation to these variables. Firstly, there is the possibility that these categories may miss certain literacy and numeracy tasks undertaken by employees. This issue is more acute for numeracy. The SES focuses on numeracy in the sense of performing calculations or mathematical procedures. However, as Hoyles et al (2010) note, numeracy in the workplace can involve a range of tasks that do not involve calculations. Furthermore, because numerical data is often embedded in workplace contexts, employees may undertake numerical tasks without identifying them as “maths”. Nonetheless, having information on the extent of “formal” maths usage is valuable, though it is important to remember that the data might underestimate the level of mathematical activity undertaken by employees.

A second issue is around the notion of “importance”. Darrah (1997) observes employees may regard a task as “important” for a variety of different reasons. There is no way from the SES data to know precisely what employees mean when they say a task is “important” or that different individuals mean the same thing when they describe a task as important. However, as with the issue of complexity discussed above this does not necessarily substantially compromise the analysis but requires a certain amount of caution when interpreting the results, while further emphasising the value of the qualitative strand of the research to allow these questions to be probed in more detail.

Thirdly, there is the risk of social desirability bias – employees may overstate the extent of skill use in their job to “impress” the researcher (Ashton et al 1999). Green and James (2003) investigate this possibility through a smaller scale survey that put SES questions to both employees and their line managers. They found the difference in perceptions of “verbal” skills (combined reading and writing) was the smallest of all the skills tested and not statistically significant. This general agreement suggests that social desirability bias is unlikely to be a major issue.

### Analysis of trends in literacy and numeracy use

For the first part of the quantitative analysis, the variables are used in two ways – firstly looking at the items individually to produce proportions of employees saying they use each of the skills. To achieve this, the variables were recoded into two categories – Essential/very/fairly important and not very/not at all important. This was driven by a need to simplify the data while trying not to lose too much information in the process (De Vaus

2002). The data produced using these variables have the advantage of being easily interpretable; we can identify proportions of employees saying each task is important or unimportant. There are two major disadvantages, firstly the volume of data produced using individual items is substantial and, particularly for the multivariate analysis, it is useful to reduce the data down into a smaller, more manageable number of items. Secondly, there are issues with some categories having very small numbers of cases.

As a consequence, three indices were also created – one each for reading, writing and numeracy – from the average scores on the three items in each category, giving indices with values of 0-4. These indices are in part based on previous work done using the SES (e.g. Felstead et al 2007, Green 2012) however, in previous studies, “literacy” has been treated as a single category combining both reading and writing variables. As the focus of this research is specifically on literacy and numeracy, it was not necessary to limit the analysis to two indices. In addition, reading and writing are often treated separately in the literature. One of the criteria for including variables in an index is that they “belong” together and measure the same concept. A conventional way of testing this is Cronbach’s alpha (De Vaus 2002, Felstead et al 2007). The alpha for each of the indices is 0.84 for reading, 0.84 for writing and 0.86 for numeracy all above the standardly accepted level of 0.7 (De Vaus 2002).

The disadvantage of using scores is that they are less easily interpretable than the proportions produced using the individual items. For example, saying that 50% of employees describe reading forms as essential to their work makes more sense than saying the average reading index score is 2.5. However, it is possible to interpret these scores relatively (De Vaus 2002), for example by comparing the scores of employees in low paid occupations to employees in non-low paying occupations or by comparing the scores in either set of occupations over time.

Data was weighted to take account of various issues in the sampling process (See Felstead et al 2015 for details). STATA does not permit the use of classical hypothesis tests for comparing proportions or means (e.g. two sample t-tests for means, tests of proportions for categorical data) for weighted survey data. An alternative is to use STATA’s “lincom” command (e.g. STATACorp 2013, UCLA Statistical Consulting Group 2013, Heeringa et al 2010). The “lincom” command produces t-statistics, p-values and confidence intervals for a linear combination of two estimates, in this case the difference between two means or two

proportions. For means, the output from lincom can be treated as equivalent to a t-test (STATACorp 2013), with the t-statistic and p-value indicating whether the difference between two means is significantly different from zero. T-tests, however, are not appropriate to use with categorical data. For data involving proportions, the approach adopted here follows Heeringa et al (2010) and looks at whether the 90%, 95% or 99% confidence intervals for the difference between two proportions contains zero. Where the confidence interval does not include zero the difference between the proportions is considered significantly different from zero.

### Multivariate analysis

The multivariate analysis focuses on the question of what factors contribute to higher levels of demand for skill. In the literature review, it was noted that three factors have been linked to rising demand for skill, product market strategies, new management practices and new technology. The multivariate analysis looks at the relationship between two of these factors – management practices and technology use – and the use of literacy and numeracy skills (data on organisational product market strategy is not available in the SES). Furthermore, it examines whether the relationships between these variables are different for employees in typically low paying occupations

The analysis uses OLS regression using pooled data from the four waves of the SES. Pooling the data increases the sample size, providing scope for more precise estimates of regression coefficients and more powerful test statistics (Woolridge 2009). However, in doing so it is necessary to take account of variance over time. This is achieved by including dummy variables for 2001, 2006 and 2012 with 1997 as a reference category, allowing the intercept to be different for each year (Woolridge 2009).

In the analysis, each of the independent variables of interest are interacted with a dummy variable for low paid status. This is a similar approach to that used by Felstead and Gallie (2004) who investigated the relationship between skill utilisation and High Involvement Work Systems for employees in non-standard jobs. The idea behind the use of an interaction term is that the relationship between two variables might be moderated by another (Field 2013). In this case the interest is in whether the relationship between various characteristics of work and the use of literacy and numeracy skills is moderated by being in

a low paid occupation, in other words whether the relationship between skill use and management practices or technology is different for employees in low paid occupations.

### Dependent variables

The three dependent variables used in the analysis are the three indices for reading, writing and numeracy discussed earlier. It should be noted that the indices from which these variables are created are ordinal, that is the levels of the variable are ordered from high to low but the intervals between the levels cannot be presumed to be equal (Jamieson 2003). In other words, it is unclear whether the distance between “not at all important” and “not very important” is the same as the distance between “not very important” and “fairly important”. There is some debate in the literature over whether it is appropriate to use OLS for ordinal data as OLS regression is generally only considered appropriate for continuous variables (Heeringa et al 2010). On the one hand, authors such as Jamieson (2003) argue that ordinal variables (specifically Likert-type data) should never be analysed using methods more appropriate for continuous variables except under very specific conditions. However, Carifio & Perla (2008) argue that by combining multiple “Likert-type” items into a scale it is legitimate to treat the resulting variable as continuous.

OLS was chosen over alternatives (for example an ordered logit model) for a number of reasons. OLS has several advantages over an ordered logit model, in particular, it has greater statistical power and is more easily interpretable. This approach also mirrors other work done using the skill use variables from the SES (e.g. Green 2012). One issue was that diagnostic tests revealed significant problems with heteroscedasticity, which potentially causes problems with the estimation of standard errors. To counter this all regressions were run using robust standard errors (Wooldridge 2009).

### Independent variables

As noted above, the focus of the multivariate analysis is on the relationship between “new” management practices and technology use and the use of literacy and numeracy skills. Following Green (2012), these concepts are operationalised using measures of involvement and discretion for management practices and simple and complex computer use for technology.

## *Discretion*

The literature review discussed two different notions about the relationship between discretion and literacy and numeracy skills. On the one hand, some authors argue that forms of work organisation that require employees to take greater control over their work increase the extent to which employees need to use skills. On the other hand, authors such as Jackson (2000) suggest that workplace documentation is increasingly a tool of managerial control and so we might expect literacy use to be associated with lower discretion, especially in lower level occupations.

Discretion is measured in the same way used by Green (2012) through an index of four items from the SES that ask about how much influence the employee personally has over how hard they work, what tasks are done, how tasks are done and the quality standards they work to. Respondents rate each item on a four-point scale from “none at all” to “a great deal”. An average score of the four items was taken giving an index ranging from 0 to 3 with an alpha of 0.78

## *Involvement*

Employee involvement is included as a factor for a number of reasons. One of Green's (2012) strongest findings is a link between involvement and literacy use. Green suggests that employee involvement might create a number of new demands on employees, for example a need to refer to company information, to record suggestions and communicate with others. Examples of this kind of process also appear in the qualitative literature on literacy (e.g. Hart-Landsberg & Reder 1997, Mikulecky and Kirkley 1998, Folinsbee 2004). A similar case can also be made for numeracy. For example, Hoyles et al (2002, 2010) suggest that growing numeracy is associated with efforts to innovate and improve efficiency, however this only becomes relevant to lower level employees if the organisation seeks to involve employees in the processes. This link to choices around management practices and numeracy is made more explicitly by Noss (1998). Hoyles et al (2010) do not specifically discuss management practices, but it is notable that a number of their case studies centre on problem solving teams involving shop floor staff.

Involvement is measured in the same manner as Green (2012), an index consisting of a number of practices associated with employee involvement –suggestion schemes, meetings to provide employees with information, meetings where employees can offer their views,

appraisals, quality circles and team working. The index varies between 0 and 1 and has an alpha of 0.70.

### *Computer use*

A number of authors argue that new technology can be linked to increasing demand for literacy and numeracy skills, notably Hoyles et al (2010) in relation to numeracy, Farrell (2006) and Mikulecky & Kirkley (1998) in relation to literacy and the OECD (2013) in relation to both. However, it is also noted in the literature that the technology can both upskill and deskill work. In Zuboff's terms (quoted in Hoyles et al 2010) technology might "informatize" but it can also "automate". It might be expected that the introduction of technology into low paying occupations would have a different impact on work to that in non-low paying occupations.

The SES asks a number of questions about computer usage. Firstly, a skill use question about the importance of using a computer, respondents who answer anything other than "not at all" are then asked about the complexity of computer usage, they are given four options "straightforward", "moderate", "complex" or "advanced". Each option includes examples of what the term should be taken to mean. Following Green (2012), two dummy variables were created, one for basic computer use (straightforward/moderate) and one for complex computer use (complex/advanced).

### *Control variables*

Each model includes a range of control variables to account for other factors that may influence the extent of skill use in work, these include qualifications, age, gender, working hours, size of workplace, occupation, sector and survey year. Full details of these variables are included in appendix 7 (p270-272).

### *Ethics*

The study was given ethical approval by the Cardiff School of Social Research Ethics Committee in September 2013. While the study should not be regarded as highly ethically sensitive, some issues were noted in relation to the qualitative research. Firstly, it was important to be clear that employee interviewees did not feel compelled to participate. To ensure this, at the start of each interview it was made clear to interviewees the interview



would only go ahead with their consent and that they were free to leave at that point or at any other time during the interview. Interviewees were given verbal and written information about the research and asked to sign consent forms (See Appendix).

A second issue was around questions related to employees' views of their own literacy and numeracy skills, which could potentially cause distress or harm to those with difficulties with either literacy or numeracy. To avoid this, interviewees were briefed on the content of the interviews and offered the opportunity not to participate if they felt uncomfortable with any topic. Potentially sensitive questions were left to the end of the interview so that these subjects would not be broached until the employee was comfortable. If employees did show signs of discomfort with earlier questions about literacy and numeracy, the questions could be dropped or the interview terminated. Guarantees were also given to all interviewees that information would be treated anonymously and confidentially and that findings from individual employee interviews would not be shared with managers.

## Conclusion

Overall, the methodology adopted in this research offers a good basis for answering the research questions and expanding our understanding of literacy and numeracy in the workplace. By drawing on both quantitative and qualitative data, the study will be able to offer a combination of depth and breadth which will give us a clearer idea about the place of literacy and numeracy in the workplace.

There are some limitations to the research design. Perhaps the most substantial of these is that the quantitative and qualitative aspects do not map directly onto each other. The analysis of low paid occupations in the SES will include occupations which are not covered by the case studies. However, while this is not ideal it by no means invalidates the research. Given the qualitative focus of many studies of literacy and numeracy in the workplace, the introduction of some kind of quality survey data undoubtedly contributes to expanding our understanding of the issue. Furthermore, while the quantitative and qualitative data can be used in combination to answer some research questions, this is not true of all the research questions. However, while this is not ideal, it does not fundamentally undermine the research. As noted above, the combination of quantitative and qualitative data allows the research to tackle different questions, which can be seen as a strength.

This research design also differs from other studies that have looked at literacy and numeracy in the workplace. The use of survey data to provide broader context to the qualitative work has rarely been used. While the SES data has its limitations, this will provide a different angle on understanding demand for literacy and numeracy skills which is lacking from many studies. Additionally, the use of comparative case studies is relatively rare. While some studies have made use of multiple cases these have not clearly been chosen with the intention of making comparisons. The expectation is that this research design will offer a range of new insights into literacy and numeracy in the workplace.

## 4 Care sector findings

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The thesis now moves on to the findings from the qualitative element of this project, beginning with the care sector. The chapter begins with general descriptions of the cases, providing an overview of the company, work organisation and management practices. The data from the cases is then organised under headings that relate to the research questions. To begin, the ways in which literacy and numeracy tasks enter into the work of employees are described, followed by interviewees' views on the importance of literacy and numeracy skills. These two sections help provide evidence in answer to questions about the extent of demand for literacy and numeracy skills as well as the character and purposes of literacy and numeracy in the cases. Following this are sections on the extent of change in the demand for literacy and numeracy skills and the places of these skills in recruitment and progression. The first of these is of interest in the context of claims that demand for these skills is growing, while the latter speaks to questions about the importance of literacy and numeracy in securing work and moving out of low paid work. Finally, the chapter discusses evidence of difficulties with literacy and numeracy found in the case study and looks at the prospects for expanding the use of literacy and numeracy skills. These contribute to answering questions about the extent to which employees have inadequate literacy and numeracy skills as well as the possibility of underutilisation of skills.

### Introduction to the sector

The adult social care sector employs roughly 1.5 million people (SfC 2015) in England. The sector has two main subsectors: domiciliary care (provided in service users' homes) and residential care. These two areas each make up 42% of employment within the sector (SfC 2015). Residential care is divided into two types – residential care homes and nursing homes, the main difference being nursing homes offer 24-hour medical care from a qualified nurse. Nursing homes make up a smaller proportion of the market (Key Note 2015).

Residential social care has undergone a number of changes in recent years. There has been a shift from public to private provision. Private and voluntary provision has grown from 61% in 1990 to 91% in 2010 (Forder and Allan 2011). The sector remains dependent on public

sector funding, however. In 2014, roughly half of private sector long-term care places were publically funded (Key Note 2015). This reliance on public funding has meant the sector has been hit by cuts in public spending (AgeUK 2014). The introduction of the National Living Wage is also expected to put significant pressures on employers (Harvey 2016). There is also evidence of market concentration and a shift towards both larger providers (organisations with three or more homes) and larger homes (Forder and Allan 2011). Finally, the quality of care has been a major issue. The sector's reputation has been damaged by a number of high profile exposes of poor quality care and abuse. The sector is regulated by the Care Quality Commission (CQC). Care facilities are required to register with the CQC and undergo periodic inspections.

## Overview of the care case studies

Fieldwork took place in three Nursing Homes in England – Southwest Home, Southeast Home and Charity Home. An interview was also conducted with the manager of another home in Charity Home's chain, referred to as Charity Home 2. The focus was on employees at the bottom of organisational hierarchies providing frontline care, usually referred to as carers or care assistants.

In all homes, the structure of the day and the responsibilities of carers were remarkably similar. The focus was on providing personal care, often quite physical care, to residents. In the morning, this typically involved getting residents out of bed and helping them wash and dress. In addition, at meal times carers served food and assisted some residents with eating. During the morning carers worked to tight timescales, being required to get all residents up by mid-morning and before quickly moving on to getting everyone ready for lunch. After lunch, homes were quieter, with residents left to their own devices or participating in activities overseen by an activities co-ordinator. Carers were still required to assist residents with going to the toilet, repositioning bed-bound residents and serving tea and drinks. Throughout the day, residents could call for attention via buzzers.

In each home, the day was segmented into three shifts. The morning shift, from around 8am until 2pm, an afternoon/evening shift from 2pm until 8pm and then a night shift until 8am. Each shift began with a handover meeting from the Nurse, providing updates on residents and delegating tasks for the shift.

## Southwest Home

### Overview

Southwest Home is a purpose built 54-bed care home in a suburban location in the South-West of England. The home is part of a local chain that runs two other homes, Southwest Home is the newest of the three, opening in 2001. The chain's owners entered the care industry in the mid-1990s. According to the Chairman, the organisation had two initial aims - to provide a better standard of care than existing local providers and to be a "good" employer, providing decent pay and working conditions for staff. As all of the original owners had other sources of income, the Chairman claimed that the organisation's objectives had always been partially altruistic.

### Market & performance

Southwest Home charges above average fees for the area. Most of the residents who are not NHS funded are either self-funded or paying top-ups to supplement Local Authority funding. The chairman also claimed that he was able to negotiate higher rates from the Local Authority due to the quality of the home. Southwest Home has more local competitors than the other two homes in the chain but due to the relatively higher population density in the area, the Chairman still considered it to be in an "advantageous" position. The home marked itself out from competitors based on the facilities and the infrastructure of the home for example having Wi-Fi, televisions and telephones in all the rooms and a 24-hour ventilation system that kept the air in the home fresh and free of unpleasant odours.

The home has undergone changes in recent years. The home received poor inspection reports in 2012 and early 2013 and had changed managers twice in a year. The CQC identified poor standards of record keeping, a lack of support for staff and some evidence of poor care. However, the situation appears to have stabilised recent inspections have been positive. The current manager and a senior carer who had been promoted since the manager had taken over said similar things about the problems in the home prior to the change in management. According to these interviewees previous managers had allowed a relatively small group of experienced employees to effectively "run" the home in their own interests, picking their own shifts and taking breaks as and when they wanted without

considering the impact this had on staffing levels. According to the manager, “It was verging a bit on chaos from what was said”.

The new manager introduced a new rota system to ensure what he described as an adequate “skill mix”. The changing rota caused some staff problems balancing work and other commitments. However, there was an expectation that the changes to the rota would eventually settle down. The manager, nurses and senior carers also became stricter about staff taking cigarette and coffee breaks.

Changes were also made to the role of senior carers who took on additional responsibilities, especially mentoring and managing staff. Some of the existing senior carers were unhappy with these changes; furthermore, the manager appointed additional senior carers but passed over some long standing staff that he felt were not willing to take on the necessary responsibilities. As a result, relations in the home had become strained and a number of experienced staff had left. A senior carer, who approved of the firmer line taken by managers, felt that the home was “not a jolly environment no more”. However, these views were not echoed by all employees and the manager himself felt relations had begun to improve.

Other changes included a more rigorous and formal supervision (appraisal) system involving nurses taking responsibility for the appraisal of care assistants and the simplification of some of the documentation that care assistants were asked to fill in.

### Training & management practices

New carers to the home go through an induction period including a day of manual handling and health and safety training that involves watching videos and taking quizzes. Carers are then paired with another member of staff who they shadow for between a week and three months depending on prior experience. Carers receive mandatory training every year in manual handling, health and safety and safeguarding to reinforce and update their knowledge. In addition, carers are encouraged to undertake NVQs/diplomas, senior carers would be expected to have at least a Level 2 qualification.

As noted above, the new manager had implemented a new appraisal system in which employees met with a nurse at least once every three months to discuss their performance. In addition to shift handover meetings, the manager holds full staff meetings once a month,

although this slipped sometimes depending on how busy the home was. Care assistants characterised staff meetings as an opportunity to raise problems with managers and receive information about what was going on in the home, however there was scepticism amongst carers about how much managers listened to suggestions.

The home had two “grades” of care worker – care assistants and senior carers. The senior carer role was essentially supervisory, with some responsibilities for mentoring new staff. Pay for care assistants was above the National Minimum Wage and characterised as “good” for the sector. During the day shift, 12 carers, two senior carers and two nurses were on duty.

## Southeast Home

### Overview

Southeast Home is a 39-bed home in a suburban location in the South East of England. The home serves three client groups elderly people, elderly people with severe dementia or other mental health problems and a small number of younger people with disabilities. Both staff and managers noted that the building was old and this caused a number of issues, the narrow corridors made it difficult when moving residents and rooms were small and lacked facilities such as en-suite bathrooms. The chain had recently been granted planning permission to completely rebuild the home to bring it up to standard.

The chain’s owners were characterised as innovative. They were early adopters of the use of computers in a care setting, this included making daily care reports (discussed in more detail below) available online to residents’ families. The home is ISO 9001 accredited and has a fairly formalised HR and administrative system.

The home’s manager first became the registered manager four years ago, having worked in the home for around 18 years in nursing or other managerial positions. In addition to Southeast Home, the manager was also responsible for a nearby home in the same chain. As a result, much of the day to day running of the home was undertaken by the manager’s assistant.

## Market place & performance

The home had struggled in recent years. There were a series of managers in a short period of time and standards of care had slipped. This led to the current manager, who had been away from the home for 18 months, being placed back in charge. In addition, the age of the building made it difficult to “sell” the home to potential residents. The recession has also had an impact, the sluggish housing market meant that it was harder for potential residents to sell their home to raise the necessary money to privately pay for nursing home fees. It was also noted that the local market was highly competitive and living costs in the area were high. As a result, the home has a high number of residents fully funded by the Local Authority at a rate several hundred pounds below what private residents would be charged.

## Training and management practices

Training in the home is provided via e-learning, with 13 modules including manual handling, health and safety, equality and diversity, safeguarding & dementia. Staff take one module each month, new staff take a customer service course and a care induction course.

Interviewees were sceptical of the value of e-learning, finding it dull and often skipping to the end of module quiz which they usually passed. The manager estimated about half of the care staff had some kind of formal qualification, at a mixture of NVQ Level 2 or 3. In addition to e-learning the induction process for new staff includes a shift shadowing a more experienced employee. The home has Investors in People accreditation.

Staff meetings are held infrequently, largely due to the fact that the manager is in charge of two homes, care assistants felt meetings were sometimes useful but complained about their irregularity. Staff also receive regular appraisals, roughly every two months. These are carried out by either a nurse or a manager. Employment relations were somewhat mixed, while some employees felt the home was a good place to work, others felt the home was understaffed and managers did not listen to carers. The manager commented that there were “one or two” staff that disliked her, but felt this was an inevitable part of managing a nursing home and that by and large relations with staff were good.

The basic rate of pay for care assistants was in line with the National Minimum Wage. Unlike the other care cases, Southeast Home did not have a senior carer role, although employees were paid increments of around 40p an hour for each NVQ Level achieved. Those with



higher level qualifications might be expected to take on additional tasks, for example helping nurses with drug administration.

Eleven carers worked during the day along with a registered nurse, 8 carers and a nurse worked the late shift and 3 carers and a nurse worked nights. Carers noted, however, that the home often felt understaffed, particularly due to sickness absences.

## Charity Home Nursing Home

### Overview

Charity Home is a 39 bed nursing home in an urban location in the South West of England, part of a national not-for-profit chain. The building was previously a local authority home, which was taken over by the chain. The manager commented that the age of the building means that they are unable to offer rooms at the same standard as more modern homes. The home lacks en-suite rooms and does not offer amenities such as Wi-Fi. The manager felt they tried to compensate for these issues by creating a “homely environment”, focussing on things like the decoration of the home.

The home has accreditations in a number of chain-wide quality standards including dementia care and medicine management. The assessment for these quality standards is undertaken by internal auditors who inspect all the homes within the chain on an annual basis. The inspections take a similar form to those conducted by the CQC, with auditors visiting the home, observing and interviewing staff and inspecting paperwork.

The home’s manager had been in place for two years at the time of the fieldwork having been a manager at another home within the same chain for three years.

### Market and performance

The manager felt the home is performing well in relation to its competitors. As the home is located in an urban location, there are a number of other homes in the area often with superior facilities. Fees were reported to be around average for the area, about 10 of the residents are fully privately funded, with others either funded through continuing healthcare or paying top-ups to local authority funding.

## Training and management practices

Charity Home has a high proportion of staff with care sector qualifications, the manager estimated around 70% had at least NVQ Level 2 and around 35-40% held NVQ Level 3s. There is a broad range of training available, although much of this is “mandatory” training on topics such as manual handling and fire safety. New carers receive a two-week induction shadowing an experienced member of staff. After induction, carers receive a two-monthly supervision and a biennial performance review.

There had been a recent effort across the chain to train carers to undertake tasks beyond providing care. This included an effort to involve front line carers in understanding, using and contributing to care plans. Among other things, carers had been trained to calculate Malnutrition Universal Screen Tool (MUST) scores, which were used to identify residents at risk of malnutrition. This will be discussed in more detail below.

The manager held full staff meetings on at least a quarterly basis or more often if needed. She also noted that she tried to be present at shift handover meetings wherever possible.

There were both carer assistant and senior carer roles within the home. The basic rate of pay for care assistants was slightly above minimum wage. The senior carer role appeared to be somewhat broader than at Southwest Home. Whereas senior carers at Southwest Home were mainly supervisors with some responsibilities for mentoring staff, at Charity Home senior carers were also involved in rota management, recruitment and staff appraisals. The senior carer interviewed at the home was also more engaged in contributing to care plans. During the day, two nurses worked at all times, with nine carers in the morning and six on the late shift. The night shift consisted of a nurse and three carers.

## Charity Home 2

In addition to the main Charity Home case study, a manager from another Nursing Home in the same chain, Charity Home 2 was also interviewed. Charity Home 2 is located in a rural location in South West England. In many respects Charity Home 2 is similar to its sister site. The home has 37 residents, similar HR and training practices are in place and its fees are about average for the local area. It is also an older home, having been converted from a family home to a local authority care home in the 1950s and moved into not-for-profit

ownership in the 1990s. However, its rural location meant fewer local competitors. The manager had been in post since 1994, having previously been a nurse in the home.

## Extent and types of literacy and numeracy skill use

Given that the primary focus of this research is understanding the demand for literacy and numeracy skills, the presentation of the case study evidence begins by identifying the different literacy and numeracy tasks undertaken by employees and how these were integrated into broader job roles.

### Literacy

#### Daily care reports and charts

Two main literacy tasks were undertaken by nearly all carers. Firstly, carers were required, on a daily basis, to write accounts of the care they had provided to each of the residents they had dealt with during the day, these accounts had different names across the homes, for simplicity they are referred to as “Daily Care Reports” (DCRs). Secondly, carers were expected to fill in a range of charts recording the provision of care to residents.

In Southeast and Charity Homes, DCRs were handwritten, while in Southeast Home they were completed on computers on sector-specific software. The amount of writing required for DCRs was ambiguous. Broadly speaking carers in all three homes agreed that they should include, at a minimum, details of the care offered and provided – for example whether the resident had been washed, dressed and gone to the toilet or whether any of these things had been offered but refused along with some notes on the general condition of the resident, for example if they had been ill. Although some carers wrote longer accounts, typically they reported writing a three or four sentences usually taking no more than five minutes to complete. Carers generally wrote these accounts at the end of their shift based on their memory of the day. These accounts could be quite formulaic and repetitive from day-to-day, especially for residents who were stable. The use of computers at Southeast Home appeared to have no effect on the amount or type of information written.

The extent of other forms and charts varied somewhat across homes. In each case carers completed “turn charts” recording that bed-bound residents had been re-positioned to prevent pressure sores and food and fluid charts recording what residents at risk of

malnutrition had consumed. In addition, carers at Charity Home mentioned charts recording the application of creams to residents while carers at Southeast Home discussed “toileting” charts used to record bowel movements. At Charity Home 2, carers were also being encouraged to write ABC (Antecedent Behaviour Consequence) forms which recorded instances of “challenging” behaviour among residents, for example physical or verbal abuse.

The forms generally recorded the same kind of information. Food and fluid charts required the carer to record the time, the type of food or drink given to the residents, the amount consumed, any comments (in general, this was either blank or recorded that the resident had refused food or drink) and sign their name. Turn charts required carers to record the time, the position they had been moved to (e.g. left side, right side, sitting up) usually in shorthand (e.g. L for left) and sign their name. In addition, carers in certain positions might take on other tasks involving paperwork. This was most often the case for senior carers in Southwest Home and Charity Home. For example, a senior carer at Southwest Home handled the paperwork for ordering incontinence pads. However, regular care assistants also undertook occasional additional tasks. At Charity Home, some carers had formal additional roles, for example Carer 2 at Charity Home was a moving and handling trainer, a job which involved some administrative work. Additional tasks involving paperwork might also be allocated on a more ad hoc basis, usually according to the needs and judgement of nurses.

The key purpose of the documentation recording the delivery of care (for example DCRs and food and fluid and turn charts) appeared to be to provide evidence to parties both inside and outside the home that care had been delivered correctly. These documents could be checked by regulators and in cases of neglect by medical practitioners and police. As noted previously, Southwest Home had failed an inspection due to poor record keeping under previous managers. A mantra repeated across the homes was “if it isn’t written down it didn’t happen”.

Carers were aware of this as a key reason for this paperwork. Several carers, particularly at Southwest Home, specifically mentioned the importance of these documents to regulators. Furthermore, a number of carers interpreted the documentation as a potential source of protection from accusations of neglect or poor care. In the event of something happening to a resident, for example an injury, illness or even death it was noted that these documents

could be used to demonstrate that care had been provided. For example, carer 3 at Southeast Home noted

*“we have that [food and fluid charts] to save ourself as well because you don’t know if the resident have any problems or they might pass away not long after and then they’ll want to see how did we cope with this person before... [the forms show] you provided care”*

- Carer 3, Southeast Home

In essence, the corollary of “if it isn’t written down it didn’t happen” was that “if it is written down it did happen”

To an extent the documents were also used to monitor the work of employees. At Southwest Home it was noted that the main way supervisors checked on carers was by looking at paperwork

*“[senior carers and nurse don’t observe carers directly] cos they’re working on the floor as well, but they’ll come in to check to make sure we’ve filled it [paperwork] out properly”*

- Carer 3, Southwest Home

It is important to be clear what exactly was being monitored. The focus of supervisors did not appear to be the actual completion and quality of work but rather the completion of paperwork. Provided the paperwork was complete it was assumed the job had been done correctly. To extend the point made above, the assumption appeared to be “it is written down it did happen and it was done to a satisfactory standard”. A further assumption, was that if there were gaps in the paperwork the problem was that carers had forgotten to fill in the paperwork, rather than that the job had not been done. This obviously raises the possibility that documentation could be prioritised over care. There was some suggestion of this being an issue from a nurse at Southwest Home who, while discussing food and fluid charts, suggested that carers often failed to “take the time” to persuade residents to have food when they were reluctant to eat. Instead carers had been given the impression that it was sufficient to simply record “refused” on the chart and move on. There was one slight exception to this rule at Charity Home where during a period of illness amongst the residents it became important to ensure residents maintained their fluid levels. To ensure carers were “pushing” fluids to the right extent, individual carers were made responsible for specific resident’s fluid charts and, if the resident in question had not drunk enough, the

carers were questioned on the extent to which they attempted to encourage residents to drink. However, since the problems with the illness had died down this practice appeared to have been discontinued.

Information from daily care reports, turn charts and food and fluid charts could also be used in problem solving processes. For example, if a resident experienced weight loss, nurses and GPs could consult the food and fluid charts to help identify the cause of the weight loss – for example, whether the resident had simply not been eating adequately or if there might be an underlying condition causing the resident to lose weight. However, carers themselves were not involved in problem solving, they recorded information that other people used to solve problems.

Additionally, charts could be useful in organising work on the floor. The working environment in all three homes could be chaotic. Carers were often called away from working with one resident to help with another. Rather than working in a straightforward linear fashion, dealing with one resident at a time, they were switching their attention between multiple residents. In this environment, the food and fluid and turn charts could be useful in helping carers keep up with which residents still needed attention.

### Care plans

Reading care plans was another frequently mentioned literacy task. Care plans contain a range of information about residents relating to their care needs and preferences including, for example, medical conditions, dietary preferences, their physical mobility and their life histories. In each home these care plans were produced by nurses or managers. The key purpose of reading care plans was to enable carers to understand the needs and preferences of residents to enable them to provide the correct level and type of care to residents. In theory, all care assistants were expected to read these care plans as background information to enable them to provide adequate personalised care to residents. However, the extent to which these documents were read by carers was extremely variable both within and across the three homes. The reasons for this will be discussed further below. Carers at Southwest Home appeared to be least aware of the need to read care plans, only one of the interviewees claimed to read these documents on a regular basis. There seemed to be more acknowledgement that care plans should be read at Southeast and Charity Home, however the actual extent of use still appeared to be low.

## Training and HR

There were also literacy requirements associated with training. All three homes required carers to undergo regular training in areas including manual handling, infection control and safeguarding. Training was most literacy-intensive at Southeast Home where the management had adopted an e-learning system which involved employees reading information which would otherwise have been delivered by an instructor, although there was also an option to listen to a recorded reading of the information. Similar training was provided as part of the induction process for new carers. At Southeast Home carers were expected to complete e-learning modules, while at Southeast and Southwest Homes carers viewed videos and then answered questionnaires as part of their induction training. Additionally, a number of carers had undertaken NVQs, usually at Level 2 which included a requirement to complete workbooks. However, it was noted that allowances could be made for carers who had difficulty in writing.

## Numeracy

Numeracy skills were less obvious in their use. In Southwest Home carers only encountered numbers in relation to filling in fluid intake on fluid charts, the home used beakers of a fixed size so carers either recorded that the full amount had been drunk or make a rough estimate if the drink had not been finished. In addition to this, at Southeast Home carers were also involved in weighing residents. Only at the two Charity Homes did carers undertake any calculations. Here carers were involved not only in weighing residents but also calculating Malnutrition Universal Screening Tool (MUST) scores. This required carers to weigh and record the weight of residents, subtract the current weight from the weight 3 months ago and look up the percentage loss on a table which would give a score between 0 and 2 (0 for weight loss under 5%, 1 for weight loss of between 5-10% and 2 for weight loss over 10%). The next step was to look up BMI (based on height and current weight) using a table which again would give a score between 0 and 2. These scores were then added together to give a final MUST score, which categorized residents into low (0), medium (1) or high (2 or more) risk of malnutrition. However, it was noted that these calculations were only undertaken once a week when residents were weighed and did not necessarily involve all staff who were on shift at the time. As such only a small number of carers were responsible for calculating MUST scores on a regular basis.

## Views on the importance of literacy and numeracy skills

Most interviewees felt that literacy skills were important in care work. For example, the manager of Southeast Home argued that carers needed to be able to read, “If they [carers] can’t read care plans... they will end up delivering care which is not in line with the assessed needs”

The manager at Southwest Home felt that carers had to be able to “write English and to quite a good level” and similarly felt that anyone who was unable to read a care plan would struggle to do the job. At Charity Home the manager suggested that literacy skills in particular are “more important now than they’ve ever been” due to the increasing importance of documentation. These kinds of views were also articulated by carers, for example carer 1 at Southeast Home when asked whether reading and writing was an important part of her job responded “Yeah 100% yeah” because “you need to read care plans don’t you? And you need to understand it”. The references to care plans were interesting in that, as has already been noted, reading these documents was not necessarily something that most carers did on a regular basis. The reasons for this will be explored below.

By contrast, most felt that numeracy skills were much less important, the slight exception being the two Charity Homes where carers were expected to undertake MUST scores. However, as noted above, not all carers were regularly involved in calculating these scores so numeracy was not necessarily seen as a core job skill.

An exception to the general consensus that literacy skills are important in care work was the Chairman at Southwest Home who felt that care jobs as they were currently “configured” in his homes actually required very little in the way of literacy skill.

