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Impact of Poor English and Maths
Skills on Employers: Literature Review

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RESEARCH

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Contents

Introduction	6
About the wider project.....	6
Objectives of this literature review.....	7
Method.....	7
Scope.....	8
Context: the drive to improve literacy and numeracy skills in England.....	9
Structure of this review.....	11
1. Literacy and numeracy skills in English workplaces	12
1.1 Basic skills and employment.....	12
1.2 Basic skills and occupation.....	13
1.3 Basic skills and industry sector.....	15
1.4 Growing demands for basic skills	16
1.5 Implications for research design	21
2. Employer views on the literacy and numeracy skills of their employees	24
2.1 Theoretical considerations: literacy and numeracy as essential parts of a broad array of employment skills.....	24
2.2 Evidence from employers	25
2.3 Implications for research design	33
3. Economic costs associated with poor English and maths in the workplace	38
3.1 Theoretical considerations: Possible costs to businesses who may be affected by poor literacy and numeracy	38
3.2 Evidence from employers (UK).....	40
3.3 Evidence from employers (International)	45
3.3 Implications for research design.....	47
4. Motivations and incentives for employers to invest in basic skills provision	50
4.1 Theoretical considerations: human capital theory, general education and job-specific training	50
4.2 Evidence from employers	51
4.3 Implications for research design.....	73
5. Disincentives, constraints and market failure	76
5.1 Theoretical considerations: market failure and suboptimal investment in workplace literacy and numeracy	76
5.2 Evidence from employers	76
5.3 Implications for research design.....	86
6. Costs and benefits of workplace English and maths programmes	90
6.1 Theoretical considerations.....	90

6.2	Costs of provision	95
6.3	Benefits of provision	96
6.4	Barriers to robust evidence on the impacts of workplace basic skills programmes	97
6.5	Perceived benefits.....	98
6.6	Implications for research design	109
	References	113
	Appendix: search and retrieval strategy	120

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Introduction

About the wider project

Ipsos MORI and the National Research and Development Centre for Adult Literacy and Numeracy (NRDC) have been commissioned by Department for Business, Innovation and Skills (BIS) to undertake research to assess the impact of poor English and maths skills on English employers. The overall goal of the study is to communicate to employers the benefits of investment in relevant provision by addressing the lack of quantifiable evidence of the costs of poor literacy and numeracy skills to English employers, and the costs and benefits of literacy and numeracy provision for these employers.

This research project has five aims:

- To establish employer views of the levels of English and maths skills difficulties among their adult workforce.
- To quantify the impact and costs to employers of poor English and maths skills on business performance – including deriving a quantitative estimate of the cost of poor English and maths skills to employers nationally.
- To quantify approximate costs and benefits for those providing or funding relevant training.
- To explore facilitators and barriers for employers providing or funding relevant training.
- To inform BIS and provider policies and activities in support of developing an internationally competitive skills base.

To achieve these aims, two employer surveys will be conducted:

- a general survey of employers designed to explore perceptions of the impact of employee skills on business performance

- a survey of employers who have recently provided relevant training, assessing the perceived costs and benefits of this training.

These quantitative data will be supplemented by qualitative data gathered from case studies conducted across a range of employer types to provide greater insight into their motivations for providing support to address poor English and maths, and experiences of doing so.

Objectives of this literature review

The following literature review has been undertaken as the first stage in producing a theoretical framework of the routes through which business performance may be affected by workforce English and maths skills. This theoretical framework will in turn inform the questionnaire design for the employer surveys and case studies, and the review offers a number of preliminary suggestions as to content.

The literature review synthesises evidence from qualitative and quantitative studies that shed light on the costs to employers of poor English and maths skills. It also addresses the benefits of, and the barriers to, workplace training, with a focus on employer perceptions of the need for and efficacy of workplace training in English and maths. The review also considers and summarises key theoretical and methodological issues.

Method

The literature review search strategy built upon the search strategy carried out for the 2011 BIS “*Review of research and evaluation on adult literacy and numeracy skills*” (Research paper 61), led by NRDC (Vorhaus et al, 2011).

In order to ensure thorough coverage of the evidence base, three types of sources were searched:

- bibliographic databases
- websites of key organisations
- publication and reference lists compiled by subject experts and earlier literature reviews.