*“I think you can configure and specify the job so that they [carers] hardly have to read or write anything so you can have verbal handovers and you can have nursing staff who verbally communicate with care staff throughout the day and it’s the nursing staff who do the reading and writing”*

- Chairman, Southwest Home

The Chairman felt that although this was the way care workers currently operated, he could see value in moving to a form of work organisation that made more intensive use of



employees' literacy skills. However even within this he felt there would be a continuing role for staff who were less confident and competent in their literacy skills on the basis that much of the core work of providing care did not need to involve reading and writing.

The Chairman's views are, in a way, supported by some of the other answers given by managers in relation to the skills and attributes required of carers. When asked about the core tasks of carers none of the managerial interviewees mentioned literacy tasks as important, but rather focussed on the role that carers played in delivering care to residents. The attributes required, therefore, were more to do with the dispositions and interpersonal skills of carers. For example, the manager at Charity Home described a good carer as someone who has

*"the desire to make a difference to somebody's day, I think sums it up, and who has got a friendly and approachable manner, who is caring and kind"*

- Manager, Charity Home

## Recruitment and progression

As noted in the introduction, literacy and numeracy skills have been seen by policymakers as crucial for both securing work and progressing within work. As such, it is important to consider what role these skills play in recruitment and progression processes. Only one of the homes attempted to assess the literacy or numeracy skills during the recruitment process and none had any requirements for literacy or numeracy qualifications. The manager at Charity Home 2 reported occasionally asking applicants to complete a written question as part of the recruitment process usually around safeguarding or abuse. This was to some extent about assessing literacy skills but also about testing knowledge. The manager was interested in "their understanding of the question and then how they present their answer". Although answers tended to be "very basic", the main problem for recruits tended to be understanding concepts like safeguarding rather than an inability to write. Furthermore, this was an individual initiative of the manager, rather than a chain-wide policy. The manager also noted that she was more likely to use a written question when recruiting nurses because "that's more of a vital part of their job, you know, writing".

The manager at Southwest Home was explicit that testing literacy and numeracy skills was "not that important" in the recruitment process and was more interested in ensuring that

applicants had what he described as a “primary education” which appeared to mean a very basic level of education where “they can actually count from, you know, one to 1000”.

Other factors that appeared to be more important to managers included the right attitude in terms of “keenness” and willingness to learn and, to a lesser extent, experiences that suggested the applicant might make a good carer. Inasmuch as literacy skills came into the recruitment process, it tended to be in the sense that potential candidates who had other characteristics that made them unsuitable for the job would also have difficulties with reading and writing. For example, the manager at Southeast Home felt that she rarely recruited people with poor literacy skills because

*“after this length of time, I’m quite good at interviewing people and if somebody comes in here with, for an interview, with jeans and a sweatshirt and says [puts on voice] ‘Ello I’ve come for an interview’ and they’re all... you know. So I pick that up at the interview”*

The scope for progression within each of the homes was somewhat limited. At Homes 1, 3 and 4 there were a small number of senior carer positions that care assistants could move into. Moving beyond this generally meant going into nursing and returning to education to achieve the necessary qualifications. At Southeast Home, there was not even a senior care role. There may be some scope for carers to move into administrative roles – for example at Southeast Home the manager’s Personal Assistant had previously been a carer.

Senior care roles typically involved slightly more intensive use of literacy skills, as noted above senior carers at Homes 1 and 3 had to deal with a greater range of paperwork than care assistants. However, literacy and numeracy skills did not appear to be important in determining who moved into senior carer roles. For example, the manager at Southwest Home had recently appointed several new senior carers in an effort to improve the care provided in the home. However, while he mentioned that senior carers would be expected to have at least an NVQ 2, his priority in selecting employees for promotion had been those he felt were willing to take on extra responsibilities such as mentoring staff. In addition, the Chairman at Southwest Home felt that even those in more senior positions, including nursing and management, within the homes did not necessarily have or need especially high levels of literacy or numeracy skill. For example, in relation to numeracy, he commented:

*“[Managers] are operating with numbers in a very simplistic way. They need to know whether a number is greater than or less than one or do these numbers add up in such a way that the total is less than or greater than the total for this or that selection of numbers”*

- Chairman, Southwest Home

## Changes

Changes in the extent of literacy (and to a much lesser extent numeracy) tasks undertaken by frontline carers were most commonly noted by managers, nurses and some long-term care staff. Interviewees noted that over the last 15-20 years there had been increased importance placed on documentation, primarily related to the demands of regulators. Specifically, where carers may have once simply provided care to residents, increasingly they were expected to record and document the care provided to residents via various forms and daily records.

*“I think 20 years ago it wasn’t about how much we had to document and adding up fluid balance charts, it was about doing the basic care, you know taking people to the toilet and washing and dressing them, but I think that now the requirements are that people record what they’ve done, to monitor documentation and be more aware that these things people are writing on are legal documents and I think that’s where it’s come from”*

- Manager Charity Home

The growth in importance was also noted by some carers who had been in the sector for an extended period. For example, Carer 5 at Southwest Home, who had worked at the home for over a decade, noted that, when asked about how the work had changed over the period commented

*“More the rules and regulations because obviously I mean care homes are hot... I mean it’s a good thing... but yeah more rules and regulations and paperwork”*

- Carer 5, Southwest Home

In addition, the emphasis on “personalisation” in care appeared to be creating some pressures to make care plans more central to the care provided by frontline staff. The expectation was that care plans would encourage carers to pay greater attention to the needs and preferences of residents and enable them to offer more “person-centred” care.

However, the extent to which this had actually been carried through into regular work tasks was somewhat patchy. For example, in the two Charity Homes, carers had received training on the care plan process and were encouraged to add information to the plan. However, this did not yet seem to be a deeply embedded activity within the home. Furthermore, at Southwest Home the manager and Chairman had got no further than floating the idea of carers being involved in care planning.

This leads to a further point that changes in the extent of tasks requiring literacy and numeracy skill could often be driven more by home and firm level decisions, rather than broader sectoral factors. This meant that the direction of change was not necessarily always towards greater levels of documentation. Notably at Southwest Home, in an effort to tackle the problems of gaps in documentation the manager had simplified the forms which carers had been required to fill in, meaning that the amount of documentation carers were exposed to had actually decreased. Similarly, in Southeast Home, carers reported having to do more reading since the home had switched to an e-learning system for training. Training had previously been led by instructors and while these sessions might include a test or written hand-outs, carers and managers felt the e-learning system was considerably more text based.

The regulatory requirements that had led to increased use of documentation appeared to have little impact on the extent of numeracy use. The decision in Homes 3 and 4 to involve carers in the calculation of MUST scores was the part of a firm-level initiative to encourage carers to take greater responsibility in this area. There was no suggestion at other homes that carers might be required to undertake this task. The rationale behind the decision to ask carers to undertake the calculation of MUST scores was to encourage carers to pay more attention to weight loss amongst residents and to be more aware of the need to ensure residents at risk of malnutrition were eating and drinking properly.

### **Skill deficits and non-completion of tasks**

Managers viewed the literacy and numeracy skills of staff as varied, sometimes low but generally sufficient for the job. The manager of Southwest Home had some difficulty assessing the literacy ability of his staff but concluded that they were “probably low maybe low to... fair to moderate”.

Compared to the other cases, Southeast Home employed more migrant workers and the manager noted problems with the written English of these staff members. She also felt the general educational level of some of her English staff was often quite low describing them as “not the brightest tools in the box” suggesting this could be seen in their writing

*“So sometimes you will find that it is very basic English, that their English is very broken, sentences aren’t joined together, that sort of thing or the words aren’t quite what they should be”*

- Manager Southeast Home

Having said this, the manager also felt that it was only those English speaking staff with “learning disabilities” that really struggled with the literacy demands of the job.

Furthermore, she felt that they were able to adapt the demands of the job to accommodate those with difficulties, for example by encouraging employees to focus on writing “short sharp sentences, more bullet points than anything” in their DCRs. Southeast Home had never had an employee who was unable to do the job due to problems with reading and writing. Some migrant workers with very low levels of English had been fired, but this appeared to be more to do with problems in verbal communication. She also noted that English speakers who had problems with the literacy requirements of the job often “struggled with the work anyway”. However, having these kind of difficulties was not necessarily a barrier to being an effective employee. The manager discussed the case of a care worker with a “severe learning disability” who had been with the home for 16 years and managed to complete a Level 2 NVQ, albeit with considerable support. This theme was taken up by a senior carer at Charity Home discussing a colleague who had severe dyslexia. The senior carer felt that despite her colleague having difficulty with writing and something of an antipathy towards paperwork “You’d never know from her work”, pointing out that the colleague in question had successfully taken on additional responsibilities such as moving and handling training.

In Charity Home the manager characterised literacy and numeracy skill levels as “varied” but improving in recent years. She suggested that problems with literacy and numeracy skills tended to be concentrated amongst older carers

*“I think the people that we have issue with, with regards to literacy and numeracy are people that have been in post for a long time and I think it’s the people who’ve been doing the job for 20 years are the people who are not as literate as the carers who are coming through now”*

- Manager H3

A nurse at Charity Home also noted that amongst some carers “The grammar’s really, really bad. Some of them, the spelling is atrocious.” However, she qualified this by noting “...we haven’t got anybody who is that bad, where you really cannot understand anything that they’re trying to write. No-one is incapable of forming a sentence”.

Carers themselves felt they generally had few difficulties in undertaking the tasks expected of them. Very few felt they had any problems in relation to literacy skills. Two of the carers mentioned having specific difficulties in relation to spelling. Carer 2 at Charity Home described her difficulties in the following way

*“if you’ve gotta write half a page, then that really frightens me to death... I know in my own heart the spelling would be atrocious”*

- Carer 2, Charity Home

It was clear her difficulty was writing longer passages, rather than reading or writing generally. However, this did not appear to cause major issues in work. With regards to writing daily care reports, she described how she was able to use shorter words and ask for assistance when she was having difficulty spelling words. Furthermore, she found she often wrote similar things each day, which meant she had a bank of words she was “used to”. She had also managed to complete her NVQ Level 2 with support from her assessor. Carer 1 at Southwest Home mentioned similar difficulties in relation to spelling.

*“It’s the spelling I find a bit hard, if I’m writing something, it’s the spelling can get a bit difficult sometimes”*

- Carer 1, Southwest Home

However, she felt this did not cause her problems because she was able to “work it around a different way” and avoid unfamiliar words. Where she found she had to use a word she had difficulty spelling she was able to ask for help from colleagues.

Interviewees were more willing to admit weaknesses in numeracy skills as a potential problem – carer 1 at Southeast Home, carer 1 at Charity Home and carer 3 at Southeast Home all expressed variations on the idea that they lacked confidence in “maths”, although this did not necessarily imply that they were entirely deficient in dealing with tasks involving numbers. For example, carer 1 at Charity Home noted that although maths was not her “forte” she was comfortable dealing with numbers in everyday life.

To further elaborate the kinds of “difficulties” carers experienced with literacy and numeracy tasks, the next section focuses on three problems with documentation encountered at all three homes – not completing forms, badly written daily care reports and carers not reading care plans – and problems around numeracy tasks in Charity Home.

### Not completing forms

At all three homes managers and carers noted that forms, such as turn charts and food and fluid charts, were not always completed. However, this was rarely seen as a problem of skill by either managers or employees. Typical explanations centred on the “busyness” of the care home environment or failure of carers to understand the importance of documentation. The manager at Southeast Home was explicit about this

*“[people not completing forms] isn’t a literacy thing, that’s a time management ‘I’m busy’ and they don’t necessarily grasp the importance of forms and documents”*

- Manager, Southeast Home

The nurse at Charity Home emphasised the time pressures above a lack of understanding on the part of carers

*“For me, I think everyone understands why they must fill these in, but to be honest, it’s a very busy environment, so they probably miss, you know, ‘cos of being bust. But then I’m not taking that as an excuse to be honest... It’s understandable but not excusable”*

- Nurse, Charity Home

As noted above, gaps in documentation at Southwest Home had contributed to failed inspections under previous managers. The current manager did not seem to be entirely clear as to why forms may not be filled in. He suggested that part of the problem may be that low levels of literacy skill contributed to carers not understanding charts but also

mentioned that the previous manager's failure to enforce recording requirements may have led to carers failing to comprehend the purpose and importance of documentation

*"...historically although there were a lot of documents that they had to complete, nobody was doing a follow up on that. So there is not that willingness to change and maybe they don't understand what we are asking them to do"*

- Manager, Southwest Home

Interestingly even when this manager was positing low literacy skills as a factor, the issue was not so much that carers lacked the capacity to fill in forms but that they did not understand "what it is they needed to do and when". A similar idea emerges in the quote above from the manager at Southeast Home when she raises the issue that carers "don't necessarily grasp the importance of forms and documents". However, as detailed in previous sections, most of the carers interviewed appeared to have a clear understanding of the main forms in use and regarded these documents as important to complete.

Carers themselves focussed on how working in a busy environment could lead to people forgetting to fill in forms. A particular problem was the chaotic working environment. Carers often had to deal with a number of competing demands on their time, their work with one resident could be interrupted by a call bell from another resident or from a colleague asking for help with a "difficult" resident. In this environment, it was relatively easy for some paperwork to be forgotten.

*"When you've got a lot to do and you've got a lot of people depending on you sometimes it's just easy to forget [to fill in forms]... you'll get four bells going at a time, all the time, so you're in with a resident and you'll hear the bell going and you think..."*

- Carer 3 Southwest Home

Having said this, it was clear that the extent to which management emphasised the importance of paperwork and took steps to "enforce" its completion had an impact on the extent to which carers remembered to complete paperwork. For example, during my observation at Southwest Home carers seemed to be particularly aware of paperwork requirements as a result of some of the measures introduced by the current manager including the requirement that anyone who left work without completing paperwork would be required to return to the home to fill in any gaps.



## Badly written DCRs

Daily care reports could be “badly” written in two ways. Firstly, the general standard of English could be poor – for example poor grammar, spelling and punctuation. Secondly they could be written “inappropriately” in the sense that carers used the wrong kind of language or did not include enough detail. The first of these – a generally poor standard of English – was noted by the manager and nurse at Charity Home and the manager at Southeast Home. The manager and nurse at Charity Home were divided on the extent to which poor English in care reports was problematic. While the manager felt that poor English sometimes led to care reports being difficult to read, the nurse commented that these reports were nearly always readable.

*“I don’t think it really causes a big impact, y’know, on the level of care. Because someone can come in and read it and still understand exactly what’s there... I think in this environment that’s most important”*

- Nurse, Charity Home

Furthermore, the manager’s concerns did not purely relate to poorly written English but also to inappropriate use of terminology and illegible handwriting. Illegible handwriting was also noted as an issue by Carer 1 from Southwest Home who saw this as the main barrier in understanding care reports when she had to read them.

Poor English appeared to be more of a problem in Southeast Home where reports were available online to residents’ families and poorly written reports reflected badly on the home, the manager mentioned that there had been instances of family members complaining about care reports that had been badly written. However, as noted above, the manager felt they were able to manage this.

Carers themselves did not appear to find writing the reports especially difficult. The exceptions were the two carers mentioned above who occasionally had difficulties spelling words. However, as has been already noted, these carers found ways around this. It was also noted that reports could be very similar from day to day given that the kind of care being provided did not vary extensively, which simplified the task of deciding what to write.

DCRs could also be badly written due to inappropriate terminology or lack of detail. This was the main concern of the Charity Home manager who began by talking about poor levels of

literacy but very quickly moved on to discussing how poorly written care reports reflected a lack of knowledge about care and appropriate terminology. In particular, she was concerned that carers sometimes used terminology that could be considered “derogatory”

*“when we give somebody a wash, we would expect them to explain it as ‘we have assisted them to have a full wash this morning’ some people would be writing ‘strip washed’... when we’re assisting people to eat, people would write ‘feeds’”*

- Manager, Charity Home

The concern was that this use of language might reflect a poor standard of care being offered to residents. The manager suggested that the issue could be linked to poor literacy because carers were “working with people who are using the correct terms all the time but they can’t translate that into how they would write something down”. However, despite concerns about this kind of language being expressed by the manager and other senior carers it did not seem to be the case that the management had made formal efforts to coach carers in how reports “should” be written. Carers seemed to be unaware that a specific type of language should be used and focussed more on simply and briefly describing the care provided, which was perhaps understandable given that they were often completing care reports at the end of shifts or in some cases after shifts had ended. Other problems noted by the manager included the use of colloquial terms in place of more appropriate medical terms

*“I had a conversation with someone about... it was about the natal cleft which is the top of your bottom and they were trying to describe it as ‘the crack’!”*

- Manager, Charity Home

The manager again offered this as evidence of poor literacy amongst some carers. However, it is difficult to see how a higher level of general literacy would solve this lack of a context-specific vocabulary. It does not seem improbable that a large number of literate individuals might be unfamiliar with the term “natal cleft”.

A second related issue was a lack of detail in care reports. This was raised by a carer at Southeast Home who had apparently been told by her manager that reports should be more detailed

*“I do mine (care reports) quite long because I put what they’ve eaten and everything... if they put ‘they’ve had breakfast and lunch’ well... That’s not going to say how much they had, they could have had a tiny bit”*

- Carer 2, Southeast Home

The carer felt that she had only understood how much she needed to write after having worked in the home for a while. Again the issue here appeared to be less to do with a lack of skills and more to do with the work context. There appeared to be little formal guidance to carers in what they should include in care reports and, given that carers rarely read or used information from these reports themselves, little in the way of mechanisms by which carers could be alerted that they were including insufficient detail. This led to some degree of ambiguity over what should be included in the report.

### ABC Forms

Similar issues were brought up by the manager of Charity Home 2 in relation to ABC forms. The manager felt that the main issue was not so much a general inability to write these documents but that carers tended to use the “wrong” kind of language

*“I think if I looked at them and I didn’t see any names on them between the carers and the nurses I could probably tell the difference because of the experience of the nurses and their training. Carers is much more basic... a carer will just say it as it is whereas we would like to think ‘actually that sounds a bit derogatory there’... I think that’s in some ways a sort of cultural training thing”*

- Manager, Charity Home 2

The manager noted that her own approach to training carers in writing these documents may have contributed in that she had been telling carers to simply describe incidents in their own words. Furthermore, she acknowledged the difficulty in writing in a dispassionate manner about an incident where the carer themselves had been the subject of verbal or physical abuse. The manager also noted a degree of reluctance amongst some employees to write these forms, which she attributed to employees seeing the forms as more “daunting” because they might be read by external mental health professionals if there were further problems with the resident (although it is interesting to note that other forms which could be read by external parties, for example DCRs, were not seen as similarly “daunting”)

## Not reading care plans

It appeared to be common for carers not to read care plans, despite claims from managers that these documents were important to the provision of care. Four possible explanations for carers not reading care plans emerged in the interviews. The first of these was a lack of literacy skill amongst carers. Interestingly the managers of Southwest and Charity Home commented hypothetically that someone who had literacy difficulties would find it difficult to work in care because they would be unable to read care plans. However, their explanations as to why staff may not read these documents in practice did not focus on poor literacy skills as an explanation. None of the carers interviewed felt that failure to read care plans could be explained by a lack of literacy skill on the part of themselves or their colleagues.

A second explanation was that carers felt they did not need the information written in care plans. For example, a senior carer at Southwest Home claimed she could not remember when she last read a care plan but felt that this was not a problem because she knew all the residents “so well”. Additionally, carers got a lot of information orally from nurses at handover, from each other and by talking to residents themselves. This system seemed to work fairly well, although it was noted that information could be lost if, for example, a carer was absent for several days in a row (either due to holidays, illness or simply shift patterns). A further variation on this point was given by Carer 2 at Southwest Home who suggested that having specific information on residents generally was not essential once she was an experienced carer

*“[not having information about residents] wasn’t a problem because I was doing this job [at another home] and it’s nothing much different you have to do... it’s just nice to know, you know, about their condition really”*

- Carer 2, Southwest Home

The idea that the work undertaken by carers is fairly generic and does not require resident-specific information is clearly at odds with the rhetoric of “personalisation” expressed in policy documents but may be a more accurate representation of the real of experience of work for many carers.

A third explanation for not reading care plans was a feeling that carers saw these documents as the preserve of nurses and, therefore, not relevant to the work of carers. The manager at Charity Home picked up on this point

*“I think historically, the personal plans have always been the property of nurses in that sense and the care staff think ‘oh I can’t write in there because that’s where the nurses write’”*

Furthermore, the manager felt that part of the responsibility for breaking down the perception that care plans were relevant only to nurses lay with management

*“I also think it’s a result of how we as managers enforce that people are doing what they’re supposed to be doing”*

- Manager, Charity Home

The notion that care plans “belonged” to nurses and so were not relevant to the work of carers was very prevalent in Southwest Home. Carer 2 noted that while it would be “good, you know, if everybody read the care plans of all the residents”, it was more important for the nurses because these documents dealt primarily with medical conditions which the carers did not need to be aware of. It was perhaps notable that more experienced staff within Southwest Home seemed to be more aware of the need to read care plans, even if they did not always do so. At Southeast and Charity Homes there were systems in place to involve carers in using care plans. Perhaps as a result of this, there was less of a sense amongst carers at these homes that care plans were solely the preserve of nurses. However, even here there appeared to be difficulties for some carers in getting to read care plans.

From the perspective of carers, the biggest obstacle appeared to be a lack of time. This issue was brought up by most carers who were aware that the care plan was a document that they “should” be reading. While most offered further rationalisations for not reading care plans along the lines described above, most began by stating that they simply struggled to find time to read care plans. None of the homes provided time in the day for carers to sit down with care plans. Those who claimed they did read these documents suggested they tried to fit them in to quiet periods during the day or even after work.

## MUST Scores

At Charity Home there were difficulties calculating MUST scores. The manager at Charity Home claimed it had been very difficult to train carers to calculate MUST scores, describing the process as “an absolute nightmare to get right”

*“they didn’t get it for ages and ages, it took repeated one to one training and teaching... I still think in this home there are probably staff who avoid doing it because they’re not comfortable with the actual calculation side of things”*

The issue appeared to be a combination of difficulties with the “maths” involved but also the “process” of calculating the scores

*“They weren’t able to do the calculations... some of them, a couple of people, struggled to work out what the weight was three months ago which was as simple as looking back up the charts”*

The nurse at Charity Home suggested that ongoing problems with these issues were limited to a minority of staff. Her view was that occasional errors in calculations could be attributed to carers attempting to do calculations mentally instead of using a calculator, especially where calculations involved a decimal point. However, she also noted that some problems were about “common sense rather than calculations”

*“what happens too is, say last month a resident was 25kg and this month they’ve gone down to 15kg – they [carers] would still write it! Now we nurses, we would look at that and say ‘no that’s too much weight loss for a month’ and we would re-weigh this person”*

Some carers appeared to be unwilling to engage with these tasks due to a lack of confidence in their maths skills, however there also appeared to be problems with remembering the “process” of calculating MUST scores as well as difficulties with the maths involved. For example, Carer 1 commented

*“I hate doing them [calculating MUST scores], I’m rubbish at maths... If you’re doing it all the time it gets easier, but because I don’t do it that often you forget”*

It is also important to note that some carers reported that they did not have any trouble with calculating MUST scores. Furthermore, the manager at Charity Home 2, gave a much more positive account of training employees to calculate MUST scores. Rather than an

“absolute nightmare”, the manager regarded the process as “remarkably positive”. While noting that some carers struggled to an extent “in reality it just needed a bit more guidance and time from the more experienced members of staff”.

## Expanding literacy and numeracy use

Amongst carers, literacy skills were not seen as a major barrier to taking on additional or more complex literacy tasks. Most appeared to be confident in their reading and writing ability and felt they were capable of doing more. The situation was slightly different with regard to numeracy skills. It was observed earlier that more carers felt their numeracy skills were weak and there was greater unease about the possibility of expanding numeracy use.

Managers at Southwest and the Charity Homes largely agreed with this assessment. Each felt that while some carers might struggle with additional literacy or numeracy tasks there were substantial numbers of staff who were capable of more. Writing care plans and undertaking drug rounds were mentioned as tasks that carers could handle.

Two sets of benefits were identified. Firstly, from the perspective of care provision, it was thought that having carers write or at least contribute to care plans might help make them more “person centred” and relevant. Because carers interacted with residents more frequently than nurses or managers, they were often in a better position to pick up relevant information. The second set of benefits were financial, the Chairman at Southwest Home noted that expanding the roles of carers might enable him to reduce his expenditure on nurses.

However, the manager at Southeast Home (who, as has been noted, was most pessimistic about her employees’ skills) strongly dissented on the idea of carers contributing to the writing of care plans

*“They are just not capable. They are not academically capable. Care plans are hard things to write”*

- Manager, Southeast Home

However, the issue did not appear to purely one of literacy skills, but also of broader training and knowledge. For example, the manager felt that carers who had managed to complete an NVQ Level 4 (which no current employees held) or possibly NVQ Level 3 might

be capable of performing these tasks. Furthermore, carers at Southwest Home helped review care plans. This meant that some of the benefits of having carers involved in writing care plans mentioned above could be achieved without actually having to ask carers to write or amend the plans themselves.

Both carers and managers did, however, note other difficulties in expanding the use of literacy or numeracy skills by carers. One such factor was the role of nurses. Many of the tasks which carers might be able to take on were currently the preserve of nurses and there was some doubt about the extent to which nurses would be able or willing to relinquish these tasks to carers. The Chairman at Southwest Home felt that to some extent nurses might be resistant to carers taking on additional tasks. For example, the idea of carers having responsibility for medication-

*“...you get this huge reaction because then of course the nurses feel threatened, they then think ‘if a carer can do a drug round then what’s special about us?’... I think nurses can be very defensive at times’*

- Chairman, Southwest Home

The manager of Charity Home 2 cited similar factors as a possible barrier to expanding the use of literacy and numeracy skills by carers

*“I can see, perhaps, maybe even nurses being ‘that’s my role, I do that’ so I can see there being conflict with the team”*

- Manager, Charity Home 2

Managers were also inclined to focus on the attitudes of carers as a barrier to expansion. This was partly related to the respective roles of nurses and carers. As noted above, at Homes 3 and 4 there had been increased efforts to involve carers in understanding and contributing to care plans. However, there had been some difficulties in encouraging carers to undertake this kind of task. One of the key explanations offered for this was the point noted above that care plans were often seen as the “property” of nurses rather than carers. A large part of the process of getting carers more involved in care planning, therefore, involved breaking down this perception amongst carers:

*“I think for a while the writing of care plans was something the nurses did and they took themselves off in an office and did it but you know care plans are for everybody to write in*



*and I wanted to break that mystery and awe about care planning and encourage care staff to participate in it more fully”*

- Manager, Charity Home 2

There was some evidence of this attitude that care plans “belonged” to nurses amongst carers, particularly at Southwest Home, when they were asked whether they felt they could contribute to writing care plans.

Broader issues with carers “attitudes” were also noted by managers. These included a lack of confidence on the part of carers and an unwillingness to take on additional responsibilities. For example, the manager at Charity Home argued

*“I think the barriers come from the care staff themselves because the saddest thing I hear is ‘I’m just a care assistant’... it’s the confidence and actually desire to do it”*

- Manager, Charity Home

This manager was critical of some older members of staff who seemed unwilling to take on additional tasks. This theme was brought up, somewhat less pejoratively, by the manager of Charity Home 2 and the Chairman of Southwest Home who both suggested that they needed to accommodate those who were confident enough to take on additional tasks and those who preferred a “basic” caring role.

Some carers echoed these sentiments. Carer 5 in Southwest Home was explicit about not wanting to take on additional responsibilities, despite previously working as a nurse when she joined the home she “said I’d come as a carer because I didn’t want any responsibilities, I just wanted to be a carer”. By contrast, other carers were more enthusiastic about the prospect of taking on additional responsibilities, notably carer 3 at Charity Home

*“I’m quite happy to be challenged with anything really. I’m not frightened to do anything different. If there was anything I needed to do, then I’d just get on with it”*

- Carer 3, Charity Home

However, in the interviews with carers a slightly different “attitudinal” barrier to undertaking further literacy and numeracy tasks emerged, particularly in relation to taking on greater levels of paperwork. Specifically, carers were concerned that taking on these tasks might affect the quality of their job. When asked about what they enjoyed about their

jobs, carers all emphasised the fulfilment they got from “caring” for and interacting with residents. Given the pace of work, these opportunities were already at a premium and there was concern that increased responsibility for paperwork would reduce this further. For example, carer 4 at Southwest Home commented

*“If we were doing that [paperwork, writing care plans] it’s taking our time away from the residents, we could be having a chat with residents instead of being on the computer. I’d rather spend time with the residents”*

- Carer 4, Southwest Home

A final barrier to expansion is simply a lack of time. Carers were already very busy in providing care to residents and there was some scepticism about the potential for adding additional tasks to their work days. This issue was noted by both managers and carers across the homes.

*“We can’t have everybody off the floor writing care plans, we need people out on the floor”*

- Manager Charity Home 2

This raises an important point about the scope for enhancing the literacy or numeracy content of these jobs. Care work is fundamentally about providing care to residents, often in quite a physical form; getting them out of bed, washed, dressed and fed, none of which inherently involves either literacy or numeracy. Literacy and numeracy are perhaps best seen as ‘add ons’ to the main job of caring. While it is conceivable that the quality of care might be enhanced through, for example, care workers having more involvement in care plans, this would have to be balanced against the need for carers to be engaged in the time consuming business of actually providing care. The impression gained from the case studies was that staffing levels were just sufficient to enable staff to provide a basic level of care within the time available. It seems probable that any expansion in the literacy or numeracy activities of care staff would require employing more carers per shift. It is unclear whether this idea would be either appealing or, given the financial pressures on the sector, possible from the point of view of the firm.

## Conclusion

This chapter has identified relative consistency in the extent and types of literacy and numeracy use across all three case studies. Regulation is identified as a major factor in explaining why literacy demands have grown somewhat in the sector over the last decade or so. By contrast, numeracy appears to be peripheral to the work of carers. Despite this, deficiencies in literacy and numeracy skill did not appear to be a major issue for the case study organisations. Managers did not appear to make literacy and numeracy skills a priority in recruitment decisions. While some difficulties around literacy and numeracy tasks could be identified, it was not clear that these could always be understood in terms of “low skills” in the abstract sense and having problems with either literacy or numeracy did not appear to be a barrier to being an effective employee. Finally, there appeared to be some prospects for expanding literacy use, however there were barriers to this and employees were not overly enthusiastic about the prospects of undertaking greater amounts of “paperwork”.

## 5 Retail sector findings

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This chapter focuses on the findings from the retail case studies. It follows the same structure as the previous chapter. An overview of the sector and case studies is provided as a starting point. Evidence from the case studies is then presented under a number of headings: descriptions of tasks, views on the importance of skills, change in demand for literacy and numeracy, the places of literacy and numeracy in recruitment and progression, difficulties with literacy and numeracy and the scope for expanding skill use.

### Introduction to the sector

The UK retail sector employs around 2.7 million people, approximately 10% of total British employment making it the largest private sector employer in the UK (Rhodes 2015, BIS Committee 2014a). The main occupational group are sales and retail assistants, making up around two fifths of employment within the sector (Vokes and Limmer 2015). In terms of demographics, the employees in retail are generally less well qualified and more female than the economy as a whole (Vokes and Limmer 2015). The sector is dominated by larger firms and there has been a general tendency towards market concentration over time (Burt et al 2010). Perhaps the most significant change in the retail sector has been the substantial growth of online retail (Rhodes 2015). Responding to the rise of online shopping is one of the major challenges for traditional high street retailers.

### Overview of the retail case studies

Retail case studies took place at three locations, Home & Garden (H&G), Department Store and ClothesCo. Department Store was chosen as a retail organisation pursuing a relatively high end product market strategy and the case covered two departments, Home and Fashion. These cases were then matched with H&G and ClothesCo, value retailers of home and fashion products respectively. Fieldwork focussed on shop floor staff who mainly undertook two kinds of work, putting stock on shelves and racks or working on tills. The work of employees varied slightly more in retail than in care, in particular in Department Store staff would often be encouraged to take on additional roles beyond till work and shelf stacking.

## Home & Garden (H&G)

### Overview

H&G is a large out-of-town store in South Wales, part of a national chain selling a variety of products including furniture, fabrics, furnishings, garden furniture, arts and crafts supplies and some clothing. The company's specialism is offering a wide variety of stock at low prices. The store employed around 53 staff, mainly in retail assistant roles along with department managers and admin staff.

### Market and performance

The firm has grown throughout the recession and is aggressively opening new stores. However, there has also been a strong emphasis on keeping wages and staff numbers low. The store where the research took place was one of the oldest within the chain, opening in the mid-1990s.

### Training and management practices

HR practices are fairly ad-hoc. Staff learnt on the job and the time taken to learn was characterised as very short. The manager reported that they have had some younger staff taking NVQs in Customer Service, although he was sceptical about the value of these qualifications, commenting that although they took 12 months they could be compressed into less than three. The organisation had few formal HR practices, for example there was no regular appraisal process and full staff meetings were held very occasionally. The company does not have a formal process for employees seeking to progress, although internal progression did happen – for example the current store manager had started out as a sales assistant.

Employees were allocated either to tills or specific departments. Each of these roles involved either putting out stock or serving customers. Shop floor staff would generally stay within their assigned department although the manager sometimes rotated staff around departments to allow them to become “multi skilled”. Shop floor staff received the National Minimum Wage.

## Department Store

### Overview

Department Store is part of a national department store chain, based in a central urban location in South Wales. The firm aims to sell high quality goods with an emphasis on knowledgeable customer service. The store employs over 500 staff over four floors and multiple sections. There were a wide variety of staff roles within store, in addition to retail assistants (shop floor staff, the focus of this research) and managers, different sections had specialist employees. For example, the Fashion department had personal stylists to offer customers advice on fashion choices while the Home department had curtain and carpet fitters and home design experts.

Interviews were carried out with staff in the Fashion and Home Departments, on average each department had between 20 to 30 staff working per day. Each of these departments consisted of several sections. The interviewees from Fashion came from the women's wear and shoe sections, while the Home interviewees came from furnishings and fabrics, lighting, pictures and mirrors and outdoor furniture.

### Market and performance

Despite solid recent sales performance, the company had recently undergone restructuring which had led to the removal of a layer of store managers, with many tasks being passed down to more junior managers and some taken on by regional shared services centres. As part of the same restructuring, the firm had taken steps to integrate its online and high street operations, meaning that where products were not available in-store they could be ordered for customers via the online store.

### Training and management practices

The firm has a reputation as a good employer in terms of both pay and conditions. Among other things, this allowed them to recruit fairly well qualified staff. The organisation has a developed system of HR practices, including a broad range of formal training, frequently leading to accreditation. The store also recruits apprentices. However, many employees (notably students working during their degree) did not undertake this more advanced training. The basic level of induction training was not dissimilar to other stores, involving till and health and safety training and learning on the job. Employees had an annual

performance appraisal along with one-to-one meetings with their line managers, aimed at identifying development opportunities. The organisation also has a system for employee representation including elected firm-level and store level employee committees. In addition, every morning began with a department-level meeting in which the managers would provide information on the store's performance. The company also had a number of other avenues for staff communication including e-mail and Facebook groups.

Internal progression was encouraged, with formal schemes for staff seeking to move into managerial positions. Both the section managers interviewed had joined the store as retail assistants. In addition to managerial roles, employees could move into specialist or admin positions.

A retail assistant's main roles involved talking to customers, staffing the tills and replenishing stock. While in many ways this was similar to retail assistant roles elsewhere, it was felt by both employees and managers that work at Department Store could be somewhat more varied and offered more autonomy than other retail jobs. As will be discussed in more detail below, employees were encouraged to take on additional roles beyond their core job tasks.