The review draws on English-language literature accessed through the main international research databases, taking advantage of NRDC's extensive library of research on adult literacy, language and numeracy. Searches were supplemented by information requests from NRDC's extensive range of LLN contacts globally and a review of grey literature related to international policymaking in adult English and maths. Where there is a lack of evidence specific to adult English and maths, the project team will explore other potentially relevant evidence, for example in the broader field of adult education and training.

The literature review takes a critical approach to the evidence: close attention has been given to the quality of the available evidence, with higher quality research highlighted and given greater priority in the assessment. Particular focus has been given to high-quality quantitative evidence, with informal "weighting" of the research evidence particularly important in the field of adult English and maths given the mixed quality of the overall evidence base.

Scope

This review is concerned with employers' perceptions and attitudes, not those of employees. Employee surveys are therefore outside of the scope of this review, except where evidence from these surveys is relevant to employers. For example, one frequently cited benefit of workplace basic skills programmes is an improvement in employees' attitudes to education. Workplace LLN courses have a strong track record of giving many previously disaffected adults their first experience of enjoyable, personally satisfying education (MacLeod and Straw, 2010). This is a valuable complement, and a necessary part of any national or regional strategy to attract low skilled, educationally disengaged adults into learning. However, except where directly related to impacts on employers, such benefits fall outside the scope of this project.

Also outside the scope of this project are factors that contribute to the success or failure of workplace learning programmes.

Context: the drive to improve literacy and numeracy skills in England

Public interest in and awareness of low literacy skills among adults began in the late 1960s and 1970s and led to a series of government-backed strategies and campaigns to improve adult literacy and numeracy levels. As technology and globalization have continued to bring about major changes in the workplace, so too have poor skills levels become an issue for governments aiming to increase the UK's productivity and build sustainable growth. Adult basic skills became a renewed priority with the election of the New Labour government in 1997. The Moser Report (DfEE, 1999) identified Level 1 literacy and Entry Level 3 numeracy as the standards necessary for adults to function at work and society in general, and recommended that there should be a national survey of literacy and numeracy need in England. The resulting survey, which took place between June 2002 and May 2003 under the auspices of the then Department for Education and Skills (DfES), assessed the literacy and numeracy skills of 8,730 randomly selected adults aged between 16 and 65 over five broad levels of competence (Entry level 1 to Level 2). The survey report (Williams et al., 2003) estimated that 6.8 million adults aged 16-65 in England had numeracy skills below Entry level 3 and 5.2 million adults had literacy levels below Level 1.

To meet the challenge of raising the literacy and numeracy skills of the adult population in England, £5 billion was invested between 2001 and 2008 (DIUS 2009, p. 4). International surveys, such as the OECD's International Adult Literacy Survey (IALS) and the Adult Literacy and Life Skills Survey (ALLS), using similar (but not directly comparable) techniques to the Skills for Life survey, showed that 'while many other countries have a large number of adults with low basic skills, the UK lies in the bottom half of the OECD' (Leitch, 2006: 43). Poor skills have been blamed for the UK's relatively low productivity compared to other EU countries: the Skills for Life strategy document claimed that 'Productivity per hour worked is 20% lower in Britain than in Germany, and our poorer literacy and numeracy skills account for a third of that shortfall' (DfEE 2001, p. 23).

The Skills for Life strategy was reviewed, revised and refreshed (see for example *the Leitch Review* [DIUS, 2007], *Skills for Life: Progress in Improving Adult Literacy and Numeracy* [NAO, 2008] and *Skills for Life: Changing lives* [DIUS, 2009]). Following the

publication of the Leitch review, which recommended that by 2020, 95% of adults should have achieved functional literacy and numeracy (an increase on estimated 85% literacy and 79% numeracy in 2005), emphasis has moved to the importance of functional skills at a time of economic challenge, with a particular focus on employability and ensuring that people have skills that enable them to find, stay and progress in work.

The UK Commission for Employment and Skills, in assessing the progress of the UK toward the 2020 ambitions for employment and productivity, signals the danger that although the skills profile of the country is improving, other countries are improving at a faster rate. Indeed, the UK's ranking has changed little. In fact, based on current progress, UKCES predicts that the international skills standing of the UK is unlikely to improve by 2020 let alone become World Class (UKCES 2009a, p. 7) with the overall skills gap between the UK and higher ranked countries widening. Since 2005, the proportions of the population with functional literacy skills were estimated by the UKCES to have edged up to just above 86% in 2008 (i.e. just less than 14% had poor literacy skills) and the proportion with functional numeracy skills had increased to 81% (i.e. 19% had poor numeracy skills).

In *Skills for Sustainable Growth* (November 2010), the new Coalition Government, while supporting the ambitions of Leitch, rejected the Leitch targets in favour of encouraging local responses to local needs. For literacy and numeracy, the removal of targets will instead introduce a programme focusing on:

'...equipping individuals with the skills and qualifications they need to get a job, progress in work and play a full part in society' (BIS, 2010, p. 32).

With this new strategy the government sought to move towards a demand-led system where the 'users' (learners and employers) are the drivers of the system and there is now a renewed focus on the need for a skilled workforce to drive growth in jobs and GDP. The 2011 Skills for Life survey, which replicated its 2003 predecessor, found a higher proportion of adults to have Level 2 literacy or above, but no change in the proportion with literacy at Entry level 3 or below. Numeracy skills in 2011 were marked by a slight decline, with fewer adults having skills above Level 1 and a greater

proportion falling below Entry Level 2.

The current Government's Further Education and Skills Reform Plan, *New Challenges, New Chances* (December 2011), sets out a vision for the future landscape of further education and skills.

Structure of this review

This review is presented in six main sections:

- Section 1 considers general evidence about workplace skills levels
- Section 2 presents evidence on employer views of the skills gaps and needs in the workplace
- Section 3 reviews evidence on the economic costs associated with poor English and maths skills in the workplace
- Section 4 considers the incentives employers have to invest in basic skills provision
- Section 5 considers the constraints, disincentives and market failures to employer engagement with workplace basic skills provision
- Section 6 presents evidence on the costs and benefits of workplace English and maths programmes

Each section provides all three of the following: 1) theoretical background on the topic(s) being investigated; 2) a summary of the most robust evidence on those topics; and 3) implications for research design. The only exception to this structure is Section 1 which, because it addresses more general evidence and issues about workplace skills, does not include theoretical considerations that might influence research design.

1. Literacy and numeracy skills in English workplaces

This section summarises general evidence (i.e. not collected from employers, but through more general surveys) about employees' literacy and numeracy skills. In particular, this section draws on findings from the most recent English study providing evidence on employment-related basic skills levels, the 2011 Skills for Life Survey by the Department of Business, Innovation and Skills.

This section also provides evidence from a range of sources looking at the growing demand for English and maths in the workplace. These sources include surveys and other studies targeted at employers and seeking to gain insights into their own perspectives on workplace changes.

1.1 Basic skills and employment

The 2011 Skills for Life (SfL) survey provides an overview of the English and maths skills of working age adults in England, including those in English workplaces. This survey assessed the literacy and numeracy skills of a representative sample of more than 5800 adults in England aged 16-65, 70% of whom were classified as working (BIS, 2012). This percentage includes people in paid labour (all but 3% of the 70% classified as working) and those in a range of other circumstances, including those on government-funded training schemes. It does not include those in full-time education.

As in its predecessor, the 2003 SfL Survey (DfES), adults who were employed tended to have better literacy and numeracy than those who were not (BIS, 2012). This was particularly true with regard to literacy. In literacy, part-time workers performed as well as full-time ones: the primary gap in literacy was between adults in paid labour and those who were not. In numeracy however, full-time employees' average scores were much higher than part-time employees': the primary gap in numeracy performance was between full-time workers and everyone else, as it had been in 2003.

Looking at literacy and numeracy levels by working status, the SfL Survey 2011 found that, among adults who were in paid labour, 9% did not achieve government targets

for functional literacy (Level 1), and 19% did not achieve government targets for functional numeracy (Entry level 3). Table 1.1 provides additional detail.