While certain aspects of daily work would be set down on the rota (for example, employees had to be on the tills for certain parts of the day) there was a feeling that staff were able to manage their own time to an extent. It was also noted that selling assistants had the discretion to offer customers up to £50 discounts if it is felt the customer had been inconvenienced by poor customer service or other errors on the company's part.

The store had previously had a structured approach to assessing the quality of customer service using so-called ABC (Acknowledge – Build – Close) forms. Employees would be periodically observed and given written feedback on whether their interactions with customers met company requirements. For example, there was a rule that each customer would be acknowledged within two minutes of entering a section. While these forms still existed, their use had become sporadic and they had ceased to be used in the departments where the fieldwork took place.

Pay rates for shop floor staff were characterised as being above average for the retail sector and staff were also entitled to a range of bonuses.

## ClothesCo

### Overview

ClothesCo is a low cost clothes retailer based at an out-of-town retail park in South Wales. The store employs around 60-65 staff, predominantly in retail assistant roles along with the manager, assistant manager, a warehouse manager, an admin manager and floor managers.

### Marketplace and performance

In common with other discount retailers, ClothesCo performed well in the early years of the recession. However, competition from other discounters has meant that financial performance in recent years has fluctuated. Despite this, the organisation is continuing to expand.

### Training and management practices

Formal training was limited to till training and occasional training on topics like health and safety and the sale of age-restricted products (knives, DVDs etc.). This training typically involved to reading an information sheet and answering a short quiz. New employees underwent a short induction, which involved watching videos and answering quizzes with a focus on customer service and health and safety.

Retail assistants were allocated to either work on tills or the shop floor by managers. Most employees could do both, and were allocated to one or the other by managers. The duties of shop floor staff were largely limited to either putting out stock or serving customers on the tills. Each department had a floor manager and one full time retail assistant, along with teams of up to four or five part-time retail assistants.

While staff had limited scope to determine where they worked, it was felt that full time staff had a little more discretion and were expected to “get on” with their work to a greater extent. There was no direct scripting or monitoring of employee-customer interactions, however till staff were expected to push the company’s loyalty card. The organisation had a target of serving no more than 10% of customers without a loyalty card. In addition, customers were offered the opportunity to provide on-line feedback on the service they had received. A selection of these comments (almost exclusively positive) were displayed on boards in the staff area



At the start of each day, managers held a meeting on the shop floor to present sales figures and highlight any problems or changes that needed to be made. The store also had an employee representation system. Reps were elected by their colleagues and met with the store management roughly every three months. Employees wishing to have issues raised at these meetings could either fill in a suggestion form or talk to their representative directly. Employees were generally positive about the functioning of this system and felt that managers were receptive to issues that were raised.

## Extent and types of literacy and numeracy use

As with the previous chapter, the presentation of the case study evidence begins with an assessment of the different ways in which employees made use of their literacy and numeracy skills. Compared to the care sector cases, there was less of a clear set of “standard” tasks in retail. There was both more diversity across cases and a wider range of different tasks identified, however as will become clear throughout this and the next chapter this does not mean that demands for skills are higher in retail.

## Literacy

### Reading information about products

In all three stores, there was a basic need to read information about products in the sense of reading labels on products to identify where these should go on shelves and displays. At ClothesCo, this appeared to more or less exhaust the extent to which employees needed to read about products. There was no general demand for product knowledge. This was even the case where employees were engaged in actively trying to sell products. ClothesCo had “products of the week” at till points which employees were asked to push to customers when they came to the tills. However, employees did not feel this required knowledge of the products, they simply drew the customer’s attention to the items.

At H&G, employees would occasionally find the need to read the backs of packets or product instructions to help answer customer questions – for example if customers wanted to know whether a certain product contained a certain chemical. The store manager also noted that they had installed a computer point with internet access so that staff from the garden centre could use google to answer customer queries. However, employees felt that

they obtained the majority of their product knowledge informally from asking colleagues or from their own experience. For example, an interviewee from the arts and crafts section who had done a college graphic design course and painted as a hobby mentioned that she was occasionally able to give customers advice on different kinds of paint. However, the organisation did not require staff to have a high level of product knowledge and most customer interactions involved locating products for customers. The store manager noted that customer questions only tended to be “tricky” in a couple of areas of the store – mainly arts and crafts and gardens, while also pointing out that:

*“customers coming in to our stores don’t expect us to know everything... they just want to know if we sell the product”*

- Manager, H&G

Product knowledge was more important in Department Store, the ability to offer customers advice and information about products was seen as something that marked the store out from its competitors. Employees had access to written information about products, both online and on printed sheets. Employees could also attend product knowledge courses. However, in Fashion the section manager felt it was more common for employees to pick up product knowledge informally through talking to colleagues. None of the employee interviewees from Fashion reported reading product information sheets. Reading about products was limited to reading boxes or labels to answer queries about things like shoe care or whether a garment could be ironed. Furthermore, in Fashion, customer queries were mainly about the location and availability of products and so did not require detailed product knowledge. Alternatively, an employee in the shoe section reported that customers would sometimes ask her opinion on whether the shoes looked “nice”. This did not require deep product knowledge and was more a question of subjective judgement. Additionally, the department employed “specialist” Personal Stylists for customers who wanted advice on fashion choices, reducing the need for non-specialist employees to offer this kind of advice.

The requirements for product knowledge were more substantial in the Home department where interactions with customers could often be longer – sometimes up to half an hour – and questions were often of a more technical nature. For example, an employee working in the lighting section commented:

*“a large part of my day is speaking to customers and trying to either find things that they want, or deal with technical questions about stuff. I spend a lot of time on lighting at the moment so we’ll have a lot of people asking about ‘Can this light go here?’ ‘Which bulb goes in this light?’”*

- Employee 4, Department Store Home

Similar practices were noted in other sections, for example in outdoor furniture employees mentioned talking to customers about whether certain items were weather proof and different types of paint to use on wooden furniture. However, this need for product knowledge did not necessarily translate into greater reading requirements. Employees varied in the extent to which they obtained product information from written sources or from talking to colleagues. Some of this was down to personal preference, for example, one employee who did not read product information sheets felt that she learned better from talking to others. It was also noted that there was not always time to read written product information. Employees often referred to written product information while dealing with customers. However, in these situations it could often be quicker to ask another member of staff, the written resources were more often used if no one else could help. It also appeared that the need to read product information decreased over time. Employees appeared to make more use of written materials when they first started in a department. Unless product lines changed, employees rarely needed to continue to use written material, although even experienced members of staff reported fielding unfamiliar questions from customers. Additionally, some of the product knowledge required was still quite basic and required very little reading. For example, an employee from furnishing and fabrics mentioned that most of the information that she needed about fabrics could be found on the product labels. Finally, encouragement from managers also appeared to shape employee’s tendency to read, an employee who had been at the store for several years noted that in recent years, managers had been less active in recommending that employees read product information.

### Visual merchandising guides

In all three stores, employees made some use of visual merchandising guides. These were documents sent down from head office detailing how certain types of stock should be displayed. The guide consisted primarily of pictures of how the display should be laid out

with labels indicating the names of products. The guide at ClothesCo also had some additional text giving tips on how to apply the guide. These tips were necessary to account for the fact that the layout of stores might not exactly match the guide and to help employees maintain displays when stock levels were low (for example to avoid large gaps in displays). In each store, these guides were not used on a daily basis by all employees, they were mainly applicable when product lines changed – for example at ClothesCo they were mostly used when the store was shifting between clothing for different seasons. The extent of their use also varied between stores.

At H&G, these guides were primarily used only for certain areas of the store, specifically promotional displays. By contrast, at ClothesCo the guides were used for all areas of the store but were primarily used by staff who worked full time. At Department Store, only one employee, who worked in the pictures and lighting section of Home, mentioned using these guides. The store had in-house visual merchandisers who took some responsibility for these activities. Additionally, at all three stores, employees did not always strictly adhere to these guides. Sometimes this was due to necessity. For example, at Department Store Home it was noted that guides would often be laid out not match the physical layout of the store, meaning employees had to use their judgement in applying the guide to their specific store. Similar issues were also noted at ClothesCo. At H&G, it was also noted that ideas for displays were sometimes generated in-store by managers and employees.

### Use of tills and other computer systems

Employees at all three stores encountered text on till points, though in general this was fairly simple - for example the labels on buttons and the names of scanned products. Occasionally employees would encounter longer prompts or type into the till system. For example, at ClothesCo, employees would get a prompt reminding them to ask the customer for a loyalty card if this had not already been presented. In addition, employees would sometimes need to type customer information into the till, for example if a customer had forgotten their loyalty card they could be found by entering the customer's surname, house number and postcode. At H&G when products came through the till without a code, employees recorded the item as a "no code" which involved typing "no code" and entering the number of the department the item came from. In addition to this, employees used the stock system to check stock levels. For example, if there was a gap in the shelves, employees

could use the system to check whether the space on the shelf could be used for other products. This involved typing in a product number and reading information about whether there was stock available in the warehouse and whether there would be further deliveries of that item in the future.

The systems at Department Store were less straightforward and used more intensively by employees, particularly in the Home Department. The store had three systems that employees could use. System 1 was a straightforward point of sale system, which was used for scanning products through tills. System 2 was used to send out items to be delivered to customers or to send them to be picked up at the store collection point, this could also be used to check stock levels. Finally, System 3 was the main stock system that employees used to get more details on stock availability and was used for procedures such as recording that damaged items had been “wasted”. Employees in Department Store Fashion predominantly used System 1. System 2 would occasionally be used for “charge and sends” where a product is sent to a customer who visited another store that did not have the product in stock. Customers would also sometimes call the store themselves to purchase something which could be sent out to them. The main writing involved in this process was entering details of the product and the customer’s delivery details into the system. Some employees mentioned that it was also possible to attach notes to the order on the system for the benefit of other employees who might deal with the order. Additionally, employees interviewed in fashion mentioned using System 3 to check stock levels or to find codes for items missing tags so that they could be processed through the till.

In Department Store Home, employees made more use of System 2 because many of the products they sold were large and kept in storage rooms. This meant that customers could not simply pick them up and take them to the till, System 2 had to be used to arrange for items to be taken to the in-store customer collection point or delivered to the customer.

In addition, Department Store had taken steps to integrate their online store and high street stores. Consequently, employees made regular use of the company’s website to order items for customers. The process was the same as a customer would follow when ordering online and involved finding the product desired and entering the customer’s delivery information into the system.

## Reading and completing forms

Employees at all three stores encountered the need to read or fill in forms. Two instances of this were noted at H&G. Firstly a “floor walk” form which was essentially a checklist to ensure the floors of the store were free of slip and trip hazards. Employees followed the checklist and signed the form to confirm it had been completed. On the tills, employees occasionally had to complete “void” forms if a product was scanned and the customer decided they no longer wanted it. These forms involved recording the number of the till they were working on, the name of the product and the reason for the product being voided.

The most common literacy task mentioned by employees at ClothesCo was filling out customer details for store loyalty cards. These forms recorded the customer’s personal information. Staff were encouraged to complete them on behalf of the customer at the till point as part of a drive to increase sign ups to the scheme. Additionally, the store ran a “click and collect” service where customers could order items online and pick them up in store. This system required employees to match order numbers brought into the store by customers with the order numbers on packages kept behind the till.

In Department Store Fashion, the main example was a form to debit suppliers for products returned to the department because of a fault. This was not a regular occurrence because there were a limited number of products sold in the department that might reasonably be expected to be “faulty”. An employee interviewee from Fashion noted that they tended to make less use of forms than other departments because of the nature of the products they sold. Greater use of forms was found in Department Store Home where in addition to debiting suppliers, employees mentioned filling in forms related to moving stock around the store (for example if a product was to be used in a display), returning broken stock to the organisation’s returns centre and transferring stock between different stores. While these kinds of form appeared to be relatively routine, employees might on occasion encounter unfamiliar forms. Employees reported that forms generally followed a similar format, requiring small bits of information such as product codes and employee numbers with occasional short sentences, for example explaining the faults with a broken product.

## Written communication with managers and colleagues

Written communication was not particularly important at either ClothesCo or H&G, most communication was oral. At ClothesCo there were forms available for staff who wished to write down suggestions for employee representatives, however these were rarely used and most employees tended to speak directly to their rep. In addition, some full time staff at ClothesCo used communication books to stay in touch with their managers if their shifts did not overlap. Typically, these were lists of jobs that needed doing the following day or short updates on progress. However, the extent to which these were used tended to depend on the preferences of individual managers and even when books were used managers still often relied on giving verbal instructions.

Employees at H&G received written communications in the form of “bulletins” from head office, these bulletins included some general company news and more specific instructions for staff. These might include information on promotions and problems with products. For example, if there had been reports that large numbers of a particular product were damaged, staff might be required to check for similar problems. While these bulletins could be several pages long, employees did not generally read the whole document, rather they would see whether their department was mentioned and focus on that section.

Furthermore, not all staff always read these bulletins, it was common for one employee to read the bulletin and pass that information on to others in their department. Some employees also reported receiving occasional written communications from their managers, for example, a short list of jobs to complete. This communication was very informal and mainly involved notes being left on pallets in the warehouse.

At Department Store, the amount of written communication varied between Fashion and Home. As with the other stores, Department Store held morning meetings for staff covering figures from the previous day and targets for the day ahead. In addition to this, employees in both departments mentioned a number of forms of internal written communication. In particular, they frequently received written queries from customers via the store’s customer service desk these would typically be questions about the availability of products and would include a description of the product, the size required and the customer’s contact details. The employee would then be expected to call the customer to let them know whether the product was available and to send it out to the customer if possible. Additionally, there

were company-wide and store newsletters available for employees to read, these contained general news about the company and the store. The extent to which these actually were read was mixed. In addition, both departments had Facebook groups that could be used to disseminate general department news to employees.

In contrast to ClothesCo and H&G, employees at Department Store had some access to e-mail, however the extent to which this was used varied between the two departments. Employees in Fashion reported that the majority of their communication with managers would be face to face on the shop floor and communication via e-mail was much rarer. In the Home department, the use of e-mail appeared to be more common though this depended largely on different line managers. In addition to this, employees in the Home department mentioned using hand-written communication diaries to communicate between shifts, these were similar to the communication books used at ClothesCo.

### Written communication with customers or others outside the business

At ClothesCo and H&G, sales assistants did not engage in any external written communication. At Department Store, however, some employees in both departments did occasionally send and receive external written communications, although this was more common in Home than Fashion. The store had a postal returns policy that meant that customers who wished to return an item could post this to the store. Employees would have to write back to the customer (if they had not left a contact phone number) to let them know that the return had been completed or to inform them of any problems. The section manager from Fashion estimated that they received around three to four postal returns a week and letter writing was handled by a group of around five shop floor staff. Where the return could be easily processed, these letters tended to be quite short, often a couple of sentences. However occasionally they could be longer if there were problems with returning the item. Employees might also write short compliment slips to customers when they were sending an item out that had been ordered over the phone. Employees could also be required to write to suppliers. For example, if a customer brought back an item that was damaged, an employee might write to the supplier to see if the item could be repaired or to request a refund. This would include explaining what was being sent and why.

Written communication with people outside the organisation were more common in Home than Fashion. This appeared to be because there were more things that could go wrong



with the items sold in Home. For example, products such as lighting could be more easily broken and would more often require things like spare parts for which the employee would have to contact the supplier. Additionally, because many of the items sold in Home were delivered to customers, there was scope for things to go wrong with the order, either in terms of products being missed or being damaged in transit. As a consequence, employees reported having more contact with those outside the store. However, employees would also deal with both suppliers and customers over the phone.

### Writing information about customers

Employees at ClothesCo and H&G never recorded information relating to customers. This was done to some extent at Department Store, although mostly in the furnishings and fabrics section of the Home Department. These notes related to customer orders for made to measure curtains and blinds. The measuring, cutting and fitting of curtains and blinds was undertaken by specialist staff members and the majority of the admin related to orders was managed by a dedicated back office team. Shop floor employees took the initial orders from customers and then passed these on to the admin team. Once a shop floor employee had spoken to a customer about their order, they would write up a note of what they had discussed for the admin team to look at. Occasionally customers would make amendments to their order and the notes on the system would be updated accordingly. Sometimes these notes were written in short hand although staff reported that they were being encouraged to write in full sentences to make it easier for the admin team to understand.

### Training and HR Admin

Training at ClothesCo and H&G was fairly limited and mostly delivered on the job. In general, the most complicated aspect of the job to learn was the use of the tills and, again, this was predominately practical and did not involve any specific reading or writing. The assistant manager at ClothesCo mentioned that new staff went through an induction which included quizzes based on DVDs on topics such as diversity and customer service. These were characterised as relatively simple and anyone who struggled would be given assistance and effectively told the answers. Beyond this there was training related to health and safety and the sale of age restricted products. For example, at ClothesCo, staff undertook this training roughly once every six months, the formats varied somewhat but largely involved staff reading a page of information on a subject and then answering questions which might

be either tick boxes or require a writing a couple of sentences. One employee also mentioned that the training had also been organised as a group session in which managers effectively read out the answers for staff to fill in.

Department Store offered a greater range of training to employees than either ClothesCo or H&G. While the section manager from Fashion noted that the “basics” of the job were relatively simple and didn’t require much beyond “personality, which is how people are recruited in the first place”, employees were assigned a mentor who could guide them through the organisation’s basic training programme which aims to assist employees in talking to customers and building and closing sales. Employees had a workbook to use as part of the course which also included some e-learning and online tests, although some aspects of the course were also done in conjunction with the mentor.

Compared to the other stores, Department Store had a more developed system of training and appraisals which in turn generated further literacy demands. Employees were expected to prepare for appraisal by doing some reading, looking over their job description and other related documents. Managers noted that employees varied in the extent to which they prepared for appraisals, while also pointing out that the appraisal process tended to be more important for full time staff wishing to progress in the organisation. Some staff, especially part-time staff in education tended were less interested in the process. Notes from the appraisal would be written up by the line manager which the employee would be expected to read and sign that they had been agreed. A section manager from Fashion noted that the organisation was in the process of moving responsibility for appraisal write ups from managers to employees, partly in an effort to reduce time burdens on managers but also to encourage employees to take greater “ownership” of the appraisals process.

## Numeracy

### Cash transactions

Despite being the most obvious form of numeracy use in a retail environment, most employees and managers felt there was very little numeracy skill required in handling cash transactions on a till. All three stores had electronic till systems which, in the words of a section manager from Department Store Fashion, “works it all out for you”. As such employees were only required to be able to count the money handed to them and any

change they returned to the customer. It was also noted that many customers paid using cards, negating the need for these calculations. Some employees reported that they would “sense check” the figures on the till in case they accidentally double scanned an item, missed an item or if an item that should be reduced came through at full price. However, this tended to be just a rough estimate of what the total bill should be

## Stock

Employees at H&G and Department Store mentioned some use of basic numeracy skills in relation to managing stock. Employees at H&G were involved in “analysing” stock, which involved checking and correcting stock figures. In terms of numeracy this mainly involved the ability to count items. For example, in the case of over-stock, when there were more items available than would fit on the shelves, employees would have to count and record how many items were being returned to the warehouse. They would then also check the stock system to check the numbers were correct and could potentially lower the amount for the next delivery to avoid excess products stacking up in the warehouse.

Employees at Department Store reported undertaking similar tasks. In addition, some interviewees reported taking on additional tasks related to managing stock. For example, one employee from Fashion had been given responsibility for “wastage and shrinkage” which involved recording via the stock system (System 3, mentioned above) that broken or damaged items had been “wasted”. Formally, this should not necessarily have required a great deal of numeracy skill. However, the department had a weekly budget for the number of products it wasted, consequently the employee had to try to ensure they did not go over that budget. This meant keeping an eye on the value of the products they had wasted and holding back items that might take the department over budget. Items that were held back would then be wasted the following week when the budget refreshed. Given that all the items would eventually be wasted, the actual amount lost by the store would be unaffected and the process of calculating what could be wasted in a given week was not an obviously beneficial to the organisation as a whole.

## Measuring

At both H&G and Department Store Home, some employees measured fabric for customers. At H&G shop floor employees measured and cut fabric themselves. In addition to measuring the fabric, employees had to calculate a price by multiplying the length required by the price

per metre and could use a calculator if required. In the Furnishings and Fabric section of Department Store Home, the actual measuring and cutting of fabric was undertaken by specialists. However, shop floor staff were involved in taking orders from customers. In some instances, this was relatively straightforward if the customer was planning on making their own curtains and knew the precise measurements they required. However, for customers who wanted made to measure curtains, employees were required to take a number of measurements from the customer which had to be combined to produce the total amount of fabric required:

- To calculate the number of widths of fabric the employee needed to take the width of the curtain pole or track, multiply this by a second number depending on the type of curtain header the customer required and then divide this number by the width of the fabric being sold
- Secondly to calculate the drop length of the curtains the employee needed to take the length of the drop the customer wanted, add a hem allowance and then add a second figure depending on whether the customer wanted the pattern of the fabric to repeat (this varied according to the fabric)
- Finally, the results of the two calculations were multiplied to get the total fabric required

Employees did have the option to simply take each of the relevant measurements and input them into the computer to produce the final figure. However, employees were encouraged to work through the process with the customer to demonstrate how the final figure was arrived at, making the process clearer to customers.

## Discounts

Employees at all three stores were occasionally required to calculate percentage discounts of products, usually when an item had been damaged in some way or, in the case of Department Store, when a customer had had some kind of problem and a discount was offered as a form of apology. However, in terms of the numeracy required, calculating percentages was often actually easier because there was a button on the till which would automatically calculate a certain percentage discount. Calculators were also available if needed. There were some specific circumstances when calculations might be somewhat

more difficult, for example for employees in the Furnishings and Fabrics section discounting off-cuts of fabric which would be less than a metre (the unit fabric was priced in) and at half price due to being an offcut.

At ClothesCo and H&G discounts had to be approved by a manager or certain designated members of staff. At H&G discounts were mainly calculated by staff on the shop floor, while at ClothesCo employees reported having to calculate discounts both on the shop floor and at the till point, for example if something was marked as reduced but scanned through the till at full price. In both cases discounts were calculated as percentages of the original price. While calculators were available to employees, many interviewees reported working out discounts mentally often using “heuristic” tools they had learnt in the workplace to help them make calculations rather than calculating the discounts in a “formal” mathematical manner, for example:

*“it was like 20% basically you move the decimal point up, times two and I was like “is that how easy it is, really?”... I dunno what I was shown in school but it was nothing like that.”*

Employee 2, ClothesCo

Additionally, at ClothesCo one employee mentioned that because the store priced many of its products at the same level and the discounts were usually either 10% or 20%, it was possible to memorise discounts for certain prices:

*“It’s just you tend to keep it in because there’s so much of it, there’s so much products that are £6 that when it’s 20% off it’ll be £4.80. It just sticks into your head”*

Employee 1, ClothesCo

### Sales figures and targets

At all three stores employees received information on the stores sales performance from managers at morning meetings. However, the extent to which these figures were used by employees or had an impact on their work varied across the stores. At ClothesCo and H&G figures appeared to be treated by employees as background information which, while interesting was not directly relevant to their job. At ClothesCo, employees were also provided with data on the percentage of customers they served who did not use or did not sign up to the company’s loyalty card. The performance of individual employees was displayed on a noticeboard in the back of the store with those who scored 10% or lower

marked in green and those who scored above 10% marked in red. Essentially employees had to understand whether they were below or above target.

In Department Store Fashion, employees had a similar attitude to figures as employees in other stores, namely that they were interesting but not essential to understand. However, one interviewee who was training to be a manager noted that some employees in the department would take an active interest in figures for their section.

However, in the Department Store Home sales figures were more central to the work of employees. Interviewees mentioned that managers would sometimes encourage employees to come up with ideas about improving the sales of products that were down on the previous year's figures. In the Furnishings and Fabrics section of the department, one employee had voluntarily begun providing her colleagues with a digested version of the figures to make them easier to understand. An employee in Furnishings and Fabrics felt that there had been growing emphasis on employees understanding and reacting to sales figures. This interviewee noted that there had been some discussion of individual employees being given responsibility for certain products on the shop floor so that if sales were down they would be required to act to raise sales. This had not yet been implemented and it is important to note that this change was not reported by other employees in either Department.

## Views on the importance of literacy and numeracy skills

Managers at ClothesCo and H&G had similar views on the necessity of literacy and numeracy skills. In essence, they felt that an ability to read, write and use numbers was important for employees but only at a "basic" level, employees were not expected to be highly qualified

*"numeracy is important, literacy is important, you know, but for our organization, basic understanding, as long as somebody can read something fairly easily in terms of instructions on the packet... As long as they can work out what 20% is, 50% is, then you know, it qualifies for what we need. We don't need scientists to work in this sector but we certainly need a basic understanding, definitely"*

- Manager, H&G

These themes were echoed by the assistant manager at ClothesCo who emphasised a need for a “basic level of intelligence” amongst employees.

*“Umm... I think it’s important, it’s not... they don’t all have to have As and A\*s coming out of their GCSEs we’d expect a competent level of GCSEs... They need to be... they need to have a basic level of intelligence to be able to work the tills... I think in general as long as you’ve got a base level of literacy and numeracy I think you’d be fine in a retail environment like this”*

- Assistant Manager, ClothesCo

Employees in both H&G and ClothesCo largely agreed with their managers’ assessments of the importance of literacy and numeracy skills. While there was agreement that there were tasks that required literacy and, to a lesser extent, numeracy skills these tasks were simple and not central to the job, particularly for jobs which mainly involved putting out stock. For example, an employee at commented:

*“It’s not, you know, that important, I don’t think personally. You do get your basic stuff where you will have to read out on the discount voucher if it’s expired, you know look for it to see the date. But there’s always people who can help. So I don’t think it’s that important”*

- Employee 3, ClothesCo

Similarly, when asked whether he felt someone with severe literacy or numeracy skills would have problems doing the job an employee at H&G responded

*“Yeah, in some ways they would but then in some ways they wouldn’t but we’ve got about 5 or 6 members of staff but there’s nothing to say that they can’t just do stock and somebody else can do the paperwork. But in the end they it might end up doing somebody’s head in... It would be the odd barrier or whatever they call it, but they’d still be capable to do the job, yeah”*

- Employee 1, H&G

At Department Store, there were some distinctions between the two departments. In Fashion, the view was closer to that found in ClothesCo and H&G. The section manager interviewed noted that while there were tasks that required employees to make use of their literacy and numeracy skills, these were “probably not that important”. The skills required were “at the basic level” and “you could have a high level of literacy and numeracy and do this job, and you could probably have a low level and still get away with it, still do it

effectively". This view was corroborated by employees from the department, who generally felt while employees could not avoid making use of literacy skills but that these tasks were a minor part of the role and relatively simple. For example, one employee from Fashion, commented

*"I think as far as this goes, the level that I'm at here, I definitely don't feel like it's challenging at all"*

- Employee 1, Department Store Fashion

Additionally, a number of employee interviewees felt that numeracy was somewhat less important than literacy because of the assistance the employees got from the till.

There was more emphasis on the importance of literacy skills in particular to employees in the Home department, perhaps unsurprisingly given the greater centrality of paperwork in this department. The section manager from home repeatedly noted that as a store they tended to make greater demands of employees than other retailers

*"I would say, I would say they are important ... you need to be literate to be able to do the job, the numeracy... I think a basic numeracy understanding... it's important to be able to be interested in being able to read about things, get on the computer, read e-mails, that sort of stuff... I think we expect much more than a lot of other retailers"*

- Section Manager, Department Store Home

Again, these views were echoed by staff interviewees who highlighted the importance of literacy skills, while focusing less on numeracy. One employee described reading and writing as "essential" due to the number of e-mails and forms employees in his department had to deal with. Another, from the Furnishings and Fabrics section of the department felt that someone with difficulties with literacy skills would struggle with working in the department.

*"I think it depends on the extent of the issues but I think it would be very difficult to do it without literacy and numeracy skills, the basics anyway... I think you could do it but it would take a very long time with all the notes and things like that"*

- Employee 3, Department Store Home

This employee noted that this situation had changed somewhat since she first began working at the store. It had been possible for some staff to focus on talking to customers



about their needs before handing them over to a colleague to do the administrative side of the order. However, it was now expected that one employee would take a customer all the way through their order, meaning that some degree of writing was less avoidable.

## Recruitment and progression

None of the stores used specific literacy and numeracy requirements in their recruitment processes. There were no tests and no qualification requirements. Managers at H&G and Department Store were clear that they did not consider literacy and numeracy skills important in recruiting staff. At Department Store, managers emphasized the importance of recruiting “competencies” such as customer service and team working skills rather than literacy or numeracy skills. At H&G literacy and numeracy skills, or indeed skills of any kind, appeared to be entirely peripheral to the recruitment process. The manager felt that the main requirement was to employ staff who were cheap and would be unlikely to leave, his preference was for individuals who he could pay lower-rate minimum wage (e.g. under 21) and those with low qualifications who have less chance of finding work elsewhere

*“it’s all about budget and money control. It’s not about whether somebody can do the job or not... I’ve interviewed somebody 21 years old that I’ve got to pay £6.19 to but somebody after that I know I could pay £5.80 to, that hasn’t got the qualifications, but they’re both applying for the same job. So you’re encouraged to go for that option, because it’s cheaper”*

- Manager, H&G

The assistant manager at ClothesCo suggested that qualifications might be considered in the recruitment process as a means of “sifting” applications. However, while English and maths qualifications might be included in this, they did not focus exclusively on these subjects and good grades were not a requirement. Other factors were of a higher priority, for example availability to work – the manager preferred those who “I can just ring and they’ll come in for us” – and being well presented and polite:

*“it isn’t essential that you’ve got good grades... but if they come in and they’ve left school for whatever reason and they seem like a nice person and they seem like they can talk well, they’re very available for us in terms of when they can work, they’ve still got a chance but*

*obviously up against someone who's got good grades and still got all that, they'd have less of a chance"*

- Assistant Manager, ClothesCo

The manager commented that while the store sometimes had difficulties recruiting staff, these problems were more about attitude and presentation rather than literacy and numeracy:

*"we've had a lot of people who weren't suitable but that's not in terms of their numeracy and literacy skills, it'll be in terms of attitude when they've got the interview and how they present themselves and how they come across when they're speaking"*

- Assistant Manager, ClothesCo

Having said this, all three stores did require applicants to fill out written application forms, which could be seen as an informal test of literacy skills and a potential barrier to those with very low skills. The complexity of the forms varied between stores. At both H&G and ClothesCo, the forms were relatively simple. H&G's application form mainly collected personal information and included a small box asking applicants why they wanted to work at the store. ClothesCo's form was similar although there was a larger box asking applicants to detail the skills and experience they felt would make them suitable for the role and applicants were also asked to specify their hours of availability throughout the week. Department Store's form required considerably more writing, requiring applicants to write several free form answers to "competency" based questions on topics like team working and the meaning of customer service. The extent to which this tested applicant's literacy skills was ambiguous. An HR manager felt that applicants were unlikely to be penalized for poor spelling and grammar if they demonstrated the necessary competencies. However, the section manager from the Home Department felt that the form required applicants "to be a bit savvy" and helped recruit those who were "already literate", although this manager was not directly involved in sifting application forms. A final point to note is that while these application forms might be seen as an informal test of an applicant's literacy skills, they provided no such test of numeracy skills.

Literacy and numeracy were similarly peripheral to progression processes. At H&G there appeared to be no formal process for progression, those wishing to achieve promotion

simply had to wait for a vacancy to become available. Qualifications did not appear to be important – the current store manager had left school at 16. The assistant manager at ClothesCo felt that literacy and numeracy might be more important for senior roles, but characterized the level required as a “base comfort level”. Those seeking to progress might be tested on their commercial awareness but not their literacy and numeracy skills. Of the three stores, Department Store had the most developed system for progression, shop floor employees were actively assisted in identifying ways to develop and progress within the organization. The store HR manager reported that literacy and numeracy skills would be tested for applicants to managerial positions, however this was mainly to see whether these applicants might need support in their new roles. If it was believed someone would be a good manager, there was support available to enable them to manage any literacy or numeracy difficulties.

More senior roles did typically require more intensive use of literacy and numeracy skills, for example dealing with e-mails, paperwork and budgets. However, the actual level of skill required was still characterised as not particularly high. For example, the manager at H&G characterized the work he did with numbers as “bog standard simple maths”, involving addition, subtraction and some use of percentages. He noted that he had become an assistant manager having spent 13 years as a professional DJ, which required him to make little use of literacy and numeracy skills. Nonetheless, he found it relatively easy to manage the literacy and numeracy demands of the job. At Department Store, Employee 3 from the Fashion department was training to be a manager and discussed making more use of figures than he did as a normal shop floor employee, although again the level of maths was not particularly high. It also appeared that difficulties with literacy and numeracy were not necessarily barriers to managerial roles. For example, the section manager in Department Store Fashion mentioned a managerial colleague who had difficulties expressing herself in writing but felt that this did not prevent her from being good at her job.

## Changes

There was minimal evidence of significant change in the demand for literacy and numeracy skills in recent years. Overall, the picture described by employees was one of general stasis, although importantly many of the retail interviewees had been in post for much less time

than some of those in care. Such changes that had occurred appeared were generally quite specific to particular organisations, with no evidence of the sector wide changes seen in the care cases. One example of this was the introduction of in-store online ordering at Department Store, which created an additional task requiring reading and writing. However, changes at Department Store mainly seemed to involve shifts in emphasis. For example, some employees commented that managers appeared to be more concerned about employees paying attention to sales figures than they had in the past, while others suggested that their managers were less proactive in encouraging them to read product information than had been the case previously. There were also examples of minor reductions in literacy and numeracy tasks. For example, at Department Store the introduction of a new till system allowed employees to work out reductions simply by pressing a button (although some employees still worked out reductions using a calculator, for example if they were not near a till). The introduction of electronic pricing guns in ClothesCo very marginally reduced the need to read when re-pricing stock going into a sale. Although, again, these changes were small.

## Skill deficits and non-completion of tasks

Across all three stores, managers and employees felt there were few significant problems with numeracy skills and virtually no problems in relation to literacy. At ClothesCo and H&G, the lack of issues around literacy skills appeared to be largely because the tasks were fairly straightforward. For example, one employee at H&G noted that, in general, she some issues with understanding long words but that this had not been a problem at work

*“No, I haven’t had that [problems understanding words] so far. They do make it quite simple”*

- Employee 2, H&G

The main areas where difficulties could emerge were around percentages in relation to reductions. Managers at both ClothesCo and H&G noted that some staff had difficulties with this

*“I mean when we’ve had sales in the past sometimes some... a lot of members of staff are quite good, but some members of staff will have trouble with what half price is. Not all and not a lot but you will have some that’ll say ‘oh I can’t work out what half price of this is, can you tell me what it is’”*

- Assistant Manager, ClothesCo

At H&G, the manager felt that it tended to be older staff who would be most likely to struggle with these tasks

*“it’s the older generation that need a little bit more education in terms of you know: what is 20% of that price, what is 3% of that price? You do find that they struggle a little bit more with it than some of the younger people”*

- Manager, H&G

However, in general he did not feel that numeracy problems were a major problem for the store suggesting that “as long as you can count up to a hundred, you’re ok really”

Some employees noted difficulties calculating percentages, for example one employee at ClothesCo reported occasionally having problems doing these calculations when she was put on the spot at the till

*“sometimes it’s quite an awkward... like the customer’s there, we’re both like this ‘umm... umm...’ and just put on the spot, but not often. They’re laughing, the customer’s going ‘well hang on, let me have a go... oh we’re all rubbish at maths’”*

- Employee 2, ClothesCo

However, these occasional difficulties did not seem to cause major problems. When they did occur, she felt customers tended to be understanding and not “bothered” about having to wait while they worked out the reduction. Staff had access to calculators if they needed them and could ask for help from colleagues. Furthermore, the procedure at the store was that when these reductions went through the tills, they had to be authorised a member of staff from the reception desk. In general, waiting for someone to authorise a reduction tended to cause a longer wait than difficulties calculating percentage reductions. The

assistant manager at ClothesCo was similarly relaxed about employees having difficulties with these calculations. He noted that it was not essential for all staff to be able to calculate reductions, if someone had difficulties it was usually possible to get someone else to undertake the task.