Table 1.1 Literacy and numeracy levels of employed adults in England

<i>Literacy/numeracy level</i>	<i>% at this level, literacy</i>	<i>% at this level, numeracy</i>
Level 2 or above	61	25
Level 1	28	32
Entry level 3	6	24
Entry level 2	2	14
Entry level 1 below	3	5

Source: Skills for Life survey 2011, page 163.

1.2 Basic skills and occupation

The 2011 Sfl Survey uses the eight-class version of the National Statistics Socio-Economic Classification (NS-SEC) system to categorise respondents' occupations. In the survey, there was a clear relationship between respondents' occupation and their literacy and numeracy skills. Table 1.2 shows the percentages of respondents within each category achieving the government recommended minimum level for the literacy and numeracy.

Table 1.2 Occupational categories achieving English government targets for literacy and numeracy

<i>Occupation</i>	<i>% of respondents*</i>	<i>% achieving Level 1 literacy</i>	<i>% achieving Entry level 3 numeracy</i>
Higher managerial and professional	8	95	94
Lower managerial and professional	26	95	88
Intermediate	11	93	84
Small employers and own account workers	8	88	78

<i>Occupation</i>	<i>% of respondents*</i>	<i>% achieving Level 1 literacy</i>	<i>% achieving Entry level 3 numeracy</i>
Lower supervisory and technical	10	83	73
Semi-routine	14	84	72
Routine	12	76	70

Source: Skills for Life survey 2011, page 166.

**Figures in this category do not add up to 100, because they do not include other categories, including those who have never worked, the long-term unemployed, full-time students, and respondents providing insufficient information for categorisation.*

Looking first at literacy assessments, there is a step-wise gradient, with more than 90% of adults in the three highest occupational categories achieving Level 1, 83-88% of those in the next three categories achieving that level, and only 76% of those in routine occupations doing so. In numeracy, overall performance is lower and the gradient is steadier, with each occupational category performing better than the one below it.

Although having lower skills cannot be equated with having a skills need, these figures suggest that those in routine, semi-routine and lower supervisory and technical occupations, categories which accounted for more than one third of the total sample, may be most in need of improving their skills.

The 2011 SfL Survey also suggests that employees' perceptions of their English and maths skills are related to occupational levels. For example, while routine occupations accounted for only 12% of the total sample, they accounted for 30% of employed respondents who felt they had poor literacy skills and 26% of those who felt they had poor numeracy skills. In contrast, the lower managerial and professional category accounted for 26% of the total sample, but only 8% of those who felt they had poor literacy skills and 14% of those who felt they had poor numeracy skills.

Table 1.3 Occupational categories and self perceived literacy and numeracy levels in England

<i>Occupation</i>	<i>% of respondents*</i>	<i>Reading and writing self-assessment</i>		<i>maths self-assessment</i>	
		<i>Positive (both skills), % of total</i>	<i>Negative (both skills), % of total</i>	<i>Positive, % of total</i>	<i>Negative, % of total</i>
Higher managerial and professional	8	13	5	13	4
Lower managerial and professional	26	31	8	30	14
Intermediate	11	11	6	10	10
Small employers and own account workers	8	9	11	10	8
Lower supervisory and technical	10	11	16	11	15
Semi-routine	14	15	25	15	23
Routine	12	11	30	11	26
<i>N (unweighted)</i>		<i>6174</i>	<i>193</i>	<i>6202</i>	<i>511</i>

Source: Skills for Life survey 2011, page 166.

**Figures in this category do not add up to 100, because they do not include other categories, including those who have never worked, the long-term unemployed, full-time students, and respondents providing insufficient information for categorisation.*

1.3 Basic skills and industry sector

The 2003 and 2011 SfL Survey found significant variation in literacy skills between industry sectors. Using the 2007 Standard Industry Classification (SIC) to classify the industries in which respondents worked, the Skills for Life surveys found that the sectors with the highest average literacy levels were: Education; Public administration; Professional, Scientific and technical; and Information and communication. For example, in 2011 almost all respondents (98%) who worked in Education achieved

Level 1 or above in literacy. The survey further found that respondents in the “Construction” and “Accommodation and food service” sectors were less likely than average to achieve Level 1 literacy. Only 76% of those who worked in “Accommodation and food service” achieved this level or above. The same industries which performed well in literacy tended to have above average numeracy, while those which performed poorly at literacy also tended to perform poorly at numeracy.

1.4 Growing demands for basic skills

1.4.1 General evidence

There is a tendency, when thinking of changes in the workplace in recent years, to focus on the growing need for digital literacy. For example, research looking at workplace needs found that the proportion of workers for whom computers are an essential part of work rose from 31% to 40% between 1997 and 2001, while the number for whom they were not important at all fell from 31% to 21% (Wolf, 2005).

However, alongside the very visible growing digitisation of the workplace, a range of other changes also appears to be driving increased demand for better literacy and numeracy. Nonetheless, most of the evidence on this topic is anecdotal or observational and insufficiently nuanced. Levenson (2004, p. 85) argues that “little systematic evidence is available to evaluate whether skill upgrading is occurring in jobs throughout the economy.” One example of such evidence is that produced in the United States by Capelli (1993) which provides “the only systematic evidence on skill upgrading within individual companies” (Levenson 2004, p. 85). Capelli investigated changes in skills requirements for production jobs in 93 manufacturing establishments between 1978 and 1986, and for clerical jobs in 211 firms between 1978 and 1988. He found significant skill upgrading in most production jobs, and a mix of skill upgrading and deskilling in clerical jobs. However, the relevance of the clerical aspect of this study to modern workplaces is questionable, given the mass computerisation of the workplace that has occurred since the 1980s.

Levenson (2004) highlights a number of within-workplace developments that have or have likely increased the need for basic skills. These include greater attention to customer service as a source of competitive advantage, and the greater degree of customer contact in service sector jobs. Both of these factors push up the need for

good quality communication and interpersonal skills on the part of front line staff. Within manufacturing and other industries, some job roles have become less narrowly defined, requiring more problem-solving and intra- and inter-team communication. In all industries (albeit not in all organisations), there has been a move towards more direct employer-employee communication on topics requiring good language and numeracy skills, e.g. staff pensions.

Increased demand for report-writing at all levels of the organisational hierarchy has been cited by employers as a motivating factor behind the setting up of Skills for Life workplace courses (Evans et al 2004). For example, in one local authority Evans and Wolf found that estate caretakers were increasingly expected to provide written documentation of cases of crime, vandalism and general disrepair, demanding higher literacy skills. A bus company in the Midlands ran a compulsory “customer service and literacy” course for 400 employees, partly in response to new requirements for drivers to fill in incident report forms, a requirement which was itself partly shaped by company fears over litigation from customers.

Employers tend to be slightly less likely to cite employees’ numeracy problems, but Hoyles et al (2002) found that, despite the occasional invisibility of numeracy in the workplace, it is widely present and is growing ever more frequent. Investigating the level and nature of mathematical skills required in seven different occupational sectors – electronic engineering and optoelectronics; financial services; food processing; health care; packaging; pharmaceuticals; and tourism – Hoyles et al found an increase in the average level of skills required in every sector.

Some common trends were identified in all these sectors:

- the need for mathematical skills was being progressively extended throughout the workforce as a result of the pressure of business goals and the spread of computers
- there was a growing need to communicate information effectively, based on mathematical data and inferences, and involving colleagues, customers and external inspectors

- there was a growing need for hybrid skills, e.g., combining technical and analytic knowledge with the ability to communicate analytical information.

Hoyles et al also found the need to perform maths being pushed further down the employment hierarchy. These researchers concluded that “mathematical skills in the workplace are changing, with increasing numbers of people engaged in mathematics-related work, and with such work involving increasingly sophisticated mathematical activities” (p. 5). Hoyles et al pointed to the following aspects of mathematics as significant components of what a burgeoning phenomenon on they referred to as ‘techno-mathematical literacy’:

- integrated mathematics and IT skills
- an ability to create a formula (using a spreadsheet if necessary)
- calculating and estimating (quickly and mentally)
- proportional reasoning
- calculating and understanding percentages correctly
- multi-step problem-solving
- a sense of complex modelling, including understanding thresholds and constraints
- use of extrapolation
- recognising anomalous effects and erroneous answers when monitoring systems
- an ability to perform paper and pencil calculations and mental calculations as well as calculating correctly with a calculator
- communicating mathematics to other users and interpreting the mathematics of other users
- an ability to cope with the unexpected.