Employees at both ClothesCo and H&G also noted that their numeracy skills had actually improved in their jobs. These interviewees felt that before they started in their current jobs they had forgotten how to do percentages or had always struggled with them at school. However, in the workplace they had been taught shorthand methods for working out percentages, which made these calculations relatively easy

*“I didn’t know how to percentage until I came here and my manager taught me. It was very quick, I couldn’t believe how easy it was, I wish they’d taught it like that in school”*

- Employee 2, H&G

At Department Store, section managers felt that most staff were capable of handling the literacy and numeracy tasks asked of them, largely because, as noted above, the organisation was able to attract employees with higher levels of education than other retail establishments. However, there did appear to be some employees with difficulties related to writing and spelling. The section manager from Home did note that one member of her department did have difficulties with some aspects of the job related to literacy, in particular when he was having to deal with a request for a “charge and send” over the phone, a job he often attempted to “pass off” to other members of staff. The problems appeared to be a combination of struggling with “difficult” words while working with technology in an environment where the employee was uncomfortable:

*“I think it is the technology but it is also, he struggles over complicated addresses and surnames ... it’s those basic skills that are harder for him”*

- Section Manager, Department Store Home

While the section manager did emphasise that this was something of an isolated case and felt that the employee in question was still able to do large parts of the job which were

more customer facing, she noted that his attempts to pass off tasks to others did cause “antagonism” with his colleagues.

Employees and managers at Department Store also commented on the quality of writing in some written communications such as letters and e-mails to customers and suppliers. The main issue appeared to be the tone of these pieces of writing, which tended towards the “conversational” rather than the formal. For example, the section manager from Fashion noted that while he did not check all the letters written by customers in relation to postal returns he had looked over some of them and noted that employees were “typing as they speak, rather than how you would put it in a letter”. An employee from Home also discussed one of his colleagues who had asked him for help in writing e-mails who struggled with tone and spelling

*“Her reading is ok. Her writing was more dictation of what she wanted to say. I don’t know if she was struggling with the tone and she wasn’t sure how to write it, but it seemed like it was mainly spelling that was the issue. I don’t think she wanted to look or be perceived to be stupid”*

- Employee 4, Department Store Home

However, these issues did not seem to cause significant problems. The section manager from Fashion was relaxed about the tone of letters, arguing that the conversational tone “doesn’t harm anybody and so therefore it’s not a particular issue”, his main concern was that the spelling in letters was accurate and from his experience this seemed to be the case.

Both section managers also noted that they had individuals within their departments who could be seen as having “low” literacy skills but whose ability to do the job was largely unaffected. For example, the section manager from Fashion managed an employee with dyslexia, however he had been “completely unaware” of this until she had informed him. The section manager’s main concern was that the employee should be made to feel uncomfortable due to her dyslexia

*“It doesn’t stop her from doing her job... It’s more about her feeling comfortable and my not reacting and saying ‘Why are you talking like that? And actually that’s wrong ...’”*

- Section Manager, Department Store Fashion

Interestingly, both employees and managers noted that while the literacy demands of the job could cause problems for a minority of employees, there was also a greater level of support available to those who did have difficulties. The organisation had systems in place to assist employees with dyslexia, the HR manager was a trained dyslexia coach and assistive technology was available to employees who were concerned about their writing. The HR manager explained that the firm's attitude was that provided employees exhibited the right "behaviours" (for example in terms of customer service) resources could be provided to help them cope with any literacy or numeracy problems. The store also offered employees the opportunity to participate in basic skills training. The section manager from Home mentioned that two of her employees were currently enrolled on Level 2 courses in English and maths. However, the manager noted that, even prior to the course, she had not noticed these employees having any difficulties with literacy and numeracy in their jobs

*"they're both in their 50s, both very good in their jobs, in their roles but probably like all of us of that age feel that there's always more we could be learning... it's good to challenge yourself, but I certainly hadn't noticed any issues or need"*

- Section Manager, Department Store Home

As in the care sector, there were a number of tasks that involved either literacy or numeracy skills which employees sometimes found difficult or complex for reasons other than simply difficulties with skill levels. There were two examples of this at H&G. The first of these related to the measuring of fabric. The Manager at H&G felt that the basic calculations required when measuring and cutting fabric were relatively simple – multiplying the price per metre by the number of metres required, employees generally understood this and had a calculator on hand if the needed it. Where problems arose, this tended to be due to "knowledge of the process more than actual numeracy". For example, the store had a policy of cutting slightly more of the fabric than was necessary to "straighten off". Some employees would forget to do this or become confused about why customers were not charged for this extra length of fabric. Additionally, once the fabric was cut, the employee had to print off a label and record the amount sold on a separate sheet to update the stock file. The Manager felt that these additional tasks could be confusing and difficult for some staff to remember.



Additionally, there were issues around managing stock files. Sometimes the stock system would throw up a “negative report”, where an item had been sold on the tills which had not been properly recorded on the system meaning the figure for that product would be negative. When this happened, employees had to go to the shop floor and the warehouse to see whether there was more of this product which had not been recorded on the file. If more products were found the stock file would need to be updated, so for example if the employee found two more items the stock file would be changed to one. The manager reported that employees sometimes found it difficult to understand, firstly why the stock file went to minus one rather than staying at zero and secondly when they came to amend the file to record any other stock found why the stock file would record one when there were physically two items in the store. Again the issue here did not appear to be numeracy but an understanding of how the stock system worked, specifically the need to keep a record that an item was sold even if it was not originally recorded in the stock file.

The process of fabric measuring at Department Store also presented some challenges to employees. As noted above, shop floor staff in the Home department did not measure or cut material for curtains themselves, however they were responsible for providing customers with estimates and taking orders. Employees found this complicated, not so much because of the individual calculations which had to be undertaken (all of which were relatively simple and could be done using a calculator) but in terms of knowing and understanding the process and being able to articulate what was going on to customers who might query the amounts of fabric required:

*“I still can’t do it properly off by heart, even after a year of working full time I still struggle with knowing the process in my head and I find it really hard to visualise what it is that I’m doing... I think you have to know why you’re putting numbers in certain places because otherwise I think it just looks a bit of a mess... the magical system will tell you what you need but to a customer that’s not very helpful”*

- Employee 3, Department Store Home

As noted above, at Department Store, especially in Home, employees encountered more paperwork than at other stores. One employee noted that these forms could be difficult to understand for employees. However, this was not because the forms were hard to read in

“pure” literacy terms but rather that understanding them required a level of knowledge about the broader processes within the organisation and how the forms fitted into this:

*“you need to have enough knowledge about why the form has arrived in front of you, who it’s going to and why it’s important that it gets done correctly... There’ll still be things now that will arrive in front of me and I’ll have to ask a manager or somebody, and say ‘What even is this? Where’s it got to go?’”*

- Employee 4, Department Store Home

In general, difficulties with literacy and numeracy tasks appeared to be relatively rare. The most common problems appeared to be around calculating reductions but even these were not widespread. While some employees who had difficulties with either literacy or numeracy did appear to struggle, low skills were not necessarily a barrier to being an effective employee. Finally, some of the difficulties with literacy and numeracy tasks experienced by employees were more to do with processes and workplace contexts than literacy or numeracy skills.

## Expanding literacy and numeracy skills

Across all three cases, there was a general agreement that there were at least some staff who could take on more in terms of literacy and numeracy tasks. As noted above, the assistant manager at ClothesCo was of the opinion that tasks were very basic and that many of his employees could take on more

*“I’d say a lot of them would be very capable to [do more complex literacy and numeracy tasks]. But for this position I guess they don’t need to undertake a lot of it”*

- Assistant Manager, ClothesCo

Similar sentiments were expressed by the section managers at Department Store, the section manager from Fashion cited the fact that many staff progressed internally as evidence of a general capacity to take on more complex tasks.

All employees interviewed felt that they had capability to take on more extensive literacy and numeracy tasks. However, employee interviewees were split on whether expanding tasks related to literacy and numeracy would be desirable. Some employees were

enthusiastic about the scope for expanding tasks for example, an employee at Department Store Fashion commented

*“it’s nice to have a bit of a challenge there and something different to get away from the mundanity of doing the same thing all the time. I think it would be good”*

- Employee 2, Department Store Fashion

Some interviewees had taken on additional tasks that involved literacy or numeracy. For example, a full time employee at ClothesCo mentioned that she occasionally helped managers with organising data in spreadsheets when they were too busy to do so. This involved using formulae in Excel. She did not need any additional training, having learnt about spreadsheets at school. Taking on additional tasks was common at Department Store, given the emphasis on staff development. Examples included Employee 1 from Fashion who had taken on responsibilities for wastage and shrinkage and Employee 2 from Home who had become involved in managing stock errors

A more common response from employees was that they would be capable of taking on more tasks and would do so if asked but this was not something they would actively seek out. For example, an interviewee at H&G commented

*“I wouldn’t mind it cos I used to like maths at school, didn’t mind English, literacy, whatever it is. I’d rather do more stock cos I like being busy rather than sat around but if it needs doing, I’d do it”*

- Employee 1, H&G

At Department Store Home, one employee offered a slightly different response, pointing out that, by the standards of retail jobs, employees already had a significant amount of responsibility and there was a tendency for managers to pile additional work on certain employees who were deemed “capable”. In the context of the job and the level of pay, adding further responsibilities could be problematic

*“If those extra responsibilities came with financial rewards and incentives alongside it, perhaps... I think you’ve got to be wary of balancing that between giving people what they’re capable of, just because somebody’s capable of it doesn’t mean that they still want to do it, particularly for a shop floor wage”*

- Employee 4, Department Store Home

## Conclusion

Compared to the care cases, the retail cases exhibited a greater diversity of literacy and numeracy tasks and somewhat more variation across cases. In addition, numeracy appeared more consistently prominent across the cases. On the other hand, literacy, especially writing, appeared to be much less central to the daily work of many employees. There was also less consistent evidence of change in literacy and numeracy practices. However, in relation to other aspects of the research, the retail findings echoed those from care. There was limited evidence of major problems with skill deficiencies and managers again did not place much emphasis on literacy and numeracy skills in recruitment processes. Finally, there appeared to be less scope for extending literacy and numeracy use than in care, though employees were similarly unenthusiastic about the idea of making more extensive use of literacy and numeracy skills.

# 6 Discussion of qualitative results

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## Introduction

This chapter brings together evidence from the case studies and begins to answer some of the key research questions. The first section makes the case that the literacy and numeracy demands found in the case studies can reasonably be seen as low by considering different facets of skill in the job including complexity, discretion and frequency of literacy and numeracy use. The next section looks at the reasons why difficulties with literacy and numeracy were relatively rare while also making the case that those difficulties that did exist could not entirely be attributed to skill deficiencies. Having established that demands for literacy and numeracy were low and that under-utilisation of skills was more common than deficits, the discussion looks at why employers did not make greater use of their employees' literacy and numeracy skills. The discussion then considers two themes from the literature review, the optimistic notion that literacy and numeracy skills are becoming increasingly associated with "knowledge" or "symbolic analytic" work and the more pessimistic idea that literacy use in the workplace is tied to managerial efforts to control and monitor employees. The final section deals with the variation in literacy and numeracy skills across the case studies, in particular it looks at the extent to which three factors commonly cited in the skills literature – "new" management practices, product market strategies and technology – can explain variations in skill use. The section finishes by exploring other factors that may account for differences in skill use.

## Level of demand for literacy and numeracy skills

The first part of this discussion assesses the level of demand for literacy and numeracy skill in the case studies. In the literature review, it was noted that it is useful to consider multiple dimensions of skill in assessing the demands of jobs. This included the complexity of tasks, the level of discretion exercised by employees, the frequency of skill use and the overall importance of skills.

The simplest measure of complexity are the assessments of interviewees. On this basis, it is reasonable to suggest that the complexity of literacy use in the case studies was low. Both

employees and managers tended to concur that most tasks were well within the capabilities of employees. Employees who had difficulties tended to be a minority who had particular challenges with English. Some forms of numeracy use tended to be a little more complex, with employees and managers reporting some difficulties with calculating MUST scores in care and percentage reductions in retail, although even here it appeared that with some support and training these problems could be overcome for many if not most employees.

One way to develop this idea is to compare the tasks found in the case studies with the adult literacy and numeracy core curricula (BSA 2001a 2001b). The core curricula provide the levels used for assessing the literacy and numeracy skills of adults. These appear in the UK Skills for Life surveys and feature regularly in literacy and numeracy policy documents. There are five levels in total – Entry Levels 1, 2 and 3 and Levels 1 and 2. Expectations about the levels of literacy and numeracy adults should have vary. The Leitch Review and the Skills for Life survey define “functional” literacy and numeracy skills as Level 1 and Entry Level 3 respectively, although the importance of having at least Level 2 skills (equivalent to GCSEs at A-C) is often emphasized by policy makers. Tables 4 to 7 provide comparisons between the literacy and numeracy tasks found in the case studies and the criteria for each level found in the core curricula.

Roughly speaking literacy demands in both sectors are comparable to what the literacy core curriculum suggests are Entry Level skills, generally around Entry Level 2 and 3. For numeracy, the picture is a little more complex, with some very simple tasks barely scraping Entry Level 1 and some moderately complex tasks up to Level 1. Helpfully, this mirrors the accounts of employees and managers who suggested there were few problems with literacy tasks but some issues with specific numeracy tasks.

**Table 4 Literacy tasks in care**

Task	Level	Explanation
Writing on forms	EL1	At EL1 individuals are expected to be able to write simple sentences. However, forms generally involved ticking boxes and writing a few words.
Reading forms	EL2/3	Adults at EL2 are expected to understand words on forms related to personal information while EL3 includes the ability to read forms that go beyond personal information.
Writing DCRs (also writing ABC forms)	EL2/3	<p>At EL2 should be able to compose and write short texts for different audiences, using correct punctuation and a reasonably accurate level of spelling. Examples include writing a “beginners guide” to an activity undertaken by the learner.</p> <p>At EL3 individuals can plan and draft writing, organise it into short paragraphs, sequence chronological writing and proof-read and correct grammar and spelling. While this might apply, most carers did not write more than a paragraph.</p> <p>Filling out ABC charts might come closer to requiring EL3 writing skill given that they require a narrative account of an event.</p>

**Table 5 Numeracy tasks in care**

Task	Level	Explanation
MUST Scores	L1	MUST score involves subtracting weights - at L1 adults should be able to perform calculations involving common units within a particular system of measurement
Recording numbers on forms (quantities of liquids etc.)	EL2/3	Adults at EL2 should be able to understand common date formats, times on analogue and 12 hour digital clocks and record quantities using common measures. At most this would rise to EL3 which requires that individuals should be able to understand and use AM and PM.



**Table 6 Literacy tasks in retail**

Task	Level	Explanation
Reading shelf edges	EL1/2	At EL1 adults should possess a limited, meaningful signs vocabulary of signs and symbols. Whether or not reading shelf edges could be considered EL2 would depend on the vocabulary required.
Reading till prompts	EL2/3	At EL2 adults can understand short texts including instructional texts. Whether this would reach EL3 depends largely on whether the relevant vocabulary required could be considered “familiar”.
Reading e-mails/internal communications	EL2/3	At EL2 adults can understand short or straightforward texts including e-mails. At EL3 adults are expected to be able to read longer, more complex texts and have a more developed vocabulary.
Reading product information	EL2/3	Reading formal product information seems closest to the EL3 requirement to be able to obtain information from texts by using a range of strategies to locate information. The level would be lower for reading product instructions or backs of packets.
Reading/filling in forms	EL2/3	Most forms encountered by employees in retail involved only personal information (EL2) although some, particularly at Department Store required other information which might come closer to EL3
Writing information about customers	EL2/3	Notes on customer orders at Department Store fit somewhere between the EL2 requirement that adults should be able to write short texts with accurate punctuation and spelling and the EL3 requirement that they should be able to organise writing into paragraphs and sequence chronological writing.
Writing letters/emails	EL2/3	Either an EL2 or an EL3 level skill, depending on the length and complexity. Spelling and grammar become more important for letters written to customers, this might be closer to EL3.
Writing in communication books/diaries	EL2	These fit under the EL2 requirement for adults to be able to write short texts.

**Table 7 Numeracy tasks in retail**

Task	Level	Explanation
Cash transactions	EL1/2	EL1 specifies that individuals should be able to recognize different coins, while EL2 requires that they can make amounts money up to £1 using a range of different coins.
Stock	EL2/ L1	At H&G this involved counting items on shelves and comparing this to the stock system. This roughly fits with the EL2 requirement that adults can add or subtract two-digit whole numbers and compare whole numbers up to 100.  The wastage and shrinkage tasks at Department Store involved working within a budget, calculation how many products the department could “afford” to waste. This is closer to L1.
Measuring fabrics	EL3	At EL3 adults should be able to read and measure length using standard units.  Calculating fabric price (multiplying length by price per metre) would also come under EL3, adults at EL3 can use a calculator to calculate using whole numbers and decimals to solve problems in context.
Made to measure calculations	EL3	The calculations required for made-to-measure curtain estimates at Department Store appear closest to the EL3 requirement that adults can use a calculator to calculate using whole numbers and decimals to solve problems in context
Discounts	L1	Adults at L1 are able to calculate percentage reductions
Sales figures/targets	EL2/3 /L1	Generally retail assistants only needed to know whether one number was bigger or smaller than another (e.g. comparing yesterday’s sales figures with today’s). The precise level would depend on the size of the number. At EL2 adults should be able to compare numbers up to 100, EL3 up to 1000 and at L1 “large numbers”.

This exercise only provides a rough guide to the complexity of tasks. There is a practical issue in matching up specific workplace tasks with the general descriptions in the literacy and numeracy curricula. Furthermore, assessing tasks in this way ignores the way that context can affect complexity. A key insight of social practice approaches is that literacy and numeracy in the workplace are embedded in broader workplace practices, they should not be seen as disconnected, abstract tasks. This has implications for making judgments about complexity. The problems that some employees had with numeracy tasks, such as calculating MUST scores and measuring fabrics appeared to be more to do with remembering the process than the more “technical” skill of carrying out calculations. In this case, the task was difficult more because of the context rather than the numeracy skills required. Similarly, characterizing ABC forms as a piece of writing involving the use of paragraphs and chronological sequencing does not capture the complications that come from writing about an event that was potentially traumatic for the author (for example being abused by a resident) or the fear that they may get into trouble as a result of what they write.

Alternatively, the context in which tasks occur may make them simpler than the descriptions in the table suggest. In relation to DCRs, for example, an individual might have difficulty constructing a free form piece of writing along the lines specified in the core curriculum. However, when writing DCRs carers could use previous DCRs as resources to get an idea of appropriate vocabulary and structure. In addition, the content of DCRs did not vary greatly further limiting the demands placed on employees’ skills. “Extra textual clues” might be used in certain circumstances, for example, employees stacking shelves could identify where a product should go because there were other similar items already in its place. At ClothesCo, the consistency of prices meant it was possible to memorize “typical” reductions.

Another issue in assessing the complexity of tasks in this manner is that there might be a difference in the ability to do a job adequately and the ability to do a job “well”. For example, writing DCRs could be seen as requiring L1 skill if, for example, carers were writing longer DCRs and giving greater levels of thought to the detail required. However, writing DCRs generally appeared to be a routinized process. Similar points apply to written communication in Department Store. However, managers appeared to be relatively satisfied

with the “adequate” jobs that employees were doing, notwithstanding some complaints about style and use of terminology.

Overall, paying greater attention to the context in which tasks are carried out does not change the overall impression that, in general, the literacy and numeracy demands found in the case study were of generally limited complexity.

The next area is discretion. Instances of literacy and numeracy use were typically highly routinized or so basic that discretion was a meaningless concept. Generally, employees had limited control over how and when they made use of literacy and numeracy skills. Where employees used literacy and numeracy skills it was generally for prescribed managerially defined tasks. Neither did employees have any role in determining how the information from written sources or the products of calculations were used. Having said this there were small instances of control exhibited in relation to reading care plans and product information in care and retail in the sense that employees could “choose” whether to get this information from written or oral sources. When contacting customers in Department Store, some employees might “choose” between phoning or emailing a customer. In the case of care plans, however, this choice was a rather unofficial one, employees were *supposed* to read care plans. Furthermore, even in the retail cases, this represented a rather paltry level of discretion.

In terms of writing, form filling offered no control over what should be written as employees were collecting predetermined information. In theory, there was a greater level of discretion in longer or more “free form” writing tasks, for example writing emails and letters in Department Store or DCRs in care. In these instances, employees were less restricted than with form filling. However, in retail the aims of the tasks were generally prescribed (for example to inform a customer about the status of their postal return) so any theoretical discretion was not particularly meaningful.

The situation with DCRs was a little more complicated. Only at Southeast Home did managers lay down guidelines on how DCRs should be written and these were intended for (mainly migrant) staff who struggled with English rather than strict requirements for everyone. Some managers claimed to want DCRs written in a specific professional style. However, in practice managers did not make any real effort to “enforce” this preferred style. Despite this, employees suggested that writing DCRs was still fairly routinized with

similar things written day to day. Arguably, this was due to the task aims being prescribed (to record details of the care provided to residents) and the limited time available. This lack of discretion has implications for some of the judgements about literacy and numeracy levels made above. For example, the routinized nature of writing DCRs means that they come closer to Entry Level 2 or 3 than Level 1.

The frequency of literacy and numeracy tasks varied considerably. However, a general pattern that emerges is that the least complex tasks tended to be the most common, while more complex tasks tended to be least frequent. In retail, the most common tasks were reading labels for staff on the shop floor and reading words on tills and handling cash transactions for staff on the till. Shop floor staff in both ClothesCo and H&G might easily go a day without reading anything more than labels on shelves or hangers. By contrast, more complex tasks, such as percentage reductions, were less frequent. The main exception to this was Department Store Home, where tasks such as reading emails, form filling, writing notes on customers and performing made-to-measure curtain calculations were more regular activities (although not for all staff).

In care, there was a greater regularity to literacy demands at a slightly higher level than in retail. Form filling and DCRs had to be undertaken every day and DCRs were somewhat more challenging than anything staff at H&G and ClothesCo might come across in a typical day. However, the highest-level tasks identified in care, calculating MUST scores and writing ABC forms were not daily tasks and were only part of carers' duties at the two Charity Homes.

The final element to consider is importance, interpreted here as the extent to which a particular task or type of skill was necessary to do a particular job. As with frequency, one of the main patterns was that the most important tasks tended to be the less complex tasks. A key point to note is that the literacy and numeracy "demands" of a job could be quite variable. Precise demands could be open to interpretation, even within the same jobs in the same organisation. This echoes Darrah's (1997) point about the difficulty of the concept of skill "requirements". The best example of this is in relation to care plans, managers felt reading these plans was essential but a number of carers appeared to be able to do their job without doing so. Similarly, the job of providing care to residents, which both managers and employees agreed was the central role of carers, did not require the paperwork that carers

carried out. In theory, an individual could do a substantial proportion of a normal care job without making any use of either literacy or numeracy skills. However, this paperwork became important primarily because of the need to show regulators that adequate care was being provided. As such, it would be difficult for an individual to work as a carer without an ability to do this paperwork. By contrast it was not essential for all employees to be able to undertake MUST score calculations or write ABC forms, it was important that *some* staff be able to do these tasks but not all.

In retail, it would be difficult to work on either tills or on the shop floor without making some quite low level use of literacy or, in the case of tills, numeracy. Shop floor staff needed to be able to read labels on products and packaging. Till staff needed to be able to read till prompts and handle change. Other more complex tasks such as calculating reductions, measuring fabrics and reading internal communications were important for some staff but not all. The exception to this was Department Store Home where employees undertook a broader range of tasks in their normal daily work.

Bringing these themes together, we can suggest that demand for literacy and numeracy skills in the case studies was generally low. The most common and important tasks were low in complexity. Furthermore, even the more complex tasks were not very complex in the context of claims that Level 2 skills are a minimum requirement. There was some variation between the cases and between sectors. In the care cases, literacy skills were a more consistent part of the job than in retail. The use of numeracy at a slightly higher level was somewhat more common in retail. However, this was not necessarily a daily activity and it was not essential for all staff to do this. In H&G and ClothesCo, it would not be difficult to arrange work so that employees only needed to read shelf-edge labels. Department Store Home was a partial exception to this rule, with employees unavoidably encountering a broader range of paperwork than in other retail locations although this was not necessarily at a higher level of complexity.

Other authors who have studied similar environments have come to different conclusions. Hastwell et al (2013) argue retail workers operate in “literacy rich” environments in the sense that they are constantly surrounded by texts in various forms. However, Hastwell et al’s claim is primarily based on the frequency with which workers encounter texts, for example having to constantly read packaging and shelf labels. They do not give much

consideration to other facets of skill, such as complexity, that might be important. Secondly, inasmuch as they do consider complexity, they look at it from the point of view of migrant workers who do not have English as a first language and are unfamiliar with the cultural context of supermarkets in New Zealand. It is reasonable to ask whether this is an appropriate perspective from which to judge complexity. To recall some of the comments made about the problem of “infinite regress” (Lloyd and Payne 2009) anything can seem complex to people who lack the ability to do it. Despite the fears of policy makers, extremely severe problems with literacy skills are relatively rare. It seems more reasonable to judge complexity on what most people can do most of the time. Furthermore, a number of the employees studied by Hastwell et al did seem to cope with the literacy requirements of their work relatively easily. In one sense, it is possible to agree with Hastwell et al, literacy skills are not entirely irrelevant to these kinds of work and some employees with very low skills or who are unfamiliar with certain environments might have some difficulties in acclimatising to these demands. However, despite this, it is reasonable to argue that the overall literacy and numeracy demands of these jobs are relatively low.

### Difficulties with literacy and numeracy

The evidence from the case studies suggests that problems with literacy and numeracy activities were minimal. The lack of major problems with literacy and numeracy tasks can largely be attributed to the fact that the literacy and numeracy demands in the case studies were generally quite low. In support of this idea is the observation that problems tended to be observed only where demands were somewhat higher.

Furthermore, in some cases where some employees had initial difficulties, there was scope to learn on the job relatively quickly. The main example of this were retail employees who could often learn to calculate reductions relatively quickly by being taught shorthand methods. Had these employees been tested on percentage reductions prior to working in retail it may well have been the case that they would not have exhibited EL3 skills. It is also conceivable that if they would be unable to calculate a percentage decrease in an unfamiliar context and, if tested, they would again fail to exhibit EL3 skills. However, from the perspective of the workplace this is irrelevant, their level of numeracy is suitable for the context.

It may also be the case that in instances where literacy and numeracy demand was marginally higher, organisations were able to recruit staff with higher-level skills. The main example of this is Department Store where a detailed application form and a reputation as a good employer potentially filtered out less able candidates and attracted more highly educated individuals. Had Department Store been more like the other retail cases in its approach to recruitment it is possible that more staff would have struggled with the slightly wider range of literacy and numeracy tasks. However, this point should not be over-emphasised. Recruitment practices in care were similar to those in ClothesCo and H&G and, despite a slightly higher level of demand for literacy skills in the care cases, problems with literacy skills did not appear to be common. Furthermore, the literacy and numeracy demands found in Department Store were still relatively straightforward and the more highly educated individuals interviewed reported the demands of the job were well below what they were capable of.

While problems around literacy and numeracy were relatively rare, across the cases some issues were identified. The next question to consider is the cause of these issues, in particular whether they can be attributed to a lack of “skill” on the part of employees or whether these difficulties had other causes.

The general proficiency of individuals can explain some of the problems. For example, difficulties with spelling and grammar in DCRs and employees “forgetting” how to calculate percentage reductions could plausibly be seen as problems of individual skill. However, it is worth noting that these did not appear to be the cause of major issues. There were also employees who had difficulties with either literacy or numeracy who were able to perform their jobs well, including managing literacy and numeracy tasks. In general, it did seem that under-utilisation of skills was a more significant issue than skill deficits.

In both the retail and care cases, however, it was noted that for a variety of reasons difficulties with literacy and numeracy tasks could not be attributed entirely to skill deficiencies. Five main themes emerged. Firstly, in a number of cases, difficulties were not so much about “technical” skill as contextual knowledge. This links to the social practice idea that it is important to consider how employees are “socialised” into workplace literacy and numeracy practices (Hart-Landsberg and Reder 1997). Issues of style in DCRs, understanding unfamiliar forms in Department Store and remembering processes for



calculating things like MUST scores and fabric prices all fall into this category. A second issue is the extent to which work provides opportunities to practice tasks. Where employees did not have an opportunity to do certain tasks on a regular basis it could undermine their proficiency. Notably, “forgetting” procedures appeared to be a major problem in relation to MUST scores. Thirdly, employees sometimes did not undertake literacy and numeracy tasks because the objectives of these tasks were achievable by other means. Oral communication was often preferred to reading or writing. While this might be seen as the product of a lack of literacy skill, for the most part employees tended to prefer oral communication for very practical reasons. In many instances, oral communication was more an easier or more efficient means of communicating information. A fourth factor was employees’ perceptions of the importance of tasks. There was evidence that workplace contexts shaped these perceptions. For example, a number of carers felt that because their managers did not actively encourage them to read care plans, these documents were unimportant. This also applied to sales figures and product information in retail. Finally, there were issues with practical barriers, in particular a lack of time and a chaotic working environment. These factors were help explain, in part, incomplete paperwork, failure to read care plans and product information and a lack of detail in DCRs.

One theme found in the literature but did not feature in the case studies was the idea that the workplace context could cause employees to perceive documentation as in some way “hostile” to their interests, resulting in employees “resisting” doing paperwork. The absence of resistance is probably indicative of earlier points that, in general, documentation was not actively used to control and monitor employees in the way that some pessimistic authors suggest. For the most part the purposes of documentation were rather mundane and functional and were interpreted as such by employees.

This discussion of problems highlights two issues, firstly that literacy and numeracy difficulties were relatively rare and secondly that explanations for the problems that did emerge involved factors other than literacy or numeracy proficiency. One question that might be asked is why managers did not do more to try to counteract the problems that did emerge. While not all the issues discussed above could be easily resolved by managers, some clearly could. Problems with grammar and spelling might be remedied by general literacy training while issues around choice of language by more work-specific training.

Managers could reduce time pressures on employees by employing more staff or setting aside time for employees to deal with paperwork. Perhaps the simplest explanation is that the scale of the problems generated by these “failings” was not sufficient to justify any substantial changes. Problems were either of negligible importance (for example grammar in DCRs) or could be relatively easily managed (for example by not allocating certain tasks to employees who had difficulties with them). While these situations might not be ideal, they were at least functional.

## **Literacy and numeracy in recruitment processes**

In addition to contributing to a lack of major skill problems, the low level of demand for literacy and numeracy skills is a reasonable explanation for why literacy and numeracy appeared to play such a limited role in recruitment processes of the case study organisations. In general, managers’ main concerns were with recruiting people who had the skills or attributes the organization actually needed. The focus was largely on “attitude” and interactional skills. Where managers felt they did sometimes have difficulties with recruitment, the problems tended to be with “attitude” rather than literacy or numeracy.

It has been argued that even where literacy and numeracy skills might not be directly important, employers might use English and maths qualifications as a way of “sifting” applicants. However, while literacy and numeracy skills, especially literacy and numeracy qualifications, could be an easy sifting mechanism for employers to use, often other criteria were more relevant and useful to the organisation. For example, the manager at Southwest Home mentioned looking at employment history for previous employment in the care sector or at least some evidence of experiences that would transfer to a care setting. Alternatively, the application for ClothesCo asked applicants to report their earliest start and latest finish time for each day of the week, this measure of availability was more useful as a sifting mechanism than qualifications.

## **Why did employers not make more use of employee skills?**

So far this discussion has highlighted two key themes, firstly that literacy and numeracy use was generally low in the case studies and secondly that the extent of “problems” with literacy and numeracy skill was limited. An idea noted in the literature review is that the low

skills of employees prevent employers from creating more highly skilled jobs. By extension, it is argued that employers will be encouraged to design more highly skilled jobs if they are able to access more highly skilled labour. Given that there appeared to be more evidence of under-utilisation of skills than skill deficits it is hard to argue that low skills on the part of employees explained the low level of demand for skills. A reasonable question to ask is why firms did not attempt to make more use of the literacy and numeracy skills of their employees?

One potential issue is a lack of broader skills and knowledge on the part of some employees. As has been noted elsewhere, being literate or numerate in the workplace is not simply about the technical tasks of reading, writing or using numbers, it also often requires broader knowledge as well. For example, the manager at Southeast Home commented that carers were in general “just not clever enough” to write care plans because they had not undergone the same training as nurses. This was not so much about the literacy skills of employees as their wider knowledge. However, other care sector interviewees were less convinced that extensive training was necessary for writing care plans.

Attitudinal barriers on the part of employees, a lack of willingness to take on additional tasks, might also be an issue. The manager of Charity Home claimed that she sometimes had difficulty persuading carers to take on additional tasks because they believed that they were “just carers” who were unsuited to doing anything more complex. Consistent with this idea, a number of employee interviewees in both care and retail were not attracted to the idea of making more use of literacy and numeracy skills in their work. It is an open question whether the “issue” here is with employees or the job context. On the one hand, this may be seen as a product of low confidence or even “laziness” on the part of employees. This was the Charity Home manager’s view. However, in the context of low paid work it does not seem entirely unreasonable that employees might be unenthused about taking on additional responsibilities that may not be very interesting or lead to higher rewards.

However, it is important to go beyond individual factors and consider wider workplace issues that might hold employers back from making greater use of employee’s skills. One issue might be workplace politics. Where the expansion of frontline employee roles involves transferring tasks from employees further up the hierarchy, there is the potential for friction. Both the Chairman and Manager at Southwest Home felt that involving carers in

writing care plans might be resisted by nurses who would be uncomfortable with “untrained” employees being allowed to deal with documents saw as their preserve. The manager of Charity Home 2 also felt there was potential for conflict, although the managers at other homes did not see this as an issue.

However, perhaps the biggest issue was a lack of need or scope for employees to expand the literacy and numeracy content of their jobs. Especially in retail, interviewees found it very hard to identify ways to expand the literacy or numeracy content of jobs. There simply were not a great number of tasks involving literacy or numeracy for employees to do.

Managers or administrative staff carried out the majority of literacy and numeracy tasks, while shop floor workers focussed on serving customers and putting stock out. There was slightly more scope for additional tasks at Department Store, and this was accentuated by an HR philosophy of promoting employee development. At other stores, it seemed that shop floor workers only took on additional tasks under specific circumstances, for example minor administrative tasks when managers were busy with something else. However, even in Department Store, there was more to do in Home than Fashion and these additional tasks were still seen as secondary, undertaken on an occasional basis during quiet periods.

Managers emphasised that serving customers remained the priority. In care, a number of interviewees did point to care plans as one area where employees might make more use of literacy skills. However, it was clear that there was also a limit to this in that carers had to focus on their core task of caring for residents. The more paperwork carers undertook, the less time they had to provide care to residents. Across both sectors, the main contribution that firms wanted their frontline workers to make was either providing care, putting out stock or serving customers. These tasks required minimal use of literacy and numeracy skills. Without some more fundamental shift in the organisation of work, it was not obvious that making more use of literacy and numeracy skills would enhance performance. Any expansion of skill use in these areas would probably mean sacrificing time spent on core job tasks.