1.4.2 Employers' perspectives

Do employers share this perception that literacy and numeracy skills are becoming increasingly important to employees in the modern workplace?

There is evidence to suggest that employers have recognised the increased need for basic skills for some time, and that this change is evident across a wide range of sectors. Three quarters of respondent employers¹ reported by Frank and Hamilton (1993) highlighted an increase in the need for basic skills in manual jobs over the previous five years, and Atkinson and Spilsbury (1993) found that nearly half of employers in their sample² reported the increasing importance of oral communication skills and also basic skills related for working with ICT (Brooks et al 2001). In the 2008 Scotland Employer Skills Survey³ (Futureskills Scotland, 2008), in which one in five Scottish workplaces reported a skills gap, those gaps were partly attributed to changes in the workplace, including new technologies, products and services.

Moore and Benseman (2003), in a small New Zealand survey investigating literacy needs in the workplace, examined whether or not employees experienced difficulties performing workplace literacy tasks and whether these demands were increasing over time. A total of 330 randomly chosen respondents (shop floor employees, supervisors and employee relations managers) at 17 companies representing a range of industries in New Zealand participated. The authors found that almost all managers reported that the demands being made on employees' literacy skills were more or much more than only two or three years ago. When asked what was driving the demand for higher literacy skills, almost all cited a drive for higher quality services and/or products. The study concluded that changing work practices and more fluid organisational structures placed greater demands on workers. Three quarters of employee relations managers rated literacy skills as very important; the remaining quarter rated them as important. According to the authors, these percentages are consistent with similar research carried out in the mid-1990s.

¹ There were 73 respondents to this survey

² 73 Training and Enterprise Councils covering approximately 1.3 million jobs below the professional and technical level in 24,000 establishments were consulted

³ 6,274 workplace/establishment interviews were completed during June and July 2008. The response rate for the survey was 45 per cent

Several supervisors in the Moore and Benseman study said that their companies were coping with rising literacy demands by raising the entry qualifications of new employees, but that the present workforce often had literacy problems that could not be sufficiently addressed by standard workplace training programmes. This finding, though only tentative, may have implications for long term national skills plans. Nations who wish to increase their competitiveness in the global marketplace by upskilling their economies may need to invest significant resources into improving workers' basic literacy and numeracy skills so that these workers can meet new workplace demands. Atkinson and Williams (2003) found that while having poor literacy or numeracy is not always a barrier to entry level employment, it can and does hamper advancement.

1.5 Implications for research design

Area	Observations	Recommendations
i. Level of skills	<ul style="list-style-type: none"> • The 2011 Skills for Life survey (SFL2011) provides the fullest and most recent data on the English and maths skills of working age adults in England. • Findings from SFL2011 show a relationship between basic skills level and occupation: the lower the occupational category, the lower the basic skills. • Findings from SFL2011 show a relationship between numeracy skills and employment type: full-time workers are more likely to have higher skills than part-time workers. • Findings from SFL2011 show a relationship between basic skills level 	<ul style="list-style-type: none"> • In order to ensure that the data from the current study are comparable to this robust source, classifications in the questionnaire should be matched where possible to those used in this larger study. • It is recommended that, if practicable, the survey obtains data on the proportion of employees in occupation types at each establishment. • It is recommended that, if possible, the Inter-departmental Business Register be used to provide data on the proportion of full-time and part-time employees within each establishment. This can then be verified in the interview. • The sampling process should take account of the considerable variation in basic skills level between industry sectors and perhaps oversample from the sectors (such as

Area	Observations	Recommendations
	<p>and industry sector: in some sectors (such as Education) almost all respondents had functional literacy.</p>	<p>Construction” and “Accommodation and food service”) where skills levels are lowest. Size and occupational structure should also be taken account of in the sampling.</p>
<p>ii. Changing skills landscape</p>	<ul style="list-style-type: none"> • Evidence on whether better and/or different basic skills (upskilling and deskilling) are required in the current/future workforce is largely anecdotal or observational. • The evidence suggests that to gather data on the changing role of literacy and/or numeracy skills in the workplace, instrumentation should 1) explore the drivers behind upskilling or deskilling, and 2) recognise that employers may not view the new skills required as literacy and/or 	<ul style="list-style-type: none"> • In establishing employer views on their employees’ basic skills difficulties, the general employer survey could: <ul style="list-style-type: none"> ○ Ascertain whether there are they perceive that there are fewer job opportunities in the establishment for low skilled workers than there were previously (within a defined reference period, or range of reference periods). ○ Investigate whether the establishment projects few opportunities for low skilled workers in the future. ○ Explore the drivers behind upskilling or