Where organisations could see an advantage in making more use of the literacy and numeracy skills of their employees, they were not averse to doing so. This applies to the decision to involve carers in calculating MUST scores at the Charity Homes and the fact that both the Manager and Chairman at Southwest Home were prepared to consider having

carers contribute to care plans. However, it was not clear that these kind of advantages could be gained elsewhere, as such expanding literacy and numeracy use for frontline workers had limited appeal for organisations.

## The nature of literacy and numeracy tasks

The next issue to consider is the “character” of literacy and numeracy tasks. In the literature review it was noted that amongst some optimistic authors there is a belief that workplace literacy and numeracy is moving in the direction of “symbolic analytic” work, using texts and data as sources of information to make decisions and solve problems in the workplace. By contrast, the more pessimistic narrative suggests that workplace texts are increasingly tied up with managerial efforts to standardize, control and monitor the work of employees.

There was little evidence of employees using literacy and numeracy skills in a way that might be considered “symbolic analytic”. There was some evidence of employees using written documents as sources of information to help them do their job, for example reading care plans and product information. However, as previously noted the use of these types of texts was varied and sporadic. There were some examples of literacy and numeracy activities that could be considered to involve problem solving. For example, the process of making sense of VM guides looks very much like what Farrell (2006) describes in terms of translating global texts into local contexts requiring the use of tacit knowledge, which she characterises as “knowledge work”. However, the level of problem solving involved in using VM guides was limited (for example making judgements on how to spread clothes out on a display when stock was low) and they were only used periodically when product lines changed. Furthermore, as will be discussed below, VM guides can also be seen as limiting the scope for employees to “think” at work. On the other hand, there were some examples of texts and data which could be used in a more “symbolic analytic” manner but were rarely used in this way by frontline employees. For example, nurses and GPs made use of DCRs in identifying and diagnosing problems with residents. In retail, managers (and presumably others in the organisation) used sales data to identify ways of increasing sales.

There are a number of reasons why frontline employees’ uses of literacy and numeracy did not take a more “symbolic analytic” form. Firstly, the amount of information required to do frontline jobs was often quite limited. For example, with the exception of Department Store

Home, there was not a substantial need for product knowledge. In care it was acknowledged by some that providing care could be quite routine, providing the same kinds of assistance to each resident. Secondly, specifically related to literacy, it has already been noted that oral communication was often a preferred method for obtaining the information that was needed. A further issue was that even if employees engaged more with data or written information, the configuration of their jobs meant there was little they could actually do with any information. For example, an employee at Department Store noted that however much they paid attention to sales figures, their scope for action was very limited – there were a whole host of variables, from the choice of products being sold to the weather, which they had no control over but could still affect sales. Inasmuch as retail employees were encouraged to pay attention to numerical data, the intention seemed to be “disciplinary”, poor figures were used to exhort employees to “try harder” – this was most obviously the case with loyalty card data at ClothesCo.

Similarly, carers were not in a position to prescribe medications or courses of treatments to residents, their capacity to provide more personalised and tailored care to individual residents was limited by the time available. To enable frontline employees to perform more “knowledge work” would require a fundamental reconfiguration of their roles, potentially involving substantial amounts of additional training and significant changes to the organisation of firms. It is difficult to see whether the kind of investments needed to effect these changes would be worthwhile from the point of view of the firm given that the core job tasks of frontline employees would still need to be done.

Furthermore, the extent to which texts and data were used to control and monitor employees was limited. In care, there were a number of documents (for example DCRs and forms) which could hypothetically be used in this way. However, for the most part documentation was used by regulators and, to a lesser extent, managers to monitor the overall quality of care in the home rather than the performance of individual employees. The documentation might be seen as contributing to the control of employees in that it reinforced that certain tasks had to be done. It is possible to argue that documentation encourages care assistants to focus on certain tasks over others, for example on “physical” tasks over the “softer” side of care such as talking to residents and building relationships.

However, this was only true in a very broad sense. It was not clear that in the absence of documentation carers would have done their work in very different ways.

In retail, VM guides could be seen as a way of controlling employees, reducing their discretion over how products should be displayed. However, as noted above these documents were not in regular use. Written instructions to employees may also be seen as means of control however, it does not entirely fit the descriptions of documentary control processes described in pessimistic accounts of literacy and numeracy. Written instructions were not about the standardisation of work but rather more a continuation of the ad-hoc control exercised by managers over employees in other ways. Furthermore, verbal instructions tended to be more common than written. Interestingly, despite the focus of pessimistic authors on texts, the clearest example of “pessimistic” practices involved numerical data, specifically the way loyalty card data was used at ClothesCo to almost embarrass employees into “trying harder” to encourage customers to sign up for loyalty cards.

The reasons for the minimal use of documentation to control and monitor employees were varied. Firstly, there were other methods of controlling or monitoring employees, in the form of simple direct monitoring by managers and supervisors – asking employees to hurry up or giving them instructions – and, in retail, electronically through the till. It was relatively easy in both sectors to assess the completion of work visually, for example by seeing whether residents were up and dressed or whether stock was on shelves. Secondly while jobs in both sectors consisted of a relatively narrow range of tasks managers did not seem to be overly interested in monitoring how employees carried those tasks out. In care, the focus was very much on getting work done within a specific timeframe. Inasmuch as managers were concerned about how care was provided, it seemed to be somewhat reactive. If an incident occurred or a complaint was received, the managers would ask questions about how carers had gone about their work but this was not monitored in “real time”. In retail, there was little scope for monitoring the “quality” of re-stocking shelves – either it was done or it was not. With the exception of periods when product lines were changing and employees made use of VM guides, employees simply put products in their allotted positions.

There were also few efforts to control the way employees interacted with customers. This is perhaps surprising, given that there is a body of literature which suggests that in customer service work, employers will seek to control how employees interact with customers (although whether these efforts involve documentation is another matter). In Department Store, there had been a policy of directly assessing employee-customer interactions supported by a documentary checklist, however this appeared to have been abandoned in favour of “trusting” employees to handle these interactions themselves. In ClothesCo and H&G, the reason appeared to be that customer-employee interactions were typically rather brief, largely limited to serving customers on the till or showing them where products were located.

## Explaining variations in literacy and numeracy use

The final part of this discussion focuses on explaining differences in the use of literacy and numeracy skills between the cases. While literacy and numeracy use was generally low, there were some important variations:

- Comparing the two sectors, literacy use tended to be higher and more consistent in the care than retail cases while numeracy use was generally more common in retail
- There was a greater degree of variation between the retail cases than the care cases
- Amongst the retail cases literacy use was somewhat higher in Department Store Home than Department Store Fashion which in turn had higher literacy use than either ClothesCo or H&G

Initially three themes, noted in the literature review, will be considered as potential explanations, “new” management practices (focussing mainly on the broad themes of discretion and involvement but also considering some specific practices), technology and product market strategy. Given the limited explanatory power of these themes, the discussion will widen out to identify other factors that contributed to higher or lower demand in the cases.

There is some evidence to suggest that greater discretion might be related to higher demand for literacy and numeracy use. Employees at Department Store appeared to have somewhat greater discretion than employees at ClothesCo and H&G and, in turn, skill use



was higher at Department Store. However, looking more closely at the Department Store case we can question whether there is a direct causal link between discretion and skill use. Firstly, there is the difficulty of skill use being higher in the Home department than the Fashion department despite both operating under the same conditions. Furthermore, one of the ideas underlying the link between discretion and skill use is that employees who have greater discretion will identify their own ways of working which will make better use of their skills (OECD 2012). Alternatively, in the absence of tight managerial control employees might have to understand and make better use of written and numerical information which otherwise would have been the preserve of managers. However, this did not appear to occur in Department Store. Rather than expanding their literacy and numeracy tasks “organically”, employees actually performed a wider range of managerially sanctioned literacy and numeracy tasks. To an extent both the moderately higher skill use and discretion at Department Store can be seen as stemming from the same source which was a general managerial philosophy of “trusting” employees and encouraging and supporting employee development. Employees were “trusted” to make judgements about how to use their time and offering discounts to customers in the same way that they were “trusted” to do things like communicate in writing with customers. However, while both may have a common cause, it was not obvious that higher discretion led directly to greater use of skills. Similarly, variation in the extent of employee involvement did not appear to coincide with variation in the demand for skills. Both Department Store and ClothesCo had formal employee representation practices but the literacy and numeracy demands were higher in the former and lower in the latter, furthermore skill use in ClothesCo was roughly equivalent to H&G, which had virtually no involvement practices. There were also differences in skill use between Department Store Home and Fashion, despite both operating under the same system of involvement. Perhaps one issue with these involvement practices was that they were both examples of “indirect” involvement (Boxall and Purcell 2010). Green’s (2012) argument for involvement contributing to higher skill demands is that greater employee involvement requires employees to work in different ways. However, the sorts of “indirect” involvement seen in the cases involves a small proportion of employees and has minimal impact on the everyday work of others.

Part of the reason why discretion and involvement are limited in the extent to which they can explain variations might be because the extent of discretion and involvement, even in cases like Department Store, was still relatively minimal. The freedom to choose between a range of prescribed tasks or to offer customers discounts at Department Store is not a particularly impressive level of discretion. The employee representation system at ClothesCo appeared to be mainly a forum for airing store level grievances rather than an opportunity for employees to contribute to broader business decision making. It is possible, therefore, that more developed arrangements might lead to higher levels of demand for skill. However, it is also possible to suggest that involvement and discretion might not have a generic impact on the demand for literacy and numeracy skill but may be more contingent on the kind of work being undertaken. One of the issues noted earlier is that, especially in retail, there seemed to be limited scope for expanding the literacy and numeracy skills use of frontline employees. As such, it is hard to see how greater discretion would lead to higher levels of skill use.

Moving beyond the general themes of involvement and discretion it is worth considering the impact of more specific practices on literacy and numeracy skill use. Pessimistic authors emphasise the importance of quality standards as a factor in increasing workplace textualisation. However, only one case, Southeast Home, held an external quality standard accreditation (ISO 9001). This appeared to have no impact on the extent of literacy demand for carers; the broader sectoral need to provide evidence of care to regulators swamped the impact of the ISO standard. Another issue noted in the literature review was layering. Again only one case, Department Store, had undergone this process. However, it did not appear that this had led to more substantial literacy or numeracy demands on frontline employees in general. Section Managers (the level below the managerial layer that was abolished and immediately above frontline employees) did take on additional responsibilities but the extent to which they in turn passed on responsibilities to frontline employees appeared to be limited.

The impact of technology was varied. There was some evidence of computer use adding to literacy requirements in retail. At Department Store, access to computers, e-mail and the integration of the organisations online and high street operations did mean that literacy use was somewhat higher than in other retail cases, although not all employees necessarily

made use of online product information and e-mail. There were differences between the Home and Fashion departments due to a combination of the kind of products sold and managerial preferences about communications. On the other hand, in care the use of computers in Southeast Home appeared to make very little difference to the literacy demands placed on carers. The differing impact of technology appeared to be because at Department Store the use of computers expanded tasks compared to the other retail sites, while the care case largely involved the computerization of existing tasks that were common to all care cases. There were also some examples of technology reducing demand for skills. Taking a long-term view, electronic tills had largely removed the need for employees to apply their numeracy skills when handling cash transactions. The introduction of electronic pricing guns at ClothesCo had led to a minor reduction in literacy skills, when reducing items on sale employees could simply scan the product barcode to find the sale price rather than looking the price up on a list of products.

Product market strategy appeared to have more of an impact in retail than care. Part of the reason for the greater literacy requirements in Department Store was that the firm's product market strategy emphasized employees having good product market knowledge, while also offering a wider range of services than other case studies, which contributed to higher literacy and numeracy requirements. For example, the postal returns service meant employees needed to write letters, greater level of after sales support meant that employees might have more contact over e-mail with customers and need to make use of written information to find replacement parts. The made to measure curtains service involved numeracy and the writing of notes about customer orders. However, there are limits to this. While the Fashion and Home Departments operated under the same product market strategy, the extent of literacy and numeracy demands varied. This suggests that other factors moderate the link between product market strategy and skill. For example, given the nature of the products on sale in Fashion, detailed product knowledge was less necessary – customers needed less information. After sales support was more prominent in the Home Department because there was more scope for products to break. Beyond this, even in the Home department it was not always the case that the extra level of service required more extensive use of literacy and numeracy skills. For example, employees did not always get their product knowledge from written product information. Thus while it is

possible to identify a link between skill demands and product market strategy, the link was rather loose.

By contrast, there was less evidence of product market strategy having an impact in the care sector. Southwest Home, which had above average fees for the local area, did not have substantially different literacy and numeracy demands to the other case studies. Part of the reason for this is that skills appeared less important to pursuing a quality product market strategy compared to the amenities offered by the home. When asked to describe what marked out his home from others in the local area, the Chairman of Southwest Home cited physical aspects of the home – the home was purpose built and offered Wi-Fi and other facilities. Furthermore, the managers of other homes noted that they had difficulties because their homes were older and did not offer the same level of amenities as other local homes.

Overall, the above factors offer only limited explanations for the differences in literacy and numeracy demand between the cases, other factors appear to be more important.

Regulation was a major factor in explaining the differences in literacy use between care and retail. Managers were clear that the additional levels of paperwork were driven by the need to demonstrate to external parties that care had been provided. It is important to note the significance of this for claims that literacy demands are growing in general. Some pessimistic authors do note regulation as a potential factor in the growing textualisation of the workplace and this can be seen in the wider context of “neo-liberal” approaches to the management of public services and the emergence of an “audit society” (Nikolaïdou and Karlsson 2012, Tusting 2009, 2010). However, while these processes are not unique to the care sector, neither are they universal. It seems likely that they will be most relevant to services that are either run directly or contracted out by the public sector. The retail cases illustrate these tendencies only in minor ways, for example, the occasional need to undertake health and safety or age protection training. Furthermore, in both the optimistic, pessimistic and broader “knowledge economy” arguments about rising demand for skills, the assertion is that employers voluntarily make changes which require higher levels of skill, to improve performance in a more demanding economic environment. However, the greater literacy demands in the care cases were largely imposed on organisations by external bodies.

Much of the variation between the cases was down to rather mundane and technical aspects of work. For example, because retail work involves the direct exchange of products for money, numeracy was more important in the retail cases. Retail workers have to deal with things like price reductions and handling money, whereas care workers do not. Equally, the nature of products sold explains some of the variation in both literacy and numeracy use in retail. At the most basic level, products such as fabric tend to require employees to make use of some degree of numeracy in relation to measurements. Additionally, many of the differences in literacy use between Department Store Home and Department Store Fashion were the result of differences in the products sold. Products that needed to be delivered, were more “unfamiliar” to customers or could break all created more scope for various kinds of reading and writing activities.

The need to communicate over time and distances was another factor that contributed to literacy. This could be seen in terms of Farrell’s (2006) contention that the workers are being drawn into ICT-enabled networks in which textualised knowledge is increasingly important. However, the reality in the cases was rather more mundane. The need to communicate over distance was largely limited to Department Store and tied to very specific tasks, for example undertaking postal returns or dealing with issues around customer deliveries. In H&G and ClothesCo, employees were exposed to some “global” texts, for example in the form of VM guides and bulletins. However, these were not a large part of work for shop floor employees. Employees outside of Department Store were largely “switched off” (Castells 2010) workers, they did not need to communicate with individuals or get information from beyond their physical location. Furthermore, even where communication over distance was important, there appeared to be a general preference for oral over written communication.

## Conclusion

This chapter has developed and expanded upon some of the themes developed in the two empirical chapters. It has made the case that it is legitimate to say that the demand for literacy and numeracy skills found in the case studies is limited. This low level of demand was identified as a key factor in explaining both the lack of significant difficulties with literacy or numeracy tasks in the case studies, as well as the lack of interest in using literacy

or numeracy as criteria in recruitment. There was also reasonable evidence to suggest that where problems with literacy and numeracy tasks did occur these could often be explained by factors other than a lack of literacy and numeracy skill on the part of employees. Combining these observations and the accounts of both managers and employees, it appeared that under-utilisation of skill was more common than skill deficiencies and this in turn suggested that employers were not obviously being “held back” by the low skills of employees.

This then leads on to the question of why exactly employers did not try to make more use of the skills of their employees. The simplest explanation was that there was not a great deal of need or scope to expand literacy and numeracy skill use. In fact, it was noted that expanding literacy and numeracy skill use could be detrimental to organisations if it took employees away from their main job tasks. This “lack of need” was also identified as an important reason why there was little evidence of a shift in the character of literacy or numeracy tasks towards either “symbolic analytic” work or controlling and monitoring employees as predicted by optimistic and pessimistic authors respectively.

Finally, the chapter took on the question of what contributed to higher or lower levels of skill demand. It was argued that the contribution of factors such as “new” management practices, product market strategies and the use of technology was variable – there was not clear evidence of a consistent impact across all cases. The analysis also drew attention to other factors that appeared to more consistently contribute to higher demand for skills.

Overall, the qualitative evidence fits most closely with more “sceptical” accounts of the demand for skill, questioning the notion that literacy and numeracy are becoming ever more central to work at all levels of the labour market. It is also at odds with policy narratives about the scale and impact of “deficiencies” in literacy and numeracy skills. However, to enhance our confidence in these findings, it is important to look at the broader picture provided by the SES, which is where this research goes next.

# 7 Quantitative analysis

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## Introduction

The qualitative section of this research focussed on providing an in-depth picture of literacy and numeracy use in two key low paying sectors. The quantitative section draws back to give a broader view of literacy and numeracy use in general. The chapter is divided into two parts. The first presents data from the SES to look at broad patterns in the demand for literacy and numeracy skills in low paid and non-low paid occupations. The second provides a multivariate analysis of the relationship between three key factors, involvement, discretion and computer use and literacy and numeracy use. The first section provides evidence on the overall level of literacy and numeracy use and the extent of change over the four waves of the survey. This is important in the context of narratives discussed in the literature review which suggest that literacy and numeracy skills are both essential and becoming increasingly important in the workplace. In doing so, the section covers both the overall importance of these skills and the specific tasks that are seen to be important. The section also considers the relative importance of literacy and numeracy skills compared to other “generic” skills.

The multivariate analysis examines relationships between some of the key factors featuring in arguments about the growing importance of literacy and numeracy skill, specifically the association between literacy and numeracy skill use and discretion, involvement and computer use. Following each of the sections, the analysis draws comparisons between the quantitative and qualitative findings. As noted in the methodology chapter, while these comparisons are somewhat imprecise they are nonetheless useful in making judgements about the wider applicability of the qualitative findings.

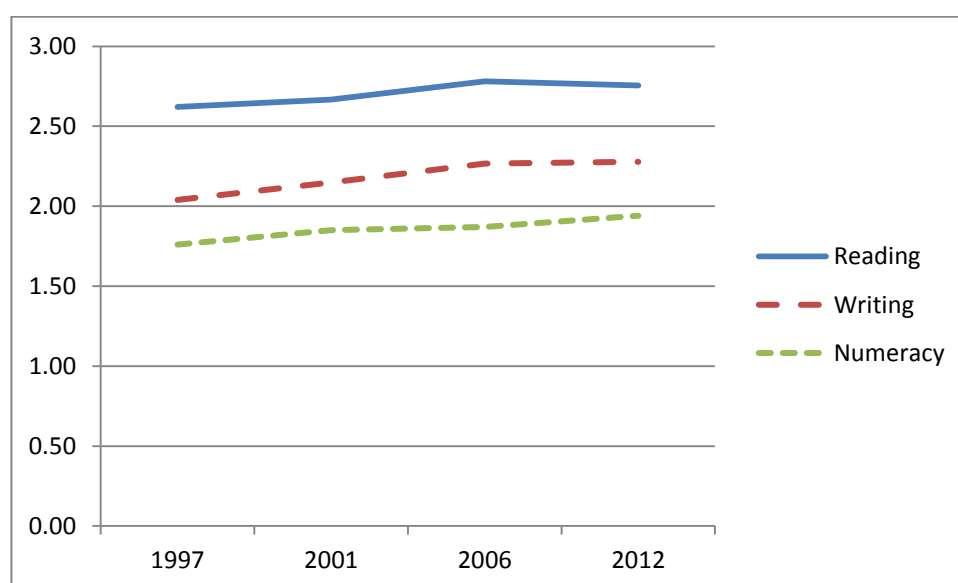
## Levels and trends in literacy and numeracy use

This section presents quantitative evidence from the SES on the importance of literacy and numeracy tasks in low paid and non-low paid occupations. It seeks to assess the degree to which the importance of these tasks has changed over the last 15 years and the extent of their current importance in the workplace. These results must be treated with some degree

of caution. Confidence intervals for percentages can be quite wide (up to plus or minus 5 percentage points) and as such should be treated as indicative rather than exact estimates. Full tables including confidence intervals and cell sizes are included in the appendix. As noted in the methodology chapter, due to the inapplicability of classic hypothesis tests to weighted survey data the statistical significance of changes in means and proportions over time is assessed by producing t-statistics, p-values and confidence intervals for linear combinations of estimates using STATA's "lincom" command. For means, this procedure is essentially equivalent to a t-test, while for proportions significance is assessed by considering whether the 90%, 95% or 99% confidence intervals include zero – where they do not the difference between the proportions is considered statistically significant from zero. Due to difficulties with precision noted above, all proportions are rounded to whole numbers. As a result of this rounding, the estimates in the tables do not always sum exactly.

To begin we can consider the overall trends in the use of reading, writing and numeracy skills between 1997 and 2012. Figure 1 shows the change in the three indices for all employees over this period. It suggests a general upwards trend in the use of skills, for reading and writing this was the case from 1997 to 2006 with a slight levelling off between 2006 and 2012 while numeracy saw stronger growth from 1997 to 2001 and 2006 to 2012. Across all years, reading appears to be more common than either writing or numeracy, although the index showing the largest increase was writing.

**Figure 1 Index scores all employees 1997-2012**



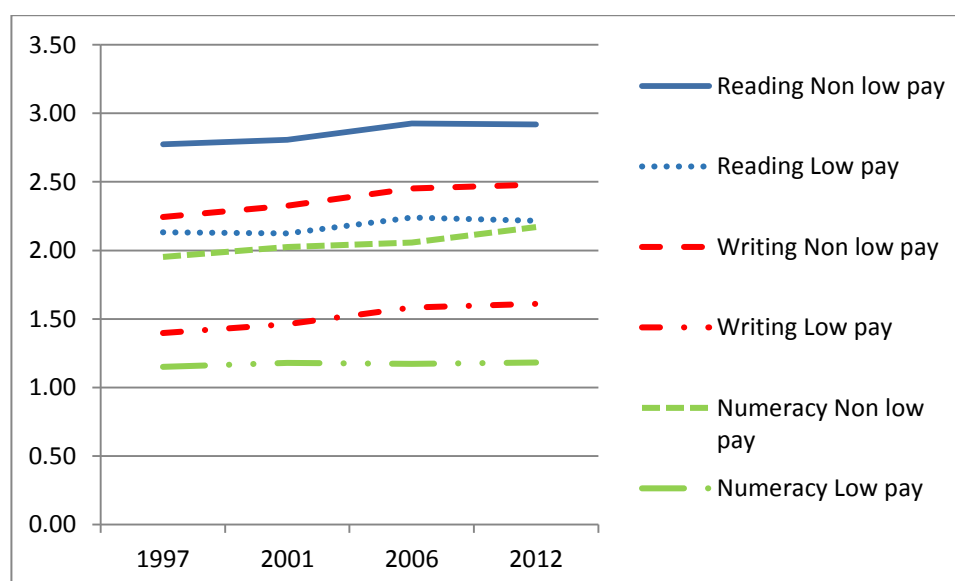


**Table 8 Index scores all employees 1997-2012 (\*= $p<0.10$ , \*\*= $p<0.05$ , \*\*\*= $p<0.01$ )**

	1997	2001	2006	2012	Change 1997-2012
Reading	2.62	2.67	2.78	2.76	0.14**
Writing	2.04	2.15	2.27	2.28	0.24**
Numeracy	1.76	1.85	1.87	1.94	0.18**

Figure 2 and Table 9 compare index scores between employees in low paying and non-low paying occupations. Here a slightly different picture emerges. As would be expected, employees in low paying occupations make less frequent use of both literacy and numeracy skills than their non-low paid counterparts. However, in addition to this the change in index scores is different. While there was statistically significant growth in scores across all three indices for employees in non-low paying occupations, in low paying occupations there were only small and non-significant increases in scores in the reading and numeracy indices. The difference in the growth in the numeracy index is striking, for employees in non-low paying occupations the index score grew substantially while for those in low paying occupations the trend was essentially flat. On the other hand, the score on the writing index showed a similar increase for both low paid and non-low paid occupations.

**Figure 2 Index scores split by low paid and non-low paid occupations 1997-2012**

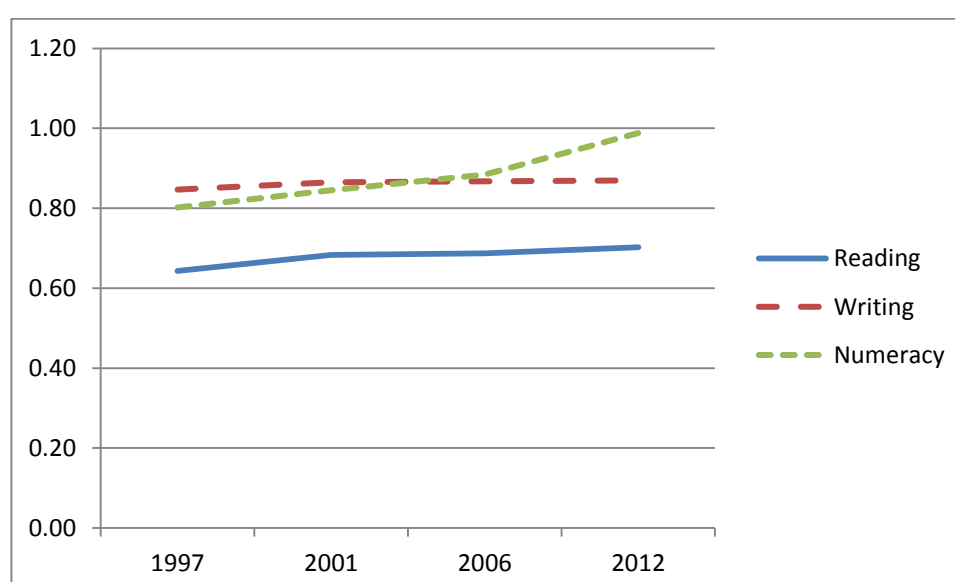


**Table 9 Index scores split by low paid and non-low paid occupations 1997-2012 (\*= $\leq 0.1$ , \*\*= $p < 0.05$ , \*\*\*= $p < 0.01$ )**

		1997	2001	2006	2012	Change 1997-2012
Reading	Non low pay	2.78	2.81	2.93	2.92	0.14***
	Low pay	2.13	2.12	2.24	2.22	0.08
Writing	Non low pay	2.24	2.33	2.45	2.48	0.24***
	Low pay	1.40	1.46	1.58	1.61	0.21**
Numeracy	Non low pay	1.95	2.02	2.06	2.17	0.22***
	Low pay	1.15	1.18	1.17	1.18	0.03

Figure 3 and Table 10 look directly at the difference between index scores for low paid and non-low paid occupations, they confirm that the main area of divergence over the period of 1997-2012 was numeracy. While the difference between scores for reading and writing grew slightly between 1997 and 2012, these changes were not statistically significant. By contrast, there was a substantial growth in the difference between low paid and non-low paid occupations in the importance of numeracy tasks.

**Figure 3 Difference in index scores between low paid and non-low paid occupations 1997-2012**



**Table 10 Difference in index scores between low paid and non-low paid occupations 1997 2012 (\*=<0.1, \*\*=p<0.05, \*\*\*=p<0.01)**

	1997	2001	2006	2012	Change 1997-2012
Reading	0.64	0.68	0.69	0.70	0.06
Writing	0.85	0.87	0.87	0.87	0.02
Numeracy	0.80	0.84	0.88	0.99	0.19**

Three conclusions can be drawn from the indices of reading, writing and numeracy use. Firstly, in terms of the relative importance of the three sets of tasks, reading appears to be the most important, followed by writing and then numeracy. Secondly, as would be expected, tasks involving reading, writing and numeracy were less important in low paying occupations with the largest gap for numeracy and smallest for reading. Thirdly, while there is evidence of a general growth in importance of literacy and numeracy tasks, this growth was generally stronger for employees in non-low paying occupations. At the very least it can be said that there is no evidence of low-paying occupations “catching up” in the importance of literacy and numeracy tasks, the extent to which there is a growing divergence between low paying and non-low paying occupations is mixed. While there is evidence of divergence in terms of numeracy, this was not the case for reading or writing.

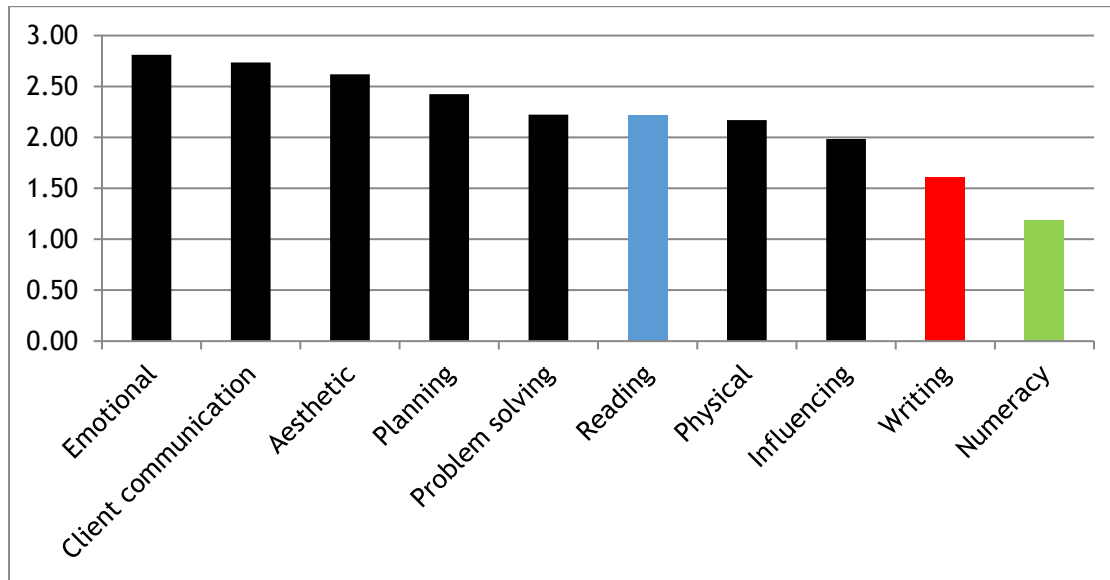
To provide some additional context, we can compare the literacy and numeracy index scores to those for other “generic” skills indices available from the SES, developed by Felstead et al (2007). These other indices are aesthetic, client communication, emotional, influencing, physical, planning and problem solving skills. These indices are created in a similar manner to the reading, writing and numeracy indices; Table 11 provides brief descriptions of what each index measures (For more detail see Felstead et al 2007).

**Table 11 Description of generic skills indices**

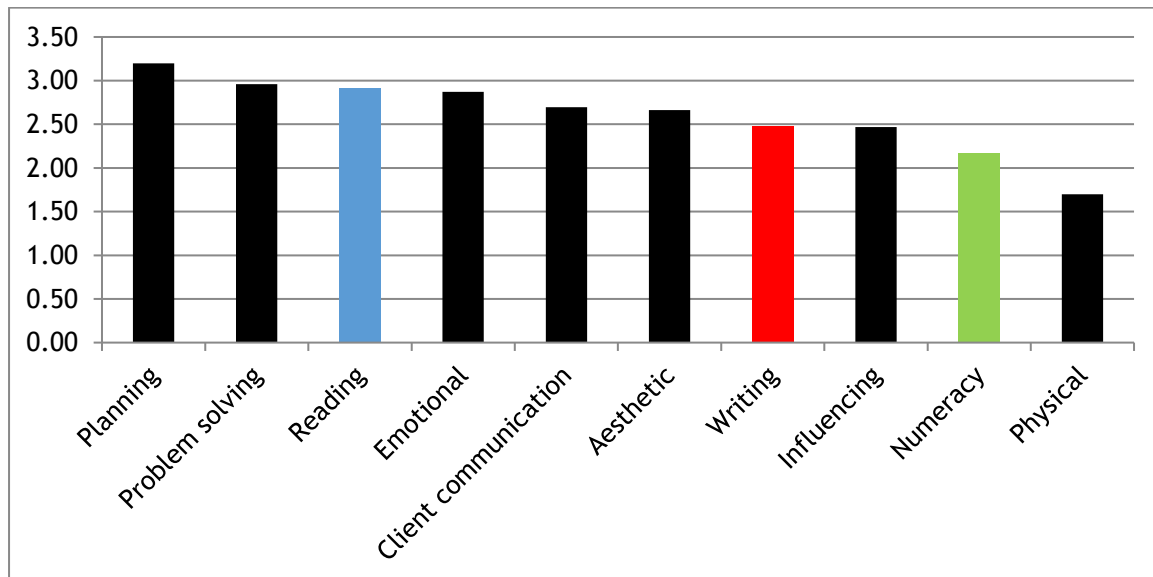
Index	Description
Aesthetic	The importance of looking and sounding “right”
Client communication	The importance of verbal communication with clients/customers and knowledge of products and services
Emotional	The importance of managing one’s own feelings and the feelings of others
Influencing	The importance of various forms of professional communication.
Physical	The importance of physical strength and manual dexterity
Planning	The importance of planning one’s own time and the time of others
Problem solving	The importance of identifying and solving problems

Figure 4 and 5 show the 2012 mean scores for each of the indices for employees in low paid and non-low paid occupations respectively. Table 12 shows the differences in mean scores between reading, writing and numeracy and each of the other nine indices.

**Figure 4 Mean scores for generic skills indices for employees in low paying occupations 2012**



**Figure 5 Mean scores for generic skills indices for employees in non- low paying occupations 2012**



**Table 12 Difference in mean generic skill index scores 2012 (\* = $p<0.1$ , \*\*= $p<0.05$ , \*\*\* $p<0.01$ )**

	Low paid occupations			Non-low paid occupations		
	Reading	Writing	Numeracy	Reading	Writing	Numeracy
Aesthetic	-0.40***	-1.01***	-1.44***	0.26***	-0.18***	-0.49***
Client communication	-0.52***	-1.12***	-1.55***	0.22***	-0.22***	-0.53***
Emotional	-0.60***	-1.20***	-1.63***	0.05	-0.39***	-0.70***
Influencing	0.23***	-0.38***	-0.80***	0.45***	0.01	-0.30***
Physical	0.05	-0.56***	-0.99***	1.22***	0.78***	0.47***
Planning	-0.21***	-0.81***	-1.24***	-0.28***	-0.72***	-1.03***
Problem solving	-0.01	-0.61***	-1.04***	-0.04	-0.48***	-0.79***
Reading	n/a	-0.61***	-1.03***	n/a	-0.44***	-0.75***
Writing	0.61**	n/a	-0.43**	0.44***	n/a	-0.31***
Numeracy	1.03***	0.43***	n/a	0.75***	0.31***	n/a

Amongst employees in low paid occupations, writing and numeracy tasks have the second lowest and lowest scores of all the indices. Reading is around the middle, with a lower score than aesthetic skills, client communication skills, emotional skills and planning skills, a higher score than influencing skills, writing and numeracy. The difference between physical skills, problem solving skills and reading is not statistically significant. The main difference for employees in non-low paid occupations is that reading ranks much higher in importance, with an index score that is only lower than planning skills. Writing and numeracy are similarly low in importance relative to other skills for employees in non-low paying occupations, both have higher index scores than physical skills and the difference between writing and influencing skills is non-significant.