Area	Observations	Recommendations
	<p>numeracy skills per se, but rather as other employability skills.</p>	<p>deskilling: for example, the effect of new reporting requirements, technological changes, customer service commitments, new work practices, new organisational structures. These drivers could then be analysed across a range of industry sectors and occupation types.</p> <ul style="list-style-type: none"> •

2. Employer views on the literacy and numeracy skills of their employees

This section provides a summary of research evidence on employers' perceptions of the basic skills levels, needs and gaps in their workforce. This evidence is contextualised within a broader theoretical discussion of the relationship between literacy, numeracy and other employment-related skills.

2.1 Theoretical considerations: literacy and numeracy as essential parts of a broad array of employment skills

There is a lack of consensus on the precise literacy and numeracy skills that adults need in many socio-economic contexts. The Programme for the International Assessment of Adult Competencies (PIAAC), which will begin reporting later in 2013, is making efforts to remedy this by asking respondents to report on the specific skills they use in the workplace (OECD 2009). This should provide valuable evidence, not just on the literacy and numeracy skills that employees need in the workplace, but on the ways in which those skills interact with other skills, including ICT. However, the evidence gathered through this repeated international cross-sectional survey will not include employers' perspectives.

More evidence is needed on the literacy and numeracy skills required in the workplace, the ways in which these skills relate to other workplace skills and characteristics, and how this broader combination of workplace skills comes together to improve productivity and performance. The UK Commission for Employment and Skills has developed a theoretical framework attempting to place literacy and numeracy within the broader context of 'employability skills', which are defined as 'the skills that must be present to enable an individual to use the more specific knowledge and technical skills that their particular workplaces will require' (UKCES 2009: 9-10c). Drawing on an international review covering 20 years of research, UKCES has developed a theoretical framework detailing the relationship between the basic skills,

digital literacy and broader employment-related skills. According to the UKCES scheme, English, maths and ICT skills can be considered “functional skills” and are supported by personal characteristics and traits sought by employers; being ready to participate, make suggestions, accept new ideas and constructive criticism, and take responsibility for outcomes. This combination of functional skills and personal characteristics are exercised in the context of four additional personal skills: self management, thinking and solving problems, working together and communicating, and understanding the business.

While this framework helps to conceptualise the relationships between different types of skills, including English and maths, it also highlights some of the challenges inherent in attempts to separate out literacy and numeracy as isolated influences on worker performance and company productivity. Employers tend to take a more holistic view of worker skills, seeing literacy and numeracy not in isolation but as part of a more general group of functional and personal skills. From a research perspective, this makes it difficult to accurately assess the contribution of literacy and numeracy skills alone to productivity.

This tendency is evidenced in a number of English and international surveys.

2.2 Evidence from employers

A 2009 survey (Martin et al) of more than 1000 employers by the Learning and Skills Network found that the key skills that employers want from the young people entering their first job were: timekeeping (80%); literacy (79%); numeracy (77%); enthusiasm and commitment (75%). The survey also asked employers about “deal breakers” what were the skills gaps that would prevent them from hiring young staff, no matter how good their other skills. 55% of employers cited a lack of literacy skills as a deal breaker; 51% a lack of communication skills; 48% focused on enthusiasm and commitment; and 47% said poor numeracy skills would prevent them from hiring young candidates.

In a survey of UK recruiters for low-skill jobs (Atkinson and Williams, 2003), basic skills were rated as the third most important selection criteria for entry-level workers, above previous experience, a continuous job record, and technical competencies, but below two key personal skills: reliability and motivation.

Approximately one in five Scottish workplaces report skills gaps. In the 2008 Scotland Employer Skills Surveys (Futureskills Scotland 2008), for example, one fifth of Scottish employers reported that their employees lacked literacy (21%) and numeracy (20%) skills, yet higher proportions cited problems with oral communication (44%) and written communication (33%). The implication of this is that English and maths skills need to improve, but such improvements will not in themselves be sufficient. Basic skills are essential, but not in isolation.