These tables demonstrate that for employees in low paid occupations, literacy and numeracy tasks tend to be less important than other “generic” skills, especially numeracy and writing. It is notable that the kinds of “skill” which employees in low paying occupations

report as most important are “soft skills” associated with interactive service work – emotional, aesthetic and customer interaction “skills”.

It is also useful to look at the percentages of employees undertaking the different tasks that make up the indices. For the sake of simplicity, only the percentages for 1997 and 2012 are presented. Table 13 shows the percentages for all employees. These largely confirm Green’s (2012) finding that within each set of tasks (with the exception of writing) the more “basic” tasks tend to be more common but there has been more substantial growth in more “complex” tasks, with large increases in the importance of writing long documents and advanced maths and statistics.

**Table 13 Percentage describing task as fairly/very important or essential 1997 & 2012**  
(\*=90% CI, \*\*=95% CI, \*\*\*=99% CI)

	1997	2012	Change 1997-2012
Reading forms	87%	89%	1
Reading short documents	82%	86%	3***
Reading long documents	67%	70%	3**
Writing forms	72%	74%	2
Writing short documents	68%	75%	7***
Writing long documents	45%	53%	9***
Basic calculations	69%	70%	2
Percentages decimals fractions	53%	57%	4**
Advanced maths	29%	38%	9***

Table 14 shows these results split by low paid and non-low paid occupations. Amongst employees in low paid occupations, there were no statistically significant increases in the proportions rating any of the reading tasks as important. This is consistent with the findings from the mean index scores. As noted above, the index score for writing in low paid occupations showed a significant increase of similar size for employees in both low paid and non-low paid occupations. Looking at the individual tasks shows that for both employees in low-paid and non-low paid occupations the nature of the change was similar, with large

statistically significant increases in the proportions rating writing long documents as important to their job.

**Table 14 Percentage describing task as fairly/very important or essential split by low paid & non-low paid occupations 1997 & 2012 (\*=90% CI, \*\*=95% CI, \*\*\*=99% CI)**

		1997	2012	Change 1997-2012
Reading forms	Non low pay	91%	91%	0
	Low pay	75%	79%	4
Reading short documents	Non low pay	87%	91%	4***
	Low pay	68%	69%	0
Reading long documents	Non low pay	73%	77%	4**
	Low pay	48%	49%	0
Writing forms	Non low pay	77%	79%	2
	Low pay	57%	58%	1
Writing short documents	Non low pay	75%	83%	7***
	Low pay	43%	48%	5
Writing long documents	Non low pay	52%	60%	8***
	Low pay	22%	31%	8***
Calculations	Non low pay	74%	76%	2
	Low pay	50%	50%	0
Percentages decimals fractions	Non low pay	59%	65%	5***
	Low pay	32%	31%	-1
Advanced maths/stats	Non low pay	34%	44%	10***
	Low pay	14%	20%	6**

The findings for numeracy are worth looking at in a little more detail. Table 14 shows no significant increase for basic calculations and a non-significant decrease in the importance of calculations involving percentages, decimals and fractions. However, looking only at those employees who state that a task is either very important or essential to their work (Table 15), we see large falls for both basic calculations and calculations involving



percentages, decimals and fractions amongst employees in low paid occupations (although in the latter case this is only significant at the 10% level). Focusing only on employees stating a task is very important or essential, makes little difference to the pattern of change for non-low paid employees. In other words, although it cannot be said that these tasks are becoming entirely unimportant in low paid occupations, there is some suggestion that their importance is declining somewhat. The increase in employees in low paid occupations reporting that advanced maths or statistics is important to their work is perhaps a little surprising and raises questions about what precisely employees are categorising as “advanced maths”. Two further points about this finding should be noted. Firstly, if the variable is recoded to include only those who state that the task is very important or essential to their work, the increase is much smaller and non-significant. Again doing this makes little difference for employees in non-low-paying occupations, the percentage point change is slightly smaller but still fairly large and significant. Additionally, even with this rise, the proportion of employees in low paid occupations stating that advanced maths is important in 2012 is low.

**Table 15 Percentage describing task as very important or essential split by low paid and non-low paid occupations 1997 & 2012 (\*=90% CI, \*\*=95% CI, \*\*\*=99% CI)**

		1997	2012	Change 1997-2012
Calculations	Non low pay	55%	58%	3
	Low pay	37%	30%	-7**
Percentages decimals fractions	Non low pay	43%	47%	4**
	Low pay	21%	16%	-4*
Advanced maths/stats	Non low pay	21%	29%	9**
	Low pay	9%	9%	1

Table 15 also gives a clearer sense of the extent to which tasks involving literacy and numeracy are relatively rare in low paying occupations. With the exception of advanced maths and statistics, in 2012 each of the tasks was ranked as important by well over half of employees in non-low paid occupations. However, for employees in low paying occupations, this was only the case for reading and writing forms and reading short documents. In all other cases tasks were important for around half or less than half of employees in low paid

occupations. Notably writing long documents and calculations involving percentages, decimals and fractions were important for around a third of low paid employees while advanced maths and statistics were important for only a fifth of these employees.

Tables 16 and 17 assess the extent of low literacy and numeracy skill use based on a measure of limited or no skill. This is defined as the proportion of employees who report that all tasks within a category (e.g. reading, writing and numeracy) are either not at all or not very important.

**Table 16 Percentage of employees reporting all tasks as not at all or not very important 1997-2012 text (\*=90% CI, \*\*=95% CI, \*\*\*=99% CI)**

	1997	2001	2006	2012	Change 1997-2012
Reading	9%	7%	7%	7%	-2**
Writing	21%	19%	17%	17%	-5***
Numeracy	29%	28%	29%	28%	-2

Table 16 shows that some degree of reading is important for the vast majority of the workforce and the proportion of employees making limited or no use of reading at work has fallen since 1997. While the proportion of the workforce making limited or no use of writing is higher, it has also fallen at a much faster rate. However, the proportion of employees making limited use of numeracy remained relatively high across the period. Over a quarter of all employees made no or limited use of numeracy in 2012 and the decrease between 1997 and 2012 was not statistically significant.

**Table 17 Percentage of employees reporting all tasks as not at all or not very important split by low paid and non-low paid occupations 1997-2012 text (\*=90% CI, \*\*=95% CI, \*\*\*=99% CI)**

		1997	2001	2006	2012	Change 1997-2012
Reading	Non low pay	n/a	4%	4%	n/a	n/a
	Low pay	20%	18%	16%	n/a	n/a
Writing	Non low pay	15%	14%	12%	10%	-5***
	Low pay	39%	37%	36%	37%	-3
Numeracy	Non low pay	23%	23%	24%	22%	-1
	Low pay	49%	48%	48%	46%	-3

Table 17 splits these figures by low paid and non-low paid occupations. The figures for reading are difficult to interpret because of the small cell sizes, in 1997 and 2012 the cell size for employees in non-low paid occupations is under 100 and the same is true for low paid employees in 2012. However, at the 95% confidence level the estimates are 32% to 42% for writing and 41% to 52% for numeracy. At the very least, this suggests that a substantial minority of employees in low paying occupations make little or no use of these skills.

## Discussion

A number of conclusions can be drawn from the preceding analysis. While the importance of reading, writing and numeracy appears to have grown for employees in non-low paying occupations, the same is only unambiguously the case for writing for those in low paying occupations. Indeed, there appears to be a growing gap between low paid and non-low paid occupations in terms of the importance of numeracy and some evidence that certain kinds of “basic” numeracy task are becoming less important in low paid occupations. The tasks that appear to have become more important are typically more formally complex tasks, even for those in low paid occupations. However, the most common tasks, especially for those in low paid occupations, are those that are formally simpler. In low paid occupations in 2012, only reading forms and short documents and writing forms were regarded as important by clear majorities of employees. Furthermore, substantial minorities of low paid

employees reported that none of the writing and numeracy tasks included in the SES were important to their work. In a similar vein, in 2012 writing and numeracy were by some distance the least important “generic” skills in low paid occupations, with reading being of middling importance.

These results undermine the notion, espoused by policy makers, that literacy and numeracy skills are central to jobs across the economy. While there appears to be some support for the notion that literacy and numeracy skills have become more important in the workplace generally, there is less evidence of this in occupations at the bottom end of the labour market. The data suggests that demand for literacy and numeracy skills is relatively weak in low paid occupations.

In relation to numeracy, it could be argued that the tasks covered by the SES are somewhat limited and miss some of the ways employees might need to make use of numeracy skills. The questions focus on the need to perform calculations rather than on other numerate tasks such as understanding information on charts, tables and graphs. For example, in the qualitative work it was noted that some employees at Department Store used sales figures to inform their work. Conceivably, the SES could therefore understate the extent to which employees are required to undertake tasks related to numeracy. However, when considering the implications of this evidence for policy it should be noted that policy makers often define numeracy in terms of “basic number skills” (Noss 1998), in other words the SES numeracy tasks cover what policy makers typically mean when they talk about numeracy.

In addition to the claim that literacy and numeracy skills are widely demanded across the labour market, a second element of the policy narrative is that it is relatively common for employees to lack the necessary skills to undertake these tasks. As the data above only provide information on what employees say they do at work, it is not possible to say anything very substantial about the extent to which employees lack the necessary skills to perform literacy and numeracy tasks at work. However, the data suggests that reading tasks are more widespread and important than either writing or numeracy tasks. It is worth putting this in the context of surveys of skills which typically find that low levels of numeracy skills are more common than low levels of literacy skills (Bynner and Parsons 2006, Harding et al 2012). Furthermore, where survey respondents are asked to rate their own skills, it is much more common for people to identify difficulties with writing (specifically spelling

certain words) and numeracy than with reading (Bynner and Parsons 2006). In other words, the skills that are most commonly problematic are less widely used in the workplace. There is not enough evidence available here to suggest that these two observations might be connected (e.g. whether the lower use of these skills in the job contributes to lower levels of skill in the individual). However, it is useful to bear this in mind when thinking about the potential impacts of low skill levels, if the skills which are most “lacking” in the population are used less often in the workplace this “lack” may be less significant than is imagined.

In terms of the types of literacy and numeracy tasks that have grown in importance over the last 15 years, the evidence is more supportive of the optimistic notion that there is a shift towards “higher level” skill use. By extension, the pessimistic descriptions of a proliferation of basic form filling appear less plausible. Where growth in importance occurred it tended to be in the more “complex” tasks such as reading and writing long documents. In relation to writing and numeracy this is true for employees in both low paid and non-low paid occupations. Notably, the findings that advanced maths and statistics have grown in importance suggests support for the contention of Hoyles et al (2010) that there is a growing need for employees to be able to understand the data produced by complex mathematical models.

However, there are reasons to be cautious about this conclusion. Firstly, it is not clear that growth in the importance of literacy skills is an ongoing trend, where index scores for reading and writing did increase the majority of this growth came between 1997 and 2006. There was less substantial growth between 2006 and 2012 (although this is not the case for numeracy). Secondly the period covered by the SES may not match precisely with the arguments of the pessimistic narrative, if the data stretched back further it may show larger increases. Thirdly, the nature of the questions, focussing on “importance” rather than frequency may complicate matters further. It is conceivable that there may have been a proliferation in the amount of more “basic” tasks but that these are not regarded as “important” by employees. Furthermore, to reiterate a point made in the methodology section, we cannot be certain that the different task levels covered by the SES definitively capture increasingly “complex” tasks. For example, inputting onto an unfamiliar form may be more complex than writing a short routine letter.

The decline in the proportion of employees in low paid occupations saying that basic calculations and calculations involving proportions are essential or very important in their work is consistent with the arguments of Marr and Hagston (2007a) that “routine” calculations will become less important due to the growing importance of technology. However, it is difficult to say from the data whether the decline in the importance of these routine calculations is matched by a rise in the need for other kinds of numeracy skills, for example understanding and using data, which Marr and Hagston predict.

However, if we look at the levels of task which are important in 2012, there appears to be more support for the pessimistic notion that, particularly for employees in low paid occupations, the kinds of literacy tasks undertaken tend towards the “basic” end of the spectrum. The main types of task important for employees in low paid occupations are reading forms and short documents and writing forms. While the importance of more “complex” tasks has grown, these tasks remain less important for large proportions of the workforce, especially for employees in low paid occupations. Although there appears to have been substantial growth in both writing long documents and advanced maths in low paid occupations, this is from a very low base and it remains the case that substantial majorities of employees these occupations do not regard these tasks as important to their work.

A final point to note is that, in the absence of broader information about the nature of the tasks that employees regard as important, it is not possible to say whether the kinds of tasks employees undertake have the character ascribed to them by optimistic or pessimistic authors. Optimists tend to argue that rising demand for literacy and numeracy skills is associated with increasing demands for employees to “think” at work, that texts and numerical data are used to make decisions, solve problems and improve processes at work. On the other hand, pessimistic authors suggest that literacy tasks in the workplace are increasingly associated with managerial attempts to control the work of employees. As the data does not tell us about the specific conditions under which tasks are undertaken, we cannot tell which of these views is more accurate.

## Multivariate analysis

The aim of the multivariate analysis is to see whether the types of factors identified in the literature as being associated with higher levels of literacy and numeracy demand apply in low paid occupations. As discussed in the methodology chapter, three variables of interest have been chosen, discretion, involvement and computer use. Each of these variables is then interacted with a dummy variable for low paid occupations. The first coefficient in each category applies when the dummy variable for low paid occupation equals zero, in other words this is the coefficient for employees in non-low paid occupations. The interaction term shows the difference between the slopes (for the two continuous variables) or the intercept points (for the two sets of dummy variables). Consequently, the slope or intercept point for employees in low paid occupations is found by adding the second coefficient to the first. In each of the three regressions, 756 observations are missing (5.3% of the total sample) full details of the missing data and descriptive statistics for the variables included in the models can be found in the Appendix.

Table 18 OLS regression results (\*=p<0.1 \*\*=p<0.05 \*\*\*=p<0.01)

	Reading	Writing	Numeracy
Low paid occupations	-0.40*** (0.08)	-0.07 (0.07)	-0.19*** (0.07)
Discretion	0.15*** (0.02)	0.22*** (0.02)	0.15*** (0.02)
Discretion*low paid occupations	0.04 (0.03)	-0.01 (0.03)	-0.03 (0.03)
Involvement	0.82*** (0.04)	0.83*** (0.04)	0.29*** (0.04)
Involvement*low paid occupations	0.61*** (0.07)	0.36*** (0.08)	0.15** (0.08)
Low computer use	0.52*** (0.03)	0.54*** (0.03)	0.68*** (0.04)
High computer use	0.57*** (0.04)	0.65*** (0.04)	1.19*** (0.04)
Low computer use*low paid occupations	-0.10* (0.05)	-0.14*** (0.05)	-0.16*** (0.05)
High computer use*low paid occupations	0.10 (0.09)	0.14 (0.11)	-0.20* (0.11)
Constant	1.59*** (0.06)	0.83*** (0.07)	0.29*** (0.08)
Observations	13622	13622	13622
R2	0.33	0.40	0.29

We can begin by describing the results. The main coefficients for discretion are positive and significant for reading, writing and numeracy suggesting that higher levels of discretion are associated with higher levels of skill use in general. However, these coefficients are amongst the smallest in the model, although with a slightly higher coefficient for writing. The



interaction coefficients are all small and non-significant, suggesting that the association between skill use and discretion is the same in both low paid and non-low paid occupations.

The main coefficients for involvement are also positive and significant across all three skill measures, however the coefficients are notably larger than for discretion. Reading and writing return large coefficients, while the coefficient for numeracy is substantially smaller (although still larger than the equivalent for discretion). Furthermore, the interaction coefficients are also all positive and significant, suggesting that involvement practices are more strongly associated with skills use in low paying occupations than non-low paying occupations. The size of the interaction coefficient is particularly large for reading and smallest for numeracy.

Finally, both high and low level computing is associated with higher literacy and numeracy skill use, in other words employees who make use of computers at either a simple or complex level typically also make more substantial use of literacy and numeracy skills. Here the coefficients are larger for numeracy than literacy. It is also notable that the difference between the size of the low and high computing coefficients is largest for numeracy. The interaction coefficient for low-level computer use for all three measures of skill is significant and negative (although in the case of reading this is only at the 90% level). This suggests that the association between low-level computer use and skill use is slightly weaker in low paid occupations than non-low paid occupations. It is important to note that this does not mean that low-level computer use is associated with lower level skill use overall. Employees in low paid occupations who use computers still make greater use of literacy and numeracy skills than employees in low paid occupations who do not use computers.

## Discussion

One way of looking at these results is to see them as providing robust support for optimistic accounts of the demand for skill. The positive coefficients for discretion suggest support for the notion that where employees have jobs that afford them more control, they make more substantial use of literacy and numeracy skills. Employees might use this greater autonomy to identify better ways of making use of their skills and to expand the range of tasks they undertake (OECD 2012). Alternatively, employees might need to draw more on texts and data in order to understand and solve problems in their job in the absence of strict instructions from managers (Mikulecky & Kirkley 1998, Joliffe 1997).

Furthermore, this relationship appears to hold for both low paid and non-low paid occupations. This provides less support for the pessimistic contention that literacy tasks are linked to greater levels of managerial control over employees particularly at the lower end of the labour market. If the pessimistic argument were supported, we would expect to find a negative relationship between the literacy variables and discretion and we would expect the interaction term to be strongly negative. It should, however, be noted that discretion produces the smallest coefficients of all the variables of interest. As such, if it can be argued that there is a relationship between discretion and literacy and numeracy skill used, it is a relatively muted one.

The results for involvement can be seen in terms of optimistic ideas about the impact of new management practices, for example Green's (2012) theory that greater involvement requires employees to communicate horizontally and share ideas and information. It is also notable that qualitative studies of workplaces demonstrate both the use of documentation and data as part of these practices (e.g. Hart-Landsberg & Reder 1997, Farrell 2006, Hoyles et al 2010). We might explain the smaller coefficient for numeracy in terms of the idea that numeracy is less "generic" than literacy. Where data is an important part of an organisation's business, it seems plausible that involvement practices would mean employees making more use of numeracy skills (as in the case studies of Hoyles et al 2010). However, it is possible to suggest that numerical data may not be central to work processes in all contexts. On the other hand, literacy tasks might be applicable in a broader range of workplaces. Seen from this viewpoint the strong positive interaction coefficients are interesting. In effect, this suggests that involvement practices have a stronger upskilling effect for employees in low paid occupations than their counterparts in non-low paid occupations. This is certainly plausible, if we assume that low paid occupations have lower "normal" demand for literacy and numeracy skills

In addition, the findings support the notion that computer use contributes more to upskilling than deskilling. Optimistic literacy and numeracy authors note the way that the use of computers potentially provides employees with access to a great deal more information, both written and numerical, increasing demand for both literacy and numeracy skills. However, it is also posited that technology may have a deskilling effect, where it is used to substitute for specific tasks or even entire jobs. Some versions of the skill biased

technological change argument suggest that this process of deskilling might be most evident in more routine and low skilled occupations of the type that are typically relatively low paid. The evidence here suggests, however, that even in low paid occupations computer use is associated with higher levels of literacy and numeracy use. This suggests support for the optimistic notion that, in general, the use of computers expands the range of both written and numerical information available to employees, even for those in low paid occupations.

The relationship between low-level computer use and demand for skills appears to be somewhat weaker for employees in low paying occupations. However, this is probably due to basic computer use being “more” basic in low paid occupations than in non-low paid occupations. As noted previously, the original variable which was used to create the computer use dummy variables categorised respondents into four different groups (straightforward, moderate, complex and advanced) which were then combined. Looking at the original variable, a higher proportion of employees in low paid occupations are found in the “straightforward” category than “moderate” and the situation is reversed for employees in non-low paid occupations.

However, there are good reasons to be cautious about these conclusions. It is possible to suggest an alternative interpretation of the involvement coefficients, more in line with the pessimistic narrative. For the most part, the items included in the involvement index are practices. The presence of practices does not necessarily tell us a great deal about their actual impact on the workplace (Wilkinson and Dundon 2010). One of the implications of the pessimistic perspective is that formal involvement practices do not guarantee actual employee involvement (Folinsbee 2004). Thus, it is difficult to say whether the apparent strong association between involvement and skill use is a product of employees having to work in different ways. An alternative explanation, closer to the pessimistic account, might be that involvement practices is an indicator of a general higher level of formality in management practices which brings with it a greater level of documentation. What we might be seeing is bureaucratic expansion rather than the impact of new ways of working. It is perhaps worth noting that this is certainly consistent with the pattern of the coefficients, with larger coefficients for literacy skills) than numeracy – consistent with the idea of ballooning documentation associated with more formal management practices.

Furthermore, these results demonstrate associations rather than direct causal relationships. There is always the possibility that associations represent reverse causation or are caused by an additional variable not included in the model. This latter issue is worth raising in relation to discretion. The qualitative work found limited evidence of a direct “organic” relationship between discretion and skill use. Reverse causation might be a particular issue in the case of computer use. The qualitative work highlighted the idea that certain literacy and numeracy tasks might be “computerised”, in other words computers were introduced where literacy and numeracy use were already high. Rather than expanding literacy and numeracy tasks, the association between computer and skill use might simply reflect the idea that computers are more useful in environments where literacy and numeracy use are already important. It is worth noting that this process might also hide small amounts of deskilling. Computerised equipment might make certain tasks less complex or reduce the need for certain kinds of skill while the overall importance of literacy and numeracy remains high. For example, the computers at Southeast Home allowed employees to use a spellchecker and copy and paste text from one entry to another. The tills in retail outlets had eliminated the need for employees to perform calculations related to transactions but numeracy remained generally more important in retail than care.

In addition, while the evidence above suggests a general association between literacy and numeracy and the kinds of factors identified as important by optimistic authors, it does not provide confirmation for the broader optimistic narrative that “new” work practices are becoming more widespread and therefore leading to increased demands for literacy and numeracy skill. The analysis simply suggests that where these practices are present, demand for literacy and numeracy skills is likely to be higher. In addition, while the analysis suggests an association between workplace characteristics and the importance of literacy and numeracy skills, it does not enable us to understand the “level” or “complexity” of the tasks required. A part of the optimistic narrative is the notion that the kinds of workplace practices included in this analysis lead to “higher level” or more “complex” skills demand. However, on their own, the associations identified above cannot be taken as support for arguments that suggest that these practices require “higher level” skills.

## Comparison with the qualitative results

Broadly speaking, the quantitative evidence supports the qualitative evidence in terms of the extent and types of skills used in low paid work. In both the care and retail case studies literacy tasks tended to be limited to dealing with forms and some short documents. The survey data suggests that reading and writing forms notices and signs and reading short documents tend to be the most common tasks for employees in low paid occupations and the only tasks that are important for a clear majority of these employees. The survey data also suggests that reading is generally more common than writing. This was less obviously the case in care, where the majority of the documents encountered by staff on a daily basis required employees to write information as well as read. However, in retail, reading was more common than writing for most staff outside of Department Store. For most employees in ClothesCo and H&G, writing was rare, irregular and limited to filling in forms. The quantitative evidence also supports the case study finding of low numeracy use in low paid occupations.

A further point to highlight is the importance of literacy and numeracy relative to other “skills” used in low paid work. The quantitative evidence suggests that interactive or soft “skills” tend to be the most important generic skills for employees in low paying occupations and considerably more important than literacy and numeracy. Again, this tallies with the findings from the case studies. In both care and retail, managers emphasised the importance of interactive skills over literacy and numeracy skills. Furthermore, it was clearly the case that employees in care and retail spent much more time interacting with residents and customers than they did carrying out literacy and numeracy tasks.

Comparing the depictions of change in skill use between the two sets of data is complicated further by the fact that the qualitative information on change depended on the memory of employees who has often been in their jobs a relatively short time. With the exception of some employees and managers in the care sector, few of the interviewees had been working in the retail or care sectors for the 15 years covered by the SES. The findings from the qualitative evidence suggested growth in the importance of paperwork in the care sector over an extended period and relative stability in the retail sector. The quantitative evidence, by contrast, suggests that certain tasks, especially writing long documents have become more widely important for employees in low paying occupations. There are two

comments to make here. The first is that the lack of any clear evidence of an increasing importance of reading and writing forms in low paid occupations more generally potentially marks care work out as an unusual type of low paid work, the growth of paperwork for care workers is linked to a regulatory environment which is not common to other low paid occupations. Secondly, it is important to reiterate that while the proportion of employees in low paying occupations reporting that reading long documents has grown, the estimated percentage for 2012 is still low.

Another benefit of the use of both qualitative and quantitative data is that the qualitative data can provide detail on some of the findings from the quantitative data. The qualitative data offers a more detailed insight into the kinds of skills that are required by the tasks covered in the SES and the challenges associated with these tasks. The main area of literacy use where employees seemed to have difficulties which could be attributed to a “lack” of literacy skill was in the writing of short documents – for example poor punctuation and grammar DCRs and issues around style in letters and e-mails at Department Store. However, the quantitative evidence suggests that only around half of employees in low paid occupations regard these tasks as important in their work. By contrast there was more or less no evidence that employees had difficulties which could be attributed to a lack of skill with reading tasks or with writing tasks involving forms, which the quantitative evidence suggests are substantially more common in low paid occupations. This adds further weight to the idea that low-level skills do not present a major problem in terms of the tasks that are most common in low paid work.

Where the more descriptive analysis of the SES appears to fit quite well with the findings from the qualitative research, the multivariate analysis combines a little more awkwardly. These results contradict one of key the qualitative conclusions, which was that it was difficult to see a clear relationship between discretion, involvement and computer use and higher level of skill use. One very real possibility is that the qualitative cases are exceptions to the broader rule that these factors raise demand for literacy and numeracy skills. This is obviously a risk with qualitative research focussed on individual workplaces. However, given the ambiguity over what the associations actually show us and the difficulty establishing causal relationships in the multivariate analysis, it cannot be said that the multivariate analysis “proves” that discretion, involvement and computer use do lead to higher levels of

skill use. It is also possible to understand the qualitative and quantitative results as mutually supportive. The multivariate analysis suggests that literacy and numeracy use is higher where discretion, involvement and computer use is higher. In the case studies skill use was often low and employees did not have a great deal of discretion, were not given a huge number of opportunities for involvement and made limited use of computers. One potential explanation for the divergence between the results, then, is that the relevant factors were “insufficient”. Alongside this, specifically in relation to involvement, the case studies might have exhibited the wrong kind of practices – indirect involvement rather than direct. As noted in the qualitative analysis, it is perhaps important to consider the *type* of involvement rather than to talk in generic terms (as Green (2012) does) about the impact of involvement on demand for skills.

## Conclusion

The quantitative section of this research comes to two broad conclusions. Firstly, literacy and numeracy use is generally low in low paid work and the extent of change over time has been modest at most. Secondly discretion, involvement and computer use do appear to be associated with higher levels of literacy and numeracy use even in low paid work, however the nature of the relationship between these variables remains ambiguous. The first of these findings is supportive of the conclusions of the qualitative work. Together the two sets of evidence paint a fairly consistent picture of the demands for literacy and numeracy skills at the bottom end of the labour market. Employees do not make a great deal of use of literacy and numeracy skills, where they do the tasks tend to be relatively “simple”, there is limited evidence of major growth in demand for skills and other “generic” skills are typically more important than literacy and numeracy skills. One further point to note here is that the relatively low level of demand for literacy and numeracy skills appears to be an important reason why there was limited evidence of major problems associated with literacy and numeracy skills. While the SES does not provide us with evidence about the extent to which employees have difficulties with literacy and numeracy tasks, the evidence is at least suggestive of the idea that difficulties might be rather low.

The findings from the multivariate analysis are more ambiguous. The firmest conclusions that we can offer are that it seems unlikely that “strong” versions of the pessimistic

narrative – that workplace literacy is increasingly linked to reduced control for employees – are accurate in general or that computer use is having a major deskilling effect, even for employees in low paid occupations. This does not necessarily mean that documentation is never used to control or monitor workers or that computer use never contributes to deskilling, but it does suggest these are not major trends, even among low paid workers. However, the analysis does not necessarily prove the optimistic view that changes in management practices and technology are contributing to higher levels of literacy and numeracy use generally, just that in general literacy and numeracy use are higher when employees have greater discretion, practices to encourage involvement are in place and computers are used. This is somewhat at odds with the conclusions of the qualitative analysis, which largely rejected discretion, involvement, and computer use as major contributors to demand for literacy and numeracy skills. Explanations for this divergence include the idea that discretion, computer use and involvement were either too low or of the wrong type to contribute to higher levels of literacy and numeracy use. However, it is also important to remember that the results of the multivariate analysis represent associations rather than causal relationships. There has been much interest in recent years in the idea that the adoption of “high performance work practices” (including practices aimed enhanced discretion and employee involvement) might contribute to increasing demand for skill. These results are indicative of the idea that the introduction of such practices might raise demand for literacy and numeracy skill, but they do not prove that this will be effective.



## 8 Discussion

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This chapter has two main aims. Firstly, the chapter provides an overview of the findings, bringing together the quantitative and qualitative data, seeking to demonstrate how the evidence has answered the research questions set out at the beginning of this study. Secondly, the relevance of this research to academic debates about literacy and numeracy skill is considered. A number of contributions to the literature are noted including in the areas of methodology and research design, the understanding of skill, the extent of demand for literacy and numeracy skill and the causes and extent of skill deficiencies. The following section focuses on the implications of the research for policy makers. It is suggested that the evidence of low demand for literacy and numeracy skills is problematic for common approaches to literacy and numeracy policy, which assume both high levels of demand and widespread shortages of necessary skills.

### Overview of the findings

#### To what extent do employees in low paid work make use of literacy and numeracy skills and what level of skill is required?

The demand for literacy and numeracy skills in the case studies was relatively low. In terms of complexity, most employees and managers felt that literacy and numeracy tasks were simple. Furthermore, it was argued that for the most part literacy and numeracy tasks matched the descriptions of what is expected of adults at either Entry Level 2 or Entry Level 3, with some numeracy tasks reaching Level 1. Employees had limited discretion over the way they used their skills and the most common and important tasks tended to be amongst the least complex.

Evidence from the SES supports the idea of limited demand for literacy and numeracy skills in low paid occupations more broadly. The only tasks that a clear majority of employees in low paid occupations regarded as important were shorter literacy tasks (for example reading forms or short documents and writing forms). Out of a set of ten “generic” skills, writing and numeracy were the least important for employees in low paid occupations while reading was of middling importance.

Some researchers taking an ethnomethodological perspective on skills have argued that, when considered in detail, tasks that seem to outside observers, and even to those undertaking them, as “simple” are actually highly complex when analysed in detail. While not denying this may be the case, the analysis questioned the usefulness of this approach in assessing the skill content of jobs, highlighting the practical problems presented by defining all human activity as “complex”. Even if all literacy and numeracy activity is complex to some extent, some of these tasks are more complex than others. Thinking in these relative terms the examples found in the case studies fall towards the less complex end of the spectrum.

### **Has the extent of literacy and numeracy skill use changed over time?**

The data from the SES only provides some evidence of increases in the importance of writing in low paying occupations, however in general growth was much more muted compared to non-low paying occupations. There was some evidence of moderate declines in the importance of certain types of calculations for employees in low paid occupations that was not mirrored in non-low paid occupations. Aside from this, however, there was no evidence of deskilling in low paid or non-low paid occupations.

As the data from the case studies was cross-sectional rather than longitudinal it is less suited to assessing changes in the demand for literacy and numeracy skills. However, within these parameters, the case study findings are roughly comparable with the quantitative evidence. In care, there was evidence that paperwork had become more important over a period of about 10-15 years, however there was less evidence of a general trend towards more extensive use of numeracy skills. In retail, there was minimal evidence of any general trend in demand for literacy and numeracy skills, with patchy examples of minor upskilling and deskilling punctuating an overall picture of very limited change.

### **Is there evidence of either skill gaps or under-utilisation of skills?**

Evidence from the case studies suggested minimal evidence of major problems related to literacy and numeracy skill. Managers in case study organisations did not generally regard a lack of these skills as a major problem. This was largely because the literacy and numeracy demands of the job were fairly minimal and basic. Furthermore, it is arguable that where problems did arise with tasks involving literacy and numeracy they could often be attributed

to factors other than a lack of “abstract” literacy and numeracy skills on the part of employees. Having said this there was some evidence of employee “lacking” literacy and numeracy skills. However, these issues did not necessarily turn into problems for firms.

There was stronger evidence that many (although not all) employees were under-using their literacy and numeracy skills. Most of the employees interviewed felt they could manage more complex literacy and numeracy tasks, although very few actually wanted to. Similarly, most of the managers interviewed felt there were at least some members of staff who could manage more advanced tasks. Managers mentioned a number of barriers to staff taking on further literacy and numeracy tasks including a lack of ambition amongst staff, a lack of broader knowledge and expertise, workplace politics, the need for staff to focus on their primary duties and a simple lack of literacy and numeracy tasks that need to be done.

### **What is the character of literacy and numeracy skills use in low paid work? Are they associated with managerial control or knowledge work?**

There was limited evidence of employees making use of texts or data in a way that might approximate “symbolic analytic” work. While there were examples of texts or data which *could* be used in this way, problem solving processes were largely the preserve of more senior staff. There was a little more support for the pessimistic narrative suggesting links between workplace texts and the control and monitoring of employees. However, it was difficult to discern a general pattern of either texts or numerical data being used to control and monitor employees. In both sectors, employees were monitored “directly” by managers and there was also electronic monitoring of employees through the till system in retail. Managers generally appeared to have little interest in monitoring *how* employees carried out their tasks, provided they worked quickly and effectively.

### **Are literacy and numeracy skills important in recruitment or progression?**

Formal consideration of literacy and numeracy skills in the recruitment process was rare. At most, literacy and numeracy skills ranked as a second order concern behind other factors such as personality and availability. There was the possibility that literacy skills entered into recruitment decisions in an informal way in the sense that poorly written application forms potentially jeopardise employment prospects, however there was no evidence of formal or informal tests of numeracy.

More advanced roles within organisations were likely to require somewhat more exposure to texts and, potentially, data. However, again these additional demands were not particularly high level. Literacy and numeracy skills were not tested as part of progression processes into more senior roles. Furthermore, the scope for progression was somewhat limited in many of the case study organisations.

### **What factors are associated with higher levels of demand for literacy and numeracy skills?**

The analysis of the qualitative data looked at three factors which are widely held to be associated with higher demand for skill – management practices, technology and product market strategy. Overall it was argued that these three factors were limited in the extent to which they could explain variation in demand for literacy and numeracy skills. On the other hand, technical aspects of work appeared to be significant drivers of literacy and numeracy demand.

However, the multivariate analysis of the SES did suggest associations between higher skill use and discretion, involvement and the use of computerised equipment, even for employees in low paid occupations. There appeared to be a stronger association between involvement and skill use for employees in low paying occupations than those in non-low paying occupations. There are a number of reasons why the quantitative analysis might differ from the qualitative. It was suggested that the case studies which exhibited greater levels of discretion and involvement may not have had “enough” discretion or the right kinds of involvement to generate higher levels of literacy or numeracy use. In terms of technology, it was also suggested that evidence that computer use involved the “computerisation” of existing tasks rather than the generation of new ones might be the exception rather than the rule. However, it is also worth bearing in mind the fact that the multivariate analysis does not prove a causal relationship between the variables of interest and skill use.

### **Contributions to the academic literature**

Having given an overview of the findings, this section moves on to highlight contributions to the academic literature on literacy and numeracy skills and low paid work. Firstly, it is argued that this study is relatively unusual in terms of combining quantitative and

qualitative data, focussing on low paying occupations in the UK and using comparative case studies. In addition, it adds to the literature on low paid work by focussing on literacy and numeracy skill. Secondly, it adopts a more robust approach to assessing the level of demand for literacy and numeracy skill in the qualitative work which is sensitive to ethnomethodologically-oriented concerns about making judgements about skill use while also avoiding the problem of “infinite regress”. The findings on the extent of demand, contribute to further developing a “sceptical” position on the demand for skills. Focussing on factors which contribute to higher demand for skill, it is argued that this study complicates arguments about the impact of technology, product market strategy and management practices while also noting the importance of other factors which get less attention in the literature, such as regulation. Finally, the contribution of this study to understanding the nature and extent of skill deficiencies is considered. The study provides further support for the notion that many “problems” with literacy and numeracy in the workplace can be attributed to factors other than a lack of skill but, more importantly, also that the extent of problems might be much less substantial than is sometimes imagined.

## Methodology

Firstly, in terms of methodology, this study combines both detailed case study evidence and broader survey data, while most previous studies of literacy and numeracy in the workplace have been limited to case study data. While both sets of data remain limited in some respects, the combination of the data helps us make judgements about the wider applicability of the case study research. Furthermore, the survey data enables us to look at changes over time. This is important, given the extent to which the aforementioned case study research makes pronouncements about the extent of change in literacy and numeracy skill demands without any real access to hard data about the extent of skill use in the past.

Secondly focussing on literacy and numeracy skills in low paid work and specifically on retail and care expands our understanding of the topic in a number of ways. Much previous work on literacy and numeracy skill has focussed on studies of manufacturing (e.g. Brier and Sait 1996, Gee et al 1997, Hart-Landsberg and Reder 1997, Joliffe 1997, Hull 1999, Mikulecky and Kirkley 1998, Hoyles et al 2002, Belfiore 2004, Folinsbee 2004, Defoe 2004, Farrell 2006, Hoyles et al 2010). Outside of manufacturing environments, call centres have also been popular (e.g. Mikulecky and Kirkley 1998, Hoyles et al 2010) but other service environments

have been less extensively researched. While there have been some studies of literacy and numeracy use in retail (e.g. Hastwell et al 2013) and care (e.g. Nikolaidou and Karlsson 2012, Karlsson and Nikolaidou 2011) these are from outside the UK. Furthermore, Hastwell et al (2013) focus on supermarkets, a different subsector to the cases selected here. On the other hand, studies focussing on work in low paid sectors have typically only paid passing attention to literacy and numeracy (e.g. Lloyd et al 2008). A further innovation is the use of comparative case studies. While this has been common in the broader literature on skills (e.g. Lloyd et al 2008), it has been less common in the literature on literacy and numeracy skills.

### Understanding skill

One of the key claims of this research is that literacy and numeracy demands in low paid work are relatively low. In some ways, a judgement of this kind can be controversial. Ethnomethodological approaches to skill in general and, to an extent, social practice perspectives on literacy skills are often uncomfortable with the idea of labelling work as “low skilled” (Attewell 1990, Hunter 2004b, Hampson and Junor 2005). It is argued that much work that is labelled low skilled appears much more demanding when looked at in detail. Labelling certain kinds of work as low skilled is seen as a product of social processes that downgrade the value of that work. While, these concerns are not without merit, taking this argument to extremes results in the unsatisfactory conclusion that all work is equally “skilled”. An example of this thinking directly relevant to this research is Hastwell et al’s (2013) argument that supermarket workers operate in “literacy rich” (Hastwell et al 2013:92) environments.

This research deployed two arguments to get around these problems. Firstly, in the qualitative stage a multi-dimensional approach to skill was adopted which considered four aspects of skill use – complexity, discretion, frequency and importance. By clearly setting out the criteria by which judgements are reached, there is less potential for accusations that the conclusion was reached due to unwarranted assumptions about the skills required in low paid work. In addition, it helps us understand how different elements of demand interact with each other. One important finding was that, in general, the more complex tasks identified tended to be less frequent and less important than the less complex tasks. This is significant in terms of Hastwell et al’s argument, which is based on the notion that

retail workers are constantly exposed to texts in the form of labels and packaging which they need to read to do their job. This takes account of frequency and importance but does not engage with the complexity of literacy use, which appears to be fairly low.

Secondly, it was also argued that, especially when judging complexity, it is important to consider who tasks are complex for. Hastwell et al (2013) come to their conclusions about the importance of literacy in retail work based on migrant workers who do not have English as a first language. Another way of stating Hastwell et al's (2013) conclusion is that retail work might present some challenges to people with who have particular difficulties with literacy (for example, those who do not have English as a first language) and/or who are not familiar with a certain retail environment. This conclusion is fairly unobjectionable; the issue is that these people are very much in a minority. Judgements about the demand for skills should be made in terms of what most people are able to do, most of the time.

### The demand for literacy and numeracy skill

This research provides very strong support for what has been dubbed the “sceptical” position on demand for literacy and numeracy skills. This is an argument against the idea that literacy and numeracy are either universally important or growing in importance across the labour market. Much of the literature on literacy and numeracy in the workplace starts from the assumption that both sets of skills are increasingly in-demand in contemporary work places. A number of authors, dubbed “optimistic” in the literature review, make the case that this expansion in demand implies more highly skilled work (e.g. Mikulecky and Kirkley 1998, Hoyles et al 2002, Farrell 2006, Marr and Hagston 2007a, Hoyles et al 2010). These changes have been linked to broader changes in the world of work. Some authors specifically argue that new literacy (Farrell 2006) and numeracy (Hoyles et al 2010) demands constitute “symbolic analytic” or “knowledge” work. Critiques of this perspective in relation to literacy (e.g. Jackson 2000, Belfiore et al 2004) largely focus on the idea that the apparent expansion of documentation in the workplace is problematic for employees. These authors accept the basic premise of the “optimistic” narrative – that employees encounter more literacy today than they did in the past – but suggest that the changes lead to employees losing control over their work, being more intensively monitored and more exposed to “blame” than in the past. The idea that literacy and numeracy might form a very marginal part of work for a significant number of employees is one that is actually quite

underdeveloped. Interestingly some “optimistic” authors (e.g. Noss 1998, Mikulecky and Kirkley 1998, Hoyles et al 2002, Hoyles et al 2010) appear to be more willing to countenance the idea that there may be exceptions to the general trend of rising demand for skill, however it is fair to say that the emphasis very much lies on the extent to which demand for skills is growing.

Focussing on low paid work, this research has questioned the extent to which these ideas apply to jobs which make up a significant proportion of employment but which have been relatively understudied. The evidence suggests that in these kinds of occupations demand for literacy and numeracy skills is low and has not changed substantially in recent years. Furthermore, literacy and numeracy appear to be much less important than other skills and qualities. This “sceptical” view of literacy and numeracy demands in low paid work adds to a broader body of evidence that very strongly suggests that work at the bottom end of labour market remains largely untouched by trends towards upskilling (Lloyd et al 2008, Lloyd and Mayhew 2010).

The research has suggested a number of reasons why these findings do not seem to conform to the expectations of previous research. On the one hand, there was little evidence of many of the factors which both pessimistic and optimistic authors suggest are driving changes in literacy and numeracy use in the workplace were not obvious in the case studies. For example, intensive use of ICT (Mikulecky and Kirkley 1998, Hoyles et al 2010), ICT being used to link workers across organisational networks (Farrell 2006), new organisational structures or management practices (Mikulecky and Kirkley 1998, Hart-Landsberg and Reder 1997, Jackson 2000) or quality standards (Belfiore et al 2004). However, even where these factors were present, their impact appeared to be minimal (this is discussed in more detail below). Beyond this, it was argued that, from the point of view of the firm, there was little need to design jobs that made greater use of their employees’ literacy and numeracy skills. It was not clear that employers were “held back” from creating more literacy and numeracy intensive jobs by low skills amongst employees, most managers acknowledged there were at least some employees who were capable of using skills in a more complex way. This argument also applies to more pessimistic notions that literacy might be tied up with efforts to control and monitor employees. It was noted that organisations had a number of non-documentary options for exercising control over



employees. This idea that many employers simply might not need employees to make more extensive use of literacy and numeracy skills is again one which is underdeveloped in the literature.

One critique of this conclusion is that the process of transformation, either in an optimistic or pessimistic direction, is still occurring. However, this argument is not hugely persuasive. While there were glimpses of literacy and numeracy practices which do fit the descriptions made by either optimistic or pessimistic authors, these were very patchy, typically applying to just one case and often to a single group of employees within that case. It is difficult to argue that this constitutes a general or universal pattern of change. This is supported by data from the SES, which shows limited evidence of growth in the use of literacy or numeracy skills in low paid occupations over a 15-year period. Secondly, we must ask how long we have to wait to see evidence of the transformations that optimistic and pessimistic authors predict. These ideas have been in circulation for at least 20 years and yet, still, they do not appear to have come to fruition in significant areas of the economy.

Work and workplaces do undoubtedly change. Organisations adopt new technologies and working practices alter over time. It may well be the case that as this change occurs demand for literacy and numeracy skills will grow in many occupations, even in some low paid occupations (although it is important to note that changes in technology and work organisation may in some instances lead to a declining requirement for some kinds of skill). However, this research raises significant questions about the notion that there is, or has been, a general trend towards greater demand for literacy and numeracy skills across all occupations generally.

### What raises demand for skill?

This study has also added to our understanding of the factors that contribute to higher levels of skill use and the extent to which these apply to low paid workers. Particular attention has been paid to three factors – “new” management practices, product market strategy and technology - that are recurrent in the general literature on skills as well as the literature on literacy and numeracy.

The research suggests that product market strategy can raise demand for literacy and numeracy skills but does not inevitably do so. The care cases echoed findings that often the

pursuit of higher value product market strategy can involve investments in amenities and facilities rather than employee skills (Lloyd 2005, Lloyd et al 2013). In retail, there was some evidence of higher value product market strategies contributing to higher levels of skill use. However, the impact of product market strategy varied by department. The provision of greater levels of customer service in the Fashion department required less use of literacy and numeracy skills than in the Home department. The study suggests the link between product market strategy and literacy and numeracy skills is at the very least contingent on other factors.

The multivariate analysis suggests that there is a positive association between literacy and numeracy use and discretion, involvement and computer use even in low paid occupations. Notably the association between involvement and skill use appears to be stronger for low paid occupations. Previous studies have only demonstrated this relationship in general (e.g. Green 2012). It was also suggested that the association between discretion and skill use – which is the same in both low paying and non-low paying occupations – undermines the pessimistic argument that workplace texts are increasingly associated with the control and monitoring of employees. However, the qualitative work complicates the interpretation of these results. It was difficult to see clear relationships between discretion and involvement and skill use in. However, the qualitative data can be used to extend our understanding of the relationships between skill use and these variables.

For example, while there are theoretical arguments that greater discretion might lead to enhanced skill use via employees being able to better identify areas to use their skills (OECD 2012), the qualitative evidence suggests that the relationship might be more indirect. Employers who “trust” their employees with higher levels of discretion might also “trust” them to take on a wider range of tasks. An important point to note here is that the relationship is not necessarily “organic”, there is no automatic link between discretion and skill use. In relation to involvement, Green (2012) talks about the impact of involvement practices in very generic terms. However, the literature on employee involvement highlights the variety of forms it can take. This study has suggested that one of the reasons why employee involvement practices at Department Store and ClothesCo did not appear to lead to greater literacy and numeracy use may be that it was based on “indirect” involvement –

the election of representatives – rather than direct involvement and as such had less impact on day-to-day working practices.

The study also highlights other factors which are less prominent in the literature but which appeared to be more significant in terms of explaining variations in the use of literacy and numeracy skill. Amongst the most important of these is regulation, which contributed to the substantial differences in literacy use between care and retail. The study also emphasises the way that sector and, within retail, sub-sector can affect demand for literacy and numeracy skill. The simple fact that retail involves selling products creates substantially more scope for using numeracy compared to the care sector. Furthermore, there was more potential for literacy activities in retail sub-sectors where customers were purchasing “unfamiliar” goods than “familiar” goods such as clothing.

### Skill deficiencies

Another focus of the academic literature is on the idea of problems and difficulties with literacy and numeracy skills in the workplace. One of the key themes of this body of work has been questioning whether problems that managers attribute to a lack of “skill” on the part of workers can actually be explained by looking at other factors.

There was evidence that there were occasions where employees faced difficulties with literacy and numeracy tasks that were due to factors other than a lack of proficiency on the part of employees. One factor identified in the literature, however, which did not appear in the case studies was “resistance” to either literacy or numeracy tasks. The idea that employees might resist engaging with texts is highlighted as a major problem in the work of pessimistic authors (e.g. Jackson 2000, 2004, Folinsbee 2004). The absence of resistance can probably be attributed to employees not perceiving workplace texts as problematic. Given the limited evidence that workplace texts were used as a tool by managers to either control or monitor the work of employees, there was little incentive to refuse to engage with texts.

At the same time, it did appear that there were some specific instances of employees struggling with literacy or numeracy tasks due to problems with their individual proficiency. However, it is important to note that where these problems occurred, it was not obvious that they presented major issues for organisations. A range of options were available to

manage these problems quickly and easily, for example brief on the job guidance and training or allocating tasks differently to enable those with difficulties to avoid these tasks.

However, perhaps the most significant finding in this area was that problems of any kind related to literacy and numeracy tasks were fairly rare. The most important reason for an absence of difficulties with literacy and numeracy problems was that these skills played a minimal role in the workplace and the tasks that required these skills were relatively simple. This is an important point. Much of the academic literature discussed above takes as its starting point the notion, propagated by business leaders and politicians, that workplaces are beset by difficulties with literacy and numeracy. However, where politicians attempt to pin the “blame” for these problems on the skill deficiencies of workers, the academic literature seeks alternative explanations that focus on, among other things, the nature of the workplace. However, this research suggests that both politicians and academics may, in some circumstances, be seeking to explain a non-existent, or at least minimal, problem.

## Implications for policy

UK adult literacy and numeracy policy has been driven by a number of key assumptions and expectations:

1. Literacy and numeracy skills are vital in jobs across the economy
2. In general employees need Level 2 literacy and numeracy skills to be successful and effective in the labour market
3. Low levels of literacy and numeracy skills are the cause of significant problems for firms
4. Low levels of literacy and numeracy prevent individuals from gaining employment, holding down jobs and progressing into better paid jobs

The findings from this research raise questions about these assumptions and expectations. Instead of widespread and growing demand for literacy and numeracy skills, this research found that literacy and numeracy play a marginal role in work at the bottom end of the market. It was extremely hard to see evidence that Level 2 skills constituted any kind of minimum requirement and it appeared more common for employees to be underutilising their skills than struggling with skill deficiencies.

One potential objection to these findings is that the selection of occupations is misleading. Low paid work is generally acknowledged to be low skilled and, as a result, we would not expect to find high levels of demand for literacy and numeracy skills. However, as was made clear in the introduction and the literature review, the policy argument is driven by the notion that literacy and numeracy demands are significant and potentially rising across the labour market in general. Moreover, care, retail and low paying occupations generally make up a significant proportion of jobs in the UK. Furthermore, given the UK government's emphasis on integrating literacy and numeracy with vocational courses, it is significant that apprenticeship frameworks associated with retail and care still make up a considerable proportion of apprenticeship starts. For example, in 2013/14 the framework with highest number of starts was Health and Social Care (16% of all apprenticeship starts), Customer Service was the fifth highest (7%) and Retail the seventh (4%)<sup>6</sup>. Obviously not all of these apprenticeships would apply to the kinds of jobs discussed in this research. Nonetheless, it is notable that in each case the majority of starts were on intermediate (i.e. Level 2) level apprenticeships (64%, 81% and 80% respectively) which are aimed at lower level jobs.

Based on these findings, a core contention is that general programmes targeted at all adults with literacy or numeracy qualifications below Level 2 are, in many cases, unlikely to have the kinds of pay offs which policy makers hope for, especially at the lower end of the labour market. Firstly, the finding that literacy and numeracy use is either quantitatively rare or qualitatively simple and that problems associated with literacy and numeracy skills appear to be fairly minimal suggests that efforts to raise skills are unlikely to have pay-offs in terms of increased productivity for firms or enhanced wages or well-being for employees.

Secondly, many of the problems that did occur, for example problems with the kind of language used by care workers in DCRs, were unlikely to be "fixed" by general literacy or numeracy courses. These kinds of issues were extremely workplace specific and it would seem more appropriate and efficient to target them with workplace level learning rather than general literacy and numeracy courses.

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<sup>6</sup> Authors calculations based on SFA/BIS (2016)

Furthermore, low levels of use in the workplace raise questions regarding the extent to which any gains from learning can be sustained over time. The extent to which literacy and numeracy skills need to be used to be maintained remains unclear. There is some evidence that use is important for the maintenance and development of these skills, particularly literacy (e.g. Reder 2009, Bynner et al 2010, Wolf and Evans 2011). In this research, it was notable that a number of retail employees reported having “forgotten” how to calculate percentages until they were required to do so in the workplace. Despite this, there is still ambiguity over how much these skills need to be used to be maintained and the relative importance of workplace use versus use outside of work. However, inasmuch as there is evidence that skill use is important for skill maintenance it seems reasonable to argue that the levels of use identified in the case studies (and to an extent the broader picture offered by the quantitative data) may not be sufficient to maintain and develop skills. These findings indicate that there is a real risk that even if employees in low paying occupations do participate in learning, any benefits may be lost over time. This potentially complicates the hopes that literacy and numeracy learning might enable employees in low paid occupations to progress into higher paid occupations if opportunities for progression are not immediately available.

Looking at the literature more broadly, there is evidence that previous mass programmes aimed at achieving near-universal adult Level 2 skills have not been exceptionally successful. Firstly, there is evidence that resources have been directed at those who already have reasonable levels of literacy and numeracy skills. The NIACE Inquiry into Adult Literacy Learning, found evidence of providers targeting “low hanging fruit”, prioritizing learners at Level 1 and Level 2 rather than individuals with more serious problems along with some evidence that learners who were not in easy reach of achieving either Level 1 or Level 2 were being excluded (NIACE 2011). Likewise, the majority of the learners in Wolf and Evans (2011) study of workplace literacy programmes were already at Level 1 or above, with nearly a quarter at Level 2 or above. Secondly, there is strong evidence that literacy and numeracy programmes have been relatively ineffective at achieving either improved skill levels or the kinds of economic outcomes that policy makers hoped. Reviewing evidence from a range of basic skills interventions, Wolf and Evans (2011:51) conclude that a “labour market impact is the exception rather than the rule”. Those programmes that do

demonstrate benefits tend to be intensive, with extended periods of teaching. Vorhaus et al (2011) report a rough figure of 100 hours of participation required for courses to make a significant impact on learner's skills. However, the desire for mass participation in adult literacy and numeracy learning has led to funding being thinly spread and large numbers of short and often low quality courses. Wolf and Evans (2011) found that most of the workplace courses they encountered offered less than 30 hours of provision and that due to changes in funding, this was likely to decrease. Perhaps as a consequence (although also taking into account the lack of usage in work) Wolf and Evans found very little evidence of sustained improvements in skills amongst course participants. There is a very strong suggestion that over the last two decades a lot of money has spent failing to improve the literacy and numeracy skills of people who, from the point of view of work at least, do not need to improve their literacy and numeracy skills.

This is not to say that investments in adult literacy and numeracy learning are entirely a waste of time and money. It is highly likely that there are individuals with severe literacy and numeracy difficulties who might struggle even with the relatively minimal demands found in the kinds of work considered here. However, it is important to realise that these individuals will be a relatively small proportion of the population. A lot depends on how we define "low skills". As noted above, there appears to be a consensus that increasingly Level 2 skills are necessary to get by in work, with Level 1 as an acceptable minimum. In the analysis, it was argued that, from a purely abstract point of view, the majority of the literacy tasks encountered in the case studies met the criteria for tasks that individuals with Entry Level 2 skills can manage. None of the tasks went above the criteria for Entry Level 3. According to the estimates from the most recent Skills for Life Survey, 93% of the population have skills at or above Entry Level 3 and 95% at or above Entry Level 2 (Harding et al 2012). The situation with numeracy was somewhat more complicated, again the majority of the most common tasks met the criteria for Entry Level 2 at most. There were some tasks undertaken by some employees which might fall into the category of Entry Level 3 or Level 1 tasks. There are reasons to doubt, however, that Level 1 (or even Entry Level 3) skills would be necessary in these jobs on the basis that these tasks were not undertaken every day by all staff, they were very much isolated examples of moderately higher level maths. Again it is important to emphasise the relatively small proportion of the population

which would be unable to meet the requirements of these jobs - according to the Skills for Life Survey 93.2% of the population have numeracy skills at or above Entry Level 2 and 76.2% at or above Entry Level 3. Furthermore, even this may be an overestimation of the proportion of the population that would have difficulties with the tasks found in the case studies, given evidence of the ways that even those with relatively low skills learn informally how to manage literacy and numeracy tasks in familiar situations.

At the same time, there may be individuals in jobs with more substantial literacy and numeracy requirements who, despite having relatively “higher” levels of skills or qualifications, might benefit from additional literacy or numeracy learning. Many of the employees encountered in the research of Hoyles et al (2010) might fall into this category, however, again it is important to pay attention to the exact needs of these kinds of employees - the very workplace specific “techno-mathematical literacy” requirements that Hoyles et al identify may not be met by generic courses based on national standards. If literacy and numeracy learning is to achieve the kind of aims which policy makers hope for, it is essential to look at ways to ensure resources are focussed on those who are most likely to benefit.

There is some hope that use of new technology might ease some of these concerns. The Department for Business Innovation and Skills is currently running trials of e-learning programmes for literacy and numeracy. If these are effective, they may substantially reduce the cost of providing literacy and numeracy learning, which would allow good quality provision to be available more widely. However, as yet, the effectiveness of learning technology in relation to literacy and numeracy is unproven (Vorhaus et al 2011).

Furthermore, even if the use of technology allows quality learning to be more widely available the issue of low skill use in the workplace remains. If learners do not encounter significant literacy or numeracy demands in the workplace, it is still unlikely that we will see the kinds of economic outcomes that policy makers expect. They will effectively be attempting to fix a problem that does not exist. In addition, if learners do not make use of literacy and numeracy skills at work there is again the risk that any gains from learning might dissipate over time.

Bearing in mind literacy and numeracy use in the workplace might be low, provision needs to pay attention to how skills might be used once the course has ended. There might also be



more focus on how learners can be encouraged to engage more in literacy or numeracy activities in their spare time. Reder (2009) argues that one of the clearer benefits of literacy courses at least is to encourage learners to engage in a broader range of literacy practices even if their skill level does not increase. This, Reder suggests, could potentially have a longer-term impact on proficiency given some evidence of a relationship between usage and proficiency. It may well be worth investigating whether literacy and numeracy learning can contribute more consciously and directly to encouraging learners to make more use of their skills in their wider lives, especially for those who are unlikely to do so at work. There is a real possibility, however, that this kind of approach might come into conflict with the policy emphasis on achieving economic aims from literacy and numeracy learning. The adoption of new “outcome” based measures of success in FE, in terms of the number of learners finding work, progressing in work and earning more, might encourage providers to focus more on literacy and numeracy oriented to the labour market. There are two reasons why this approach might be counterproductive. Firstly, given evidence that many learners do not engage in literacy and numeracy learning for economic reasons (Vorhaus et al 2011) there is a risk that these kinds of courses will not appeal to many potential learners. Secondly, there is a risk that courses organised along these lines will not emphasise how literacy and numeracy can enable learners to engage in other useful and enjoyable practices beyond the workplace. If, as Reder suggests, the use of literacy and numeracy in wider life can contribute to proficiency in the longer term, this could potentially undermine the effectiveness of learning interventions.

The limited use of literacy and numeracy in low paid occupations also suggests that it might be worth thinking more broadly about the aims of adult literacy and numeracy learning. Policy makers more or less take for granted that the main aims of literacy and numeracy learning should be economic, to help individuals get into work, progress in work and be more effective and productive employees. Putting aside the issue of whether these outcomes are realistic, the economic focus of literacy and numeracy policy also ignores other benefits which learning might have, such as improvements to social capital, family life and self-esteem (Vorhaus et al 2011). Furthermore, Reder’s finding that literacy and numeracy learners are more likely to engage in literacy and numeracy practices more broadly can legitimately be seen as beneficial outcome of learning in itself. There is strong

evidence that these broader aims are what many learners actually want from learning (Vorhaus et al 2011).

A further change in the policy approach to literacy and numeracy skills could be more emphasis on what organisations can do to solve and manage many of the smaller scale literacy and numeracy problems that do occur, particularly where literacy and numeracy demands are fairly basic. This would involve, firstly, encouraging organisations to get a clearer understanding of why some staff struggle with certain literacy and numeracy tasks, whether this is really an issue of “skills” or the product of other workplace problems. Secondly inasmuch as learning is required, focussing on ways that can be delivered using small scale or informal learning in the workplace. There were examples of this kind of learning already in practice at least informally in case studies, most obviously the way some retail employees were taught to calculate discounts and the support offered to employees with dyslexia at Department Store. In both cases, skill “problems” were dealt with through small-scale interventions in the work place rather than the provision of formal training.

Making this shift for some firms might involve looking at the roles of front-line managers and encouraging them to play a more active role in identifying and rectifying skill “gaps” amongst their employees. Evidence on managerial work in typically low paying sectors (e.g. Grugulis et al 2011, Smith & Elliot 2012, Lloyd & Payne 2014) suggests that these roles predominantly involve monitoring staff and offer limited scope for creativity and discretion. This situation is not ideal for these individuals to play a greater role in developing the skills of their staff. It is unclear whether making the necessary changes would be an attractive option for many firms. As noted above, the skill gaps that did occur did not appear to impact on overall organisational performance. It is perfectly plausible that many organisations would be relatively satisfied with this situation and uninterested in making significant changes to working arrangements to ameliorate the occasional gaps in skills that sometimes occur.

An alternative approach might be to attempt to raise employer demand for literacy and numeracy skills. However, the evidence provided here suggests that this may not be a promising route to go down. Suggestions about how policy interventions might raise skill demand have largely focussed on two ideas. Firstly, that raising the supply of skilled workers will result in a supply-push effect and secondly that employers might be encouraged to

adopt forms of work organisation, so-called “High Performance Work Practices”, which might enable greater skill utilisation. This research strongly suggests that the first of these ideas is unlikely to bear fruit. Despite managers acknowledging evidence of the under-utilisation of skills, there was no real evidence of organisations systematically seeking to make use of these skills. There were a number of reasons for this, but a major issue was simply that employers did not need employees to make more extensive use of their literacy and numeracy skills.

The evidence relating to HPWP from this study is somewhat more promising, but not substantially so. The multivariate analysis did show associations between discretion and involvement and skill use but it was difficult to attribute a causal relationship between the variables or to come to any firm conclusions about the nature of any relationship. The evidence from the case studies suggested that there are minimal links between these practices and skill. At the very least it seems that higher literacy and numeracy skill utilization would require greater levels of discretion and different kinds of involvement practices than were on show in the case studies. Given the general issues with persuading employers to adopt “sophisticated” management practices (Guest et al 2001) and questions about what leavers policy makers might be able to use to encourage greater adoption of these practices, the evidence presented here does not look overly encouraging for the idea that HPWP might be a way for policy makers to raise demand for literacy and numeracy skills in low paid work.

In summary, the main policy recommendations of this research is for a more modest vision of what adult literacy and numeracy policy can achieve, underpinned by a better understanding of how literacy and numeracy are used in everyday life, a more detailed analysis of the extent and causes of literacy and numeracy difficulties and a more developed approach to how these difficulties can be dealt with. Evidence from this study and elsewhere (e.g. Wolf and Evans 2011, Winterbotham et al 2014) suggests very strongly that for many workers, literacy and numeracy are a marginal part of everyday tasks and that there are not widespread problems with literacy and numeracy skill deficits in workplaces. An approach to adult literacy and numeracy policy that assumes the opposite appears unlikely to have the kinds of impacts that policy makers hope for and might prevent many of those with severe literacy or numeracy problems being able to access the quality provision

that would help them. It is important that literacy and numeracy policy pays attention to what potential learners actually can and cannot do and the reasons why they struggle with some tasks. Basing policy purely on excessive and overly emotive interpretations of survey data, making claims about the proportion of adults with skills below the level schoolchildren of a certain age, or on anecdotal and unrepresentative claims of business representatives is not a promising way forward.

## Conclusion

This research has made a number of contributions to both academic and policy debates. In terms of subject matter, it combines two areas, literacy and numeracy skills and low paid work, which have been understudied particularly in a UK context. It also takes a different methodological approach to other studies in using both qualitative case study evidence and survey data. The findings also contribute a number of new insights, most importantly suggesting support for an underdeveloped “sceptical” perspective on literacy and numeracy skills, which suggests that demand for these skills may not be subject to universal growth and change in the way that many previous accounts have suggested. Relatedly, while supporting the notion found in previous academic accounts that difficulties related to literacy and numeracy in the workplace may not always be due to deficiencies in the skills of employees, the findings also strongly suggest that the low level of demand in these occupations mean that problems related to literacy and numeracy are often fairly rare.

Finally, the findings have been used to provide a critique of current policy on adult literacy and numeracy. It has been argued that the assumptions of both high levels of demand for literacy and numeracy skills and widespread deficiencies in these skills are implausible, at least at the lower end of the labour market. This gap between the assumptions of policy makers and the evidence raises a range of potential problems for an approach to policy which expects investments in adult literacy and numeracy learning to yield large scale direct economic benefits.

# 9 Conclusion

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## Introduction

This research has suggested that the use of literacy and numeracy skills in low paid work is fairly limited. Literacy and numeracy skills tend to be used sporadically rather than consistently and to a relatively low level of complexity. Numeracy, in particular, seems to have a minimal range of applications in low paid work. Concerns about deficiencies in literacy and numeracy skills were fairly rare, to a large extent due to the relatively low levels of skill use. Furthermore, there was minimal evidence that these skills have grown or are growing in importance. These findings raise questions about both policy and academic narratives which claim that literacy and numeracy skills are of critical and growing importance in the labour market. However, it is important to note that this research is not without its limitations and is far from exhaustive. This concluding chapter begins with a discussion of some of the limitations of the research, while arguing that, overall, the findings make a useful contribution to the study of literacy and numeracy in the workplace. Secondly, possibilities for further research are considered. The chapter finishes with a final comment on the contribution of this study to policy and academic debates.

## Limitations

There are limitations to both the quantitative and qualitative data, which were discussed in the methods chapter. The quantitative data relies on rather abstract categories of skills which could be interpreted differently by different respondents. In addition, the questions regarding numeracy are mainly limited to tasks involving calculations. While the qualitative data provided greater depth there are questions about the extent to which it forms the basis of generalisations. To an extent, some of these issues have been accounted for by the adoption of a mixed methods approach, especially for the key finding that literacy and numeracy skill use is fairly low in low paid work. However, some issues remain. A number of findings rely on only one source of data. For example, the evidence of change over time relies primarily on the quantitative data. On the other hand, the evidence on skill gaps and underutilisation, the nature and purpose of literacy and numeracy tasks and the

role of literacy and numeracy in relation to progression and recruitment rely only on the case study evidence.

The absence of longitudinal qualitative data means that our understanding of changes in the demand for literacy and numeracy skills lack detail. It is difficult to say very much about any shifts in the character and nature of literacy and numeracy over time or the causes of any changes. It was possible to get some information on these issues by asking interviewees about change over time but the data was somewhat patchy for a variety of reasons including difficulties remembering and the relatively short tenure of some interviewees. It simply was not possible to collect more detailed data on changes over time within the scope of this project. This was unfortunate but not fatal to the project, we still have solid if rather broad evidence that the demand for literacy and numeracy skills in low paid occupations was largely static between 1997 and 2012.

The issue of generalisations from the case studies is somewhat more problematic. However, it can be argued that, at least, the selection of case studies of different sizes and market segments provides a reasonable basis for some generalisations within the two sectors. The existence of general patterns (for example the absence of widespread skill deficits) across firms that were different in many ways suggests these findings might hold more broadly. Furthermore, as noted in the methodology chapter, these two sectors form a large part of employment in low paid work overall suggesting that these cases might reflect the experiences of a significant proportion of low paid workers more generally. In addition, there are still some connections that can be made to the broader quantitative data. One of the key reasons for the low level of problems related to literacy and numeracy skills in the case studies was the low level of demand for these skills. Given that the quantitative data suggests that literacy and numeracy use is generally low in low paid work, it does not seem like an enormous leap to suppose that problems related to literacy and numeracy skills are similarly low in other areas of low paid work.

The findings from this research are broadly in accordance with other research on literacy and numeracy skills. Evidence from other sectors in other countries, comes to similar conclusions about the absence of large scale problems with deficiencies in the skills of employees (e.g. Hull, Jury and Zacher 2007, Black et al 2013) Evans and Wolf (2011) found similarly limited evidence of widespread skill deficiencies in their study of adult learners.

The Employer Skills Survey (Winterbotham et al 2014) suggests that skill gaps and shortages related to literacy and numeracy skills are relatively low both in absolute terms and in relation to other types of skill. The patchy evidence of labour market impacts from literacy and numeracy learning similarly supports the notion that developing these skills is not sufficient to ensure that individuals are able to find jobs or achieve progression. It is also indicative that many adults who do undertake literacy and numeracy learning do not do so with economic aims in mind (Vorhaus et al 2011).

A further issue is that the quantitative and qualitative data do not entirely overlap. The quantitative data includes a broad range of low paid occupations, while the qualitative data focuses on low paid occupations in two specific sectors. This provides some limits to the “depth” which the qualitative data can add to the quantitative data. While it has been possible to look into greater detail at some of the broad SES skill categories in the care and retail sectors, understanding what tasks involve, their purpose and the challenges which employees may face in undertaking them, this is not possible for occupations beyond the two sectors included in the qualitative research. It is possible, for example, that the forms or short documents encountered in other sectors may present different challenges to employees than those in the care and retail sectors.

Finally, while the research gives a reasonable picture of the place of literacy and numeracy skills in low paid work, the findings are very much limited to the bottom end of the labour market. As such, they do not touch on other areas that are of relevance to both policy makers and academics. For example, policy makers have expressed concerns about the shortage of higher-level mathematical skills necessary for careers in science, technology and engineering sectors (Science and Technology Committee 2012). Some optimistic authors focus on the changing skill demands in intermediate and higher level occupations (Hoyle et al 2010). Evidence for the pessimistic narrative appears somewhat more pertinent to jobs in manufacturing (e.g. Belfiore 2004, Folinsbee 2004). As a result, this research does not entirely refute some of the claims made about the place of literacy and numeracy in the workplace. It does however place clear limits on the generalizability of these claims to low paid work in general and front line work in the retail and care sectors in particular. This is an important corrective to some of the more general claims about the role and importance of literacy and numeracy skills in the workplace.

## Suggestions for further research

This research has contributed to our understanding of the place of literacy and numeracy in the workplace. However, there are a number of additional areas which might be explored following on from this research.

## Literacy and numeracy skills and productivity and performance

There are further questions which can be asked about the relationship between literacy and numeracy proficiency of employees and both individual and firm performance. One of the key conclusions of this research is that it is difficult to see how higher levels of literacy and numeracy skill would contribute to improved performance at either the individual or firm level because the demand for these skills was minimal and for the most part within the competencies of current employees. However, the notion that literacy and numeracy skills, in and of themselves, contribute to higher productivity and performance is a key tenet of much of the literature. In particular, the econometric literature on literacy and numeracy assumes that premiums associated with measures of literacy and numeracy skills can be explained in terms of the superior productivity of those who score higher on literacy and numeracy tests. However, as noted above, this evidence does not attempt to tap into the causal mechanisms by which higher literacy and numeracy skills convert into higher performance. Neither does it necessarily demonstrate that firms with better skilled employees will outperform their competitors.

Investigating the link between skills and performance is by no means easy. As Grugulis and Stoyanova (2011) note, there are problems around both the measurement of skill and performance. To an extent, the measurement of skill is less of a problem in relation to literacy and numeracy given the efforts that have gone into developing means of assessing these skills. Although, even here we have to bear in mind critiques of measures of “abstract” skill from situated literacy theorists.

At the firm level, one possibility might be to conduct comparisons between different firms to see whether higher levels of measured literacy and numeracy skill amongst employees can be linked to superior performance. However, studies of this type have been critiqued in the past. One issue is that they tend to focus attention only at the level of production, rather than considering broader factors – for example firm strategy and quality of



management – which might contribute to differences in performance (Cutler 1992). As Grugulis and Stoyanova (2011:527) “the performance of the organization as a whole is not the same as that of the shop-floor writ large”. A related problem is the difficulty of finding appropriate organisations to compare (Cutler 1992). Making assessments about the impact of skills on performance ideally requires the comparison of organization that are as similar as possible with the exception of skill levels. In this regard, it is important to note that even firms in the same broad sector can take quite varied approaches to issues like work organization and firm strategy that might affect productivity or performance. Furthermore, it is plausible that both literacy and numeracy could be proxies for ability or “skill” more broadly. This potentially complicates arguments that literacy and numeracy skill in themselves contribute to productivity and performance. Overcoming these methodological issues is by no means easy and it is perfectly possible that such research will not yield unambiguous answers. However, given that policy makers continue to claim links between economic performance and literacy and numeracy skill, investigating this link remains important.

At the individual level, an important focus of these studies should be an analysis of the relationship between the “measured” skills of individuals and their capabilities at work. Testing regimes are clearly not going away; governments are likely to maintain their interest in attempting to “measure” the skills of adults. This is not necessarily a bad thing; it seems highly improbable that these tests tell us nothing about the proficiency of individuals. However, they are far from the whole picture. As noted in the literature review, a number of studies have suggested that tests of skill may not entirely reflect the capabilities of individuals in concrete situations. Furthermore, this research has emphasised that differences in skills of employees might be rather moot given the limited opportunities to apply these skills. To make the findings from quantitative studies of employee skills more useful, we need to get a better understanding of what exactly it is that those with either high or low skills actually can or cannot do and the extent to which these measures of skills translate into differing capabilities at work.

At the individual level, more robust evaluations of the impacts of literacy and numeracy learning on individuals would also be valuable. Many of the studies that suggest learning produces labour market benefits for individuals are beset by problems of finding

appropriate control groups. Meadows and Metcalf's (2008) study did have an appropriate control group but did not measure changes in skill over time. As such, it is difficult to say whether the lack of impact they found was due to literacy and numeracy skills being less important in the labour market than is sometimes supposed or because the courses themselves did not improve learners' skills. Well-designed longitudinal qualitative work might also be useful here, tracking learners over time and getting a more detailed understanding of any progressions they make in the labour market. Again, this links back to the idea of trying to understand the causal mechanisms by which any changes in labour market status occur.

### Literacy and numeracy skills and recruitment and progression

There is also further scope for investigating the role of literacy and numeracy in recruitment and progression. The focus of this research has been on the actual use of literacy and numeracy skills in the workplace. While it provides some insights into the roles these skills play in recruitment and progression processes, there is scope for a more direct examination of these practices. In the case studies, there was little evidence of either literacy or numeracy having a direct formal role in either recruitment or progression. However, there is a perception amongst policy makers that literacy and numeracy skills are important factors in decisions about recruitment (e.g. Hancock 2014). Further research is needed to understand whether the findings from this research constitute an exception to the rule or whether firms generally make limited use of literacy and numeracy in recruitment processes. In addition, variation across different occupations in the importance of literacy and numeracy in recruitment should also be examined.

Similar questions could also be asked in relation to progression opportunities. It would be worth undertaking further work to consider the extent to which literacy and numeracy skills form part of HR practices around progression opportunities. To what extent, for example do companies make use of tests or qualification requirements to determine who has access to more senior roles? Better quality studies of the relationship between literacy and numeracy learning and labour market outcomes would be helpful to understand whether and how those who undertake literacy and numeracy learning actually achieve progression.

## Literacy and numeracy skill gaps and shortages

A persistent driver of policy concern relating to literacy and numeracy skills have been complaints from employers and employer organisations about literacy and numeracy skill shortages and gaps. This research, however, found limited evidence of either deficiencies in current employees or shortages of potential recruits with sufficient literacy or numeracy skills. It was emphasized, moreover, that this finding was consistent with evidence from the Employer Skills Survey (Winterbotham et al 2014) and other relevant studies (e.g. Wolf and Evans 2011). Nonetheless, complaints about deficiencies in the literacy and numeracy skills of the workforce persist. Trying to get a deeper understanding of these two conflicting pieces of evidence would be a useful contribution to the debate around the importance of literacy and numeracy skills.

One possibility might be to compare similar organisations whose managers have different views on the extent to which their organization suffers from either skill gaps or shortages. Selection of these organisations could be based on responses to surveys such as the ESS or the CBI's Education and Skills Survey. A first stage might be to attempt to validate the perceptions of the manager who responded to the survey. A second stage would be to compare those organisations who report skill gaps/shortages with those who do not, trying to identify what differences between the organisations might contribute to these different outcomes.

## Specific policy areas - literacy and numeracy learning for the unemployed and those taking vocational education

Wolf and Evans (2011) study of work based literacy learning provided a useful critique of a major element of literacy and numeracy policy under the last Labour government. However, under the coalition and Conservative government's policy has shifted away from work-based programmes. As noted elsewhere, since 2010 there has been a focus on the role of literacy and numeracy as a response to unemployment and in integrating literacy and numeracy learning into vocational courses. There is a clear case for investigations into the nature and effectiveness of provision in these areas, along the lines of the work that Wolf and Evans carried out on work based provision. A starting point for this kind of research would be simply to understand what provision is out there for either the unemployed or those taking vocational qualifications. This would include looking at the length, quality and

design of these programmes. A question to consider would be how service users are selected to participate in these schemes, this is important in relation concerns that literacy and numeracy learning is sometimes inappropriately targeted at individuals who do not particularly need it.

In the light of this research, it would be useful to consider the extent to which those who participate in learning as part of either vocational qualifications or employment programmes actually have the opportunity to use and sustain the skills they develop through learning in the workplace (assuming the learning is of sufficient quality to develop their skills at all). Related to this is an understanding of employers' awareness of, engagement in and attitudes to these forms of learning. Do employers of apprentices or those recruiting from the unemployed regard this literacy and numeracy learning as important or useful, have they had any role in shaping the content of this learning and are they aware of it at all?

## Final comments

These suggestions for additional work have the potential to enhance our understanding of the nature and importance of literacy and numeracy in the workplace. Nonetheless, it is important to emphasize that this research has itself furthered our understanding of this issue. Perhaps the most important message of this research is that it is important to approach claims regarding the importance of literacy and numeracy skills in the workplace with a degree of scepticism. The arguments deployed by policy makers regarding the universal importance of literacy and numeracy, along with the notion that large numbers of people lack the necessary skills to cope in the workplace, have a certain "common sense" appeal. The idea that literacy and numeracy are fundamental basics for all other activity is deeply embedded in our culture. In educational terms, literacy and numeracy are among the first things that children learn in school. Their designation as "basic" skills further emphasizes the idea that literacy and numeracy constitute fundamental building blocks of competence. The idea that substantial numbers of adults lack these skills is shocking and, as has been noted, this sense of shock has been played upon by the presentation of results from surveys of skills in terms of emotive comparisons between the skills of adults and the expected skills of children. The idea that, for example, "around a quarter of adults have the

numeracy skills of a 7 to 9-year-old” (BIS 2012) gives the impression that 25% of adults have the general competence of a primary school child. These arguments also play into well-worn narratives of educational, and perhaps even wider cultural decline. Given the persistent perception that educational standards are in decline, the idea that many individuals lack the necessary “basic” skills required in the workplace is one that many will be willing to believe. Furthermore, those so inclined can point to contemporary phenomena such as proliferation of “text speak” on social media as apparent evidence of the decline in capabilities, particularly of young people.

This research has not sought to argue that literacy and numeracy skills are entirely irrelevant in work generally or in low paid work specifically but it has noted limitations to the conventional policy view described above. Demand for literacy and numeracy skills in low paid work is not entirely absent but there are strong reasons to suppose that it is limited in the sense that these skills were often only used sporadically and at a fairly low level. These skills were not central to work. Tasks that could hypothetically involve these skills were often completed by other means. Employers valued other skills and attributes more highly and problems with either literacy or numeracy were not fundamental barriers to employees being valuable to the organization. Furthermore, given the relatively lack of complexity in many of the tasks, it has been suggested that the literacy and numeracy demands of low paid work are well within the capabilities of the vast majority of the workforce. As has been stated above, this is not to say that that literacy and numeracy are not more important or growing in importance in other parts of the labour market. Neither does it imply that there are not some people who might struggle with literacy and numeracy in the workplace - even with the low-level demands found in this research. However, it does suggest that the picture is substantially more complex than is often assumed and that blanket assertions about the importance of literacy and numeracy skills, the prevalence of skill deficiencies and, by extension, the potential impact of literacy and numeracy learning must be treated with some degree of caution.

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# Appendices

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## Employee interviews

### Background

#### Work history

- 1) How long have you been in your current job
- 2) Before you began this job what were you doing? Have you previously worked in a similar role? How did you come to start working here?

#### Attitudes towards job and organisation

- 3) Do you enjoy working here? How does it compare to other places you have worked?
- 4) What are your plans for the future, do you see yourself staying in this job/organisation?
- 5) If you could improve your job in any way, what would you do?
- 6) Do you feel you have an opportunity to take part in making decisions that affect your work?

#### Daily tasks

- 7) Can you talk me through a normal day at work?
- 8) How would you define doing a “good job”?
- 9) How do managers/supervisors check you’ve done a good job?

#### Work organisation

- 10) How much control do you feel you personally have over your work? How much choice do you feel you have over what tasks you do and how these are carried out? How much control do you have over how quickly you work?
- 11) How closely are you supervised?
- 12) Do you feel you have enough support to do your job well?

#### Training

- 13) Have you ever received any training in how to do your job – what form and on what subject
- 14) To what extent did you learn how to do your job from colleagues?

### Literacy and numeracy tasks

#### Reading tasks

- 15) Can you give me examples of when you have to read at work/what do you have to read at work
  - a) Prompts (retail): Text on computer screens/tills, instructions or messages from colleagues or managers, product information, information about customers, enquiries/complaints from customers, company policies or procedures (H&S etc), staff newsletters/bulletins, instructions for operating equipment (Tills, computers), signs or notices (including noticeboards), filing or record keeping

- b) Prompts (care): Care plans, care diary/resident reports, instructions or messages from colleagues or managers, books/newspapers/letters for residents, incident reports, company policies or procedures (H&S etc), other company information – for example staff newsletters, instructions for operating equipment (Hoists, computers), signs or notices (including noticeboards), filing or record keeping
- 16) [If more than three answers] Which of these tasks do you think is most important in your work? Why? Why would you say other tasks are unimportant?
- 17) For each task – Describe what you do, how often you do it, how long it takes, why you have to do it and how important it is

### Writing tasks

- 18) Can you give me examples of when you have to write at work?
  - a) Prompts (retail): Instructions or messages to colleagues (incl e-mail), record information about customers, fill in forms, write appraisal notes, notes for yourself
  - b) Prompts (care): Care plans, information about residents, instructions or messages to colleagues, form filling, incident reports, appraisal notes, notes for yourself
- 19) [If more than three answers] Which of these tasks do you think is most important in your work? Why? Why would you say other tasks are unimportant?
- 20) For each task – Describe what you do, how often you do it, how long it takes, why you have to do it and how important it is

### Numeracy tasks

- 21) Can you give me examples of where you use maths or numbers in your job?
  - a) Prompts (retail): Handling money, discounts, sales quotas/targets, planning time, measurements, working out hours/rotas, ordering/managing stock, understanding graphs etc, using spreadsheets
  - b) Prompts (care): Reading or filling in charts, ordering supplies, activities or shopping for residents, dealing with medicines, planning time, working out hours/rotas, understanding graphs etc, using spreadsheets
- 22) [If more than three answers] Which of these tasks do you think is most important in your work? Why? Why would you say other tasks are unimportant?
- 23) For each task – Describe what you do, how often you do it, how long it takes, why you have to do it and how important it is

### Problems and complexity of task

- 24) How difficult do you find it to undertake the tasks we have discussed?
- 25) Are there ever any specific problems in doing any of the tasks discussed? What impact does this have?
- 26) Are you aware of any of your colleagues having difficulties doing any of the tasks discussed? What impact does this have?
- 27) If there are ever problems [If no problems are mentioned] If an individual was unable to do any of the tasks what would happen?

### Expanding literacy and numeracy tasks

- 28) To what extent do the tasks we have discussed make use of your literacy and numeracy skills, do you feel as though you could manage more complex literacy and numeracy tasks?

- 29) Would you like to take on more responsibility for literacy/numeracy tasks currently undertaken by others?
- 30) Are there any tasks currently undertaken by others that you think you could do?
- 31) What do you think would be the benefits of you taking on these tasks?
- 32) How would you feel if you were asked to undertake additional literacy/numeracy tasks?

### Changes to tasks

- 33) Do you think the extent to which you make use of literacy and numeracy skills has changed at all over the time you have been working here/in the sector?

### Education background

#### Qualifications/schooling

- 34) At what age did you leave full time education?
- 35) Do you have any qualifications from school? Are any of these in either maths or English, if so what grade?
- 36) Have you undertaken any other qualifications since leaving school? Were any of these in English or Maths?

#### Self-assessment of own literacy and numeracy ability

- 37) How easy do you find it to read English when you need to in daily life? For example: reading newspapers and magazines or instructions for medicine or recipes?
- 38) How easy do you find it to write English when you need to in daily life? For example: writing letters or notes or filling in official forms?
- 39) How easy do you find it to work with numbers when you need to in everyday life? For example working out your wages or benefits, or checking bills and statements?



## Manager interviews

### Background

- 1) How long have you worked in your current position?
- 2) Could you just describe your main roles and responsibilities?
- 3) How many employees would be working in your store/home on a normal day?
- 4) Has your organisation undergone any major changes in recent years?

### Workplace context

- 5) What are the main roles of employees within the store/home?
- 6) How would you describe the main skills and characteristics required by employees?
- 7) Could you describe the arrangements for communications between managers and employees?
- 8) To what extent would you say employees have discretion over how they do their work?
- 9) Do you measure or assess the performance of employees in any way? (e.g. appraisals, targets)
- 10) Do you use any form of quality standards, for example Investors in People, ISO etc?
- 11) What kind of job-related training do employees receive? (induction/ongoing)

### Literacy and numeracy - general

- 12) Overall how important is literacy and numeracy for employees in your store/home? Is it more important for some employees than others?
- 13) Do you have a view on the general level of literacy and numeracy skill of employees in your store/home?

### Description of tasks

- 14) Can you describe the ways in which employees have to read in their job?
  - a) Purpose
  - b) Importance
  - c) How often
- 15) Can you describe the ways in which employees have to write in their job?
  - a) Purpose
  - b) Importance
  - c) How often
- 16) Can you describe the ways in which employees have to use numbers or maths in their job?
  - a) Purpose
  - b) Importance
  - c) How often
- 17) Do all employees undertake each of these tasks? Do some undertake certain tasks more than others? Why is this?

### Skills and knowledge required

- 18) How complex or challenging would you say literacy/numeracy tasks are? Why?

- 19) Are you aware of employees having any problems undertaking tasks that involve literacy or numeracy? If so what are the consequences of these problems and can any action be taken to resolve them?
- 20) Would someone with significant difficulties with literacy or numeracy be able to do the job?
- 21) Do you feel that employees would be capable of undertaking more complex literacy and numeracy tasks?

### Changes

- 22) Have the literacy and numeracy tasks undertaken by frontline employees changed at all since you have been working here? In what way?

### Progression

- 23) To what extent are literacy and numeracy an important part of progression for employees? For example, do more senior roles require higher levels of literacy or numeracy? Are there formal literacy and numeracy tests as part of the process for progression?

### Recruitment

- 24) Are you involved in recruiting staff in your store/home?
  - 25) To what extent do you take literacy and numeracy into account in the recruitment process?
  - 26) How important are literacy and numeracy relative to other skills and characteristics in the recruitment process?
  - 27) Has this always been the case or have literacy and numeracy requirements changed?
  - 28) Do you ever find it difficult to recruit staff with sufficient literacy and numeracy skills?
- Are there other skills or characteristics that are more difficult to recruit

Thank you for agreeing to be interviewed for my research on literacy and numeracy in care homes. This sheet explains the background and purpose of the research. If there is anything else you'd like to know that isn't covered here, please get in touch – my contact details are at the bottom of the sheet.

### Who is doing the research?

My name is Tom Higgins - I'm a researcher from Cardiff University.

### What is the research about?

I am interested in finding out about how people in care homes use reading, writing and maths skills in their everyday work.

### Why am I being interviewed?

I want to hear first-hand from people, like you, who work in care homes to get a really good understanding of what it takes to work in a care home.

### What will I be asked?

The interview will focus on occasions when you need to read, write or use maths at work. I'll ask you to describe what you do, how often you do it and any problems you or your colleagues have. I'll also ask a few questions about your background and general information about your job.

### How will my information be used?

All the information from the interview will be treated confidentially and anonymously. I will not use any real names of people or organisations when I write up the research. The main product of the research will be my PhD thesis but I'll also be writing up shorter summaries of my findings for people who are interested in the research but don't want to read a whole thesis.

### Do I need to do anything before the interview?

There is no need to do anything specific before the interview but it would be useful if you could think about ways in which you use reading, writing or numbers in your job. If you have any documents which you regularly use in your job (for example forms you have to fill in) it

would also be helpful if you could bring these along, but don't worry if there's nothing like this that you can think of.

### Where can I get more information?

If there's anything else you'd like to know about the research, please get in touch with me.

My e-mail is [higginstp@cardiff.ac.uk](mailto:higginstp@cardiff.ac.uk)

# Literacy and numeracy skills in the workplace



I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to consider the information and ask questions and have had these answered satisfactorily. I understand that my participation is voluntary and that I am free to withdraw at any time.

I understand that my name will not appear in any reports, articles or presentations.

I agree to take part in the above study.

Participant name:

Participant Signature:

Date:

## Low pay

	Number	Percent
Low Paid	11,106	77.23
Non-low paid	3,272	22.75
Missing	2	0.01
Total	14,380	100

Table 19: Low paid occupations

## Reading

	Number	Percent
Not at all important	619	4.3
Not very important	1,005	6.99
Fairly important	2,176	15.13
Very important	4,222	29.36
Essential	6,358	44.21
Missing	0	0
Total	14,380	100

Table 20: Reading forms, signs, notices etc

	Number	Percent
Not at all important	1,064	7.4
Not very important	1,099	7.64
Fairly important	2,311	16.07
Very important	4,097	28.49
Essential	5,809	40.4
Missing	0	0
Total	14,380	100

Table 21: Reading short documents

	Number	Percent
Not at all important	2,172	15.1
Not very important	2,310	16.06
Fairly important	2,923	20.33
Very important	3,185	22.15
Essential	3,790	26.36
Missing	0	0
Total	14,380	100

Table 22: Reading long documents

## Writing

	Number	Percent
Not at all important	1,760	12.24
Not very important	2,097	14.58
Fairly important	2,904	20.19
Very important	3,394	23.6
Essential	4,225	29.38
Missing	0	0
Total	14,380	100

Table 23: Writing forms, signs, notices etc

	Number	Percent
Not at all important	2,232	15.52
Not very important	1,830	12.73
Fairly important	2,497	17.36
Very important	3,474	24.16
Essential	4,347	30.23
Missing	0	0
Total	14,380	100

Table 24: Writing short documents

	Number	Percent
Not at all important	4,014	27.91
Not very important	3,123	21.72
Fairly important	2,303	16.02
Very important	2,181	15.17
Essential	2,759	19.19
Missing	0	0
Total	14,380	100

Table 25: Writing long documents

## Numeracy

	Number	Percent
Not at all important	2,198	15.29
Not very important	2,382	16.56
Fairly important	2,549	17.73
Very important	2,647	18.41
Essential	4,604	32.02
Missing	0	0
Total	14,380	100

Table 26: Calculations involving adding, subtracting and multiplying numbers

	Number	Percent
Not at all important	3,645	25.35
Not very important	2,957	20.56
Fairly important	2,213	15.39
Very important	2,039	14.18
Essential	3,526	24.52
Missing	0	0
Total	14,380	100

Table 27: Calculations involving decimals, percentages or fractions

	Number	Percent
Not at all important	6,030	41.93
Not very important	3,659	25.45
Fairly important	1,777	12.36
Very important	1,237	8.6
Essential	1,677	11.66
Missing	0	0
Total	14,380	100

Table 28: Advanced maths or statistics

## Literacy and numeracy indices

Variable	Obs	Mean	Std. Dev.	Min	Max
Reading	14380	2.73	1.09	0	4
Writing	14380	2.20	1.24	0	4
Numeracy	14380	1.83	1.29	0	4

Table 29: Descriptive statistics for indices

## Discretion

	Number	Percent
None at all	259	1.8
Not much	1,092	7.59
A fair amount	5,293	36.81
A great deal	7,722	53.7
Missing/DK	14	0.1
Total	14,380	100

Table 30: Influence over how hard you work



	Number	Percent
None at all	1,539	10.7
Not much	3,192	22.2
A fair amount	5,226	36.34
A great deal	4,415	30.7
Missing/DK	8	0.06
Total	14,380	100

Table 31: Influence over what tasks you do

	Number	Percent
None at all	793	5.51
Not much	1,645	11.44
A fair amount	5,531	38.46
A great deal	6,406	44.55
Missing/DK	5	0.03
Total	14,380	100

Table 32: Influence over how to do tasks

	Number	Percent
None at all	942	6.55
Not much	1,587	11.04
A fair amount	4,352	30.26
A great deal	7,484	52.04
Missing/DK	15	0.1
Total	14,380	100

Table 33: Influence over quality standards

## Involvement

	Number	Percent
No	8,768	60.97
Yes	5,524	38.41
Missing/DK	88	0.61
Total	14,380	100

Table 34: Part of a quality circle

	Number	Percent
No	3,702	25.74
Yes	10,595	73.68
Missing/DK	83	0.58
Total	14,380	100

Table 35: Employer arranges meetings to provide employees with information

	Number	Percent
No	4,414	30.7
Yes	9,860	68.57
Missing/DK	106	0.74
Total	14,380	100

Table 36: Employer arranges meetings where employees can give views

	Number	Percent
No	3,905	27.16
Yes	10,445	72.64
Missing/DK	30	0.21
Total	14,380	100

Table 37: Suggestion scheme

	Number	Percent
No	4,603	32.01
Yes	9,583	66.64
Missing/DK	194	1.35
Total	14,380	100

Table 38: Appraisal system

	Number	Percent
No	7,223	50.23
Yes	7,157	49.77
Missing/DK	0	0
Total	14,380	100

Table 39: Works in a team

## Discretion and involvement indices

Variable	Obs	Mean	Std. Dev.	Min	Max
Discretion	14345	2.20	0.66	0	3
Involvement	14021	0.62	0.29	0	1

Table 40: Descriptive statistics for discretion and involvement indices

## Computer use

	Number	Percent
No computer use	3,102	21.57
Low computer use	8,174	56.84
High computer use	2,869	19.95
Missing	235	1.63
Total	14,380	100

Table 41: Computer use

## Control variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	14380	40.34	10.61	20	60

Table 42: Age

	Number	Percent
Male	6,930	48.19
Female	7,450	51.81
Missing	0	0
Total	14,380	100

Table 43: Sex

	Number	Percent
No quals	1,752	12.18
Level 1	1,319	9.17
Level 2	3,226	22.43
Level 3	3,112	21.64
L4/5 below degree	1,985	13.8
Degree	2,963	20.61
Missing	23	0.16
Total	14,380	100

Table 44: Qualifications

	Number	Percent
1 to 24	4,760	33.1
25+	9,587	66.67
Missing	33	0.23
Total	14,380	100

Table 45: Size of workplace

## APPENDIX 5: DESCRIPTIVE STATISTICS

	Number	Percent
Part time	3,339	23.22
Full time	11,040	76.77
Missing/DK	1	0.01
Total	14,380	100

Table 46: Part time/full time

	Number	Percent
Agriculture & fishing	121	0.84
Energy & water	173	1.2
Manufacturing	2,331	16.21
Construction	620	4.31
Distribution, hotels & restaurants	2,432	16.91
Transport & communication	930	6.47
Banking, finance & insurance etc	2,193	15.25
Public admin, education & health	4,904	34.1
Other services	578	4.02
Missing	98	0.68
Total	14,380	100

Table 47: Industries

	Number	Percent
Managers	1,960	13.63
Professionals	1,793	12.47
Associate professionals & technical occupations	2,131	14.82
Administrative & secretarial	1,988	13.82
Skilled trades	1,340	9.32
Personal services	1,213	8.44
Sales	1,052	7.32
Operatives	1,253	8.71
Elementary	1,648	11.46
Missing	2	0.01
Total	14,380	100

Table 48: Occupation

## APPENDIX 6: STANDARD ERRORS FOR POINT ESTIMATES

	1997		2001		2006		2012	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Reading	2.62	0.03	2.67	0.02	2.78	0.02	2.76	0.03
Writing	2.04	0.03	2.15	0.02	2.27	0.02	2.28	0.03
Numeracy	1.76	0.03	1.85	0.02	1.87	0.02	1.94	0.03

Table 49: Literacy and numeracy indices means and standard errors

		1997		2001		2006		2012	
		Mean	SE	Mean	SE	Mean	SE	Mean	SE
Reading	Non low pay	2.78	0.03	2.81	0.02	2.93	0.02	2.92	0.03
	Low pay	2.13	0.06	2.12	0.05	2.24	0.05	2.22	0.07
Writing	Non low pay	2.24	0.03	2.33	0.02	2.45	0.02	2.48	0.03
	Low pay	1.40	0.05	1.46	0.05	1.58	0.05	1.61	0.07
Numeracy	Non low pay	1.95	0.03	2.02	0.02	2.06	0.02	2.17	0.04
	Low pay	1.15	0.05	1.18	0.04	1.17	0.05	1.18	0.06

Table 50: Literacy and numeracy indices means and standard errors - split by low pay/non low pay

	1997		2012	
	Proportion	SE	Proportion	SE
Reading forms	87%	0.8	89%	0.9
Reading short documents	82%	0.9	86%	0.9
Reading long documents	67%	1.1	70%	1.2
Writing forms	72%	1.1	74%	1.1
Writing short documents	68%	1.1	75%	1.1
Writing long documents	45%	1.2	53%	1.2
Basic calculations	69%	1.1	70%	1.2
Percentages decimals fractions	53%	1.2	57%	1.2
Advanced maths	29%	1.1	38%	1.2

Table 51: Literacy and numeracy tasks proportions and standard errors

# APPENDIX 6: STANDARD ERRORS FOR POINT ESTIMATES

		1997		2012	
		Proportion	SE	Proportion	SE
Reading forms	Non low pay	91%	0.8	91%	0.8
	Low pay	75%	1.9	79%	2.6
Reading short documents	Non low pay	87%	1.0	91%	0.8
	Low pay	68%	2.1	69%	2.7
Reading long documents	Non low pay	73%	1.2	77%	1.2
	Low pay	48%	2.3	49%	2.7
Writing forms	Non low pay	77%	1.2	79%	1.2
	Low pay	57%	2.3	58%	2.7
Writing short documents	Non low pay	75%	1.2	83%	1.0
	Low pay	43%	2.3	48%	2.7
Writing long documents	Non low pay	52%	1.4	60%	1.4
	Low pay	22%	1.9	31%	2.4
Calculations	Non low pay	74%	1.2	76%	1.2
	Low pay	50%	2.3	50%	2.7
Calculations involving fractions	Non low pay	59%	1.4	65%	1.3
	Low pay	32%	2.1	31%	2.4
Advanced maths/stats	Non low pay	34%	1.3	44%	1.4
	Low pay	14%	1.5	20%	2.1
Calculations (Essential/v important)	Non low pay	55%	1.4	58%	1.4
	Low pay	37%	2.2	30%	2.4
Calculations involving fractions (Essential/v important)	Non low pay	43%	1.4	47%	1.4
	Low pay	21%	1.8	16%	1.8
Advanced maths/stats (Essential/v important)	Non low pay	21%	1.1	29%	1.3
	Low pay	9%	1.2	9%	1.4

Table 52: Literacy and numeracy tasks proportions and standard errors - split by low pay/non low pay

		1997		2001		2006		2012	
		Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Reading	Non low pay	**	**	4%	0.4	4%	0.4	**	**
	Low pay	20%	1.8	18%	1.5	16%	1.4	**	2.3
Writing	Non low pay	15%	1.0	14%	0.7	12%	0.6	10%	0.8
	Low pay	39%	2.2	37%	1.8	36%	1.9	37%	2.8
Numeracy	Non low pay	23%	1.2	23%	0.8	24%	0.8	22%	1.2
	Low pay	49%	2.3	48%	1.9	48%	1.9	46%	2.7

Table 53: Low literacy and numeracy use proportions and standard errors - split by low pay/non low pay

## Reading

	Coefficient	Standard Error	t-stat
Low paid occupations	-0.40	0.08	-5.15
Discretion	0.15	0.02	9.71
LPO*Discretion	0.04	0.03	1.14
Involvement	0.82	0.04	22.73
LPO*Involvement	0.61	0.07	8.24
Low computer use	0.52	0.03	16.08
High computer use	0.57	0.04	15.68
LPO*low computer use	-0.10	0.05	-1.78
LPO*high computer use	0.10	0.09	1.09
Age (centred)	0.00	0.00	4.90
Age <sup>2</sup> (centred)	0.00	0.00	-5.35
Female	0.02	0.02	0.83
Level 1 Quals	0.01	0.04	0.38
Level 2 Quals	0.04	0.03	1.31
Level 3 Quals	0.05	0.03	1.45
Level 4 Quals	0.10	0.04	2.88
Level 5 Quals	0.08	0.04	2.09
Workplace size (1-24)	-0.02	0.02	-0.91
Full time	0.16	0.02	6.91
Agriculture and fisheries	-0.27	0.08	-3.15
Energy and water	-0.22	0.07	-3.21
Manufacturing	-0.30	0.03	-10.98
Construction	-0.07	0.04	-1.66
Distribution Hotels & Restaurants	-0.28	0.03	-9.34
Transport and Communications	-0.19	0.04	-5.01
Banking finance and insurance	-0.13	0.02	-5.47
Other services	-0.35	0.04	-7.99
Managers	-0.04	0.03	-1.34
Professionals	0.07	0.03	2.71
Admin and Secretarial	-0.09	0.03	-2.95
Skilled trades	-0.05	0.04	-1.34
Personal services	-0.08	0.04	-1.99
Sales	-0.13	0.05	-2.56
Machine operatives	-0.18	0.04	-4.55
Elementary	-0.46	0.04	-10.75
2001	0.02	0.02	0.72
2006	0.05	0.02	1.98
2012	0.02	0.03	0.78
Constant	1.59	0.06	24.48

## Writing

	Coefficient	Standard Error	t-stat
Low paid occupations	-0.07	0.07	-1.02
Discretion	0.22	0.02	13.61
LPO*Discretion	-0.01	0.03	-0.21
Involvement	0.83	0.04	21.09
LPO*Involvement	0.36	0.08	4.69
Low computer use	0.54	0.03	16.00
High computer use	0.65	0.04	16.79
LPO*low computer use	-0.14	0.05	-2.61
LPO*high computer use	0.14	0.11	1.32
Age (centred)	0.00	0.00	1.51
Age 2 (centred)	0.00	0.00	-4.44
Female	0.01	0.02	0.37
Level 1 Quals	0.07	0.04	1.83
Level 2 Quals	0.10	0.03	3.13
Level 3 Quals	0.15	0.03	4.47
Level 4 Quals	0.27	0.04	7.18
Level 5 Quals	0.28	0.04	7.49
Workplace size (1-24)	-0.04	0.02	-2.10
Full time	0.24	0.02	9.63
Agriculture and fisheries	-0.27	0.09	-3.03
Energy and water	-0.28	0.08	-3.66
Manufacturing	-0.37	0.03	-12.32
Construction	-0.15	0.05	-3.25
Distribution Hotels & Restaurants	-0.42	0.03	-13.48
Transport and Communications	-0.25	0.04	-6.26
Banking finance and insurance	-0.19	0.03	-6.68
Other services	-0.37	0.05	-8.01
Managers	-0.01	0.03	-0.34
Professionals	0.17	0.03	5.44
Admin and Secretarial	-0.17	0.03	-4.98
Skilled trades	-0.35	0.04	-8.69
Personal services	-0.15	0.04	-3.45
Sales	-0.41	0.06	-7.43
Machine operatives	-0.44	0.04	-10.27
Elementary	-0.62	0.04	-13.85
2001	0.04	0.03	1.43
2006	0.05	0.03	1.83
2012	0.03	0.03	1.00
Constant	0.83	0.07	12.04



## Numeracy

	Coefficient	Standard Error	t-stat
Low paid occupations	-0.19	0.07	-2.60
Discretion	0.15	0.02	8.20
LPO*Discretion	-0.03	0.03	-1.00
Involvement	0.29	0.04	6.39
LPO*Involvement	0.15	0.08	2.00
Low computer use	0.68	0.04	19.15
High computer use	1.19	0.04	27.82
LPO*low computer use	-0.16	0.05	-2.86
LPO*high computer use	-0.20	0.11	-1.72
Age (centred)	0.00	0.00	0.23
Age 2 (centred)	0.00	0.00	-2.23
Female	-0.12	0.02	-5.09
Level 1 Quals	0.06	0.04	1.55
Level 2 Quals	0.11	0.03	3.07
Level 3 Quals	0.20	0.04	5.43
Level 4 Quals	0.38	0.04	9.19
Level 5 Quals	0.24	0.04	5.85
Workplace size (1-24)	-0.08	0.02	-4.01
Full time	0.11	0.03	3.98
Agriculture and fisheries	0.47	0.09	5.14
Energy and water	0.28	0.09	3.24
Manufacturing	0.55	0.03	15.95
Construction	0.67	0.05	13.11
Distribution Hotels & Restaurants	0.49	0.03	14.33
Transport and Communications	0.18	0.04	4.08
Banking finance and insurance	0.35	0.03	11.01
Other services	0.21	0.05	3.83
Managers	0.24	0.04	6.41
Professionals	0.32	0.04	8.14
Admin and Secretarial	0.13	0.04	3.24
Skilled trades	-0.07	0.05	-1.57
Personal services	0.01	0.05	0.20
Sales	0.22	0.06	3.55
Machine operatives	-0.23	0.05	-4.69
Elementary	-0.23	0.05	-4.91
2001	0.01	0.03	0.38
2006	0.00	0.03	0.08
2012	0.01	0.03	0.45
Constant	0.29	0.08	3.78