In a small study of 13 managers, Boyle et al (2001) found that managers were much more interested in skills such as punctuality, team work and compliance with regulations than with basic skills. However, Boyle et al observed that these managers appeared to have limited understanding of the amount of reading, writing and numeracy required to perform the jobs in question, leading the authors to conclude that either managers were unaware of the level of basic skills required or that they took the possession of such skills by their recruits for granted.

2.2.1 Evidence on literacy and numeracy levels and skills and gaps (UK)

The subject of what employers perceive to be the literacy and numeracy skills employees need to be productive has been the focus of a number of surveys in the past two decades, due in large measure to increasing concerns about the basic skills needs of the workforce. However, the majority of this research has focused on employees' skills, rather than their impacts on employers. This may be because, in England at least, much of the funding for workplace basic skills programmes has come from adult literacy and numeracy policy streams.

As summarised in Brooks et al (2001), surveys undertaken during the 1990s included a large-scale study conducted in 1991-1992 by Atkinson and Spilsbury (1993) which questioned 73 Training and Enterprise Councils covering 1.3 million jobs in 24,000 establishments in England and Wales. Ten percent of establishments reported that their employees' basic skills were 'just adequate or worse' (particularly low-skilled workers) and nearly one in four reported that job applicants' basic skills were 'just adequate or worse' (across all occupations). Concentrating primarily on the less skilled parts of the labour market (that is, the 2/3 of the labour market then below professional and technical level), Atkinson and Spilsbury found that even in the early 1990s

relatively few jobs could be done without basic skills, with oral communication and reading skills considered particularly important. The survey found that there was substantial variation in occupational basic skills needs, depending on the type of job, industry and company size. Skills were summarized by six broad occupational categories: clerical/secretarial; personal service; selling; skilled/craft manual; plant, vehicle, and machine operatives; and other manual jobs. Notably for policymakers, employers felt that staff needed reading, writing and oral communication skills at higher than Entry level for all types of jobs.

The UK Commission's Employer Skills Survey 2011 is now "the key UK data source on employer demand for and investment in skills" (Davies et al, 2012, p. iv). The England-specific survey report includes findings from more than 74,000 interviews conducted with employers in England, and enables time series comparisons with earlier National Employer Skills Surveys carried out in 2005, 2007 in 2009. (Surveys of employers in Scotland, Wales and Northern Ireland produce results very similar to those of England, and will not be discussed in this paper.)

In the UK Commission's Employer Skills Survey 2011, 18% of establishments reported a skills gap. This compares to 19% in 2009, 15% in 2007 and 16% in 2005. In the 2011 survey, employers reported that 6% of their staff were not fully proficient in the skills they needed to do their jobs. This figure is consistent across the four most recent surveys: 7% in 2009, and 6% in both 2007 and 2005. However, with regard to literacy and numeracy, the survey only appears to include information on education leavers. By education leavers, the survey refers to individuals coming to employment from education, rather than from other employment. Only a small proportion of employers cited a lack of literacy or numeracy skills as a problem for this group. Looking at distinct subgroups of education leavers, 5% of employers said that 16-year-olds suffered from a lack of literacy/numeracy skills. 3% of employers said that 17-18-year-olds suffered from a lack of basic skills, 2% of employers said that 17-18-year-old FE college leavers did, and only 1% of employers cited literacy/numeracy as a weakness amongst university or HE leavers. These results place literacy/numeracy needs far down the list of skills and attributes perceived as lacking amongst education leavers, and are consistent with findings from earlier surveys in this series. This consistent finding implies that the education system is having a higher level of success than is

generally thought in its efforts to provide young people with employment-ready literacy and numeracy skills.

Unlike the 2011 survey, the 2009 National Employer Skills Survey for England 2009 (Shury et al, 2010) did report employers' perceptions of literacy and numeracy needs amongst all employees, rather than just education leavers. In 2009, 19% of employers reported a skills gap – that is, they had employees who were not fully proficient in their jobs. Amongst employers reporting such a skills gap 24% said that there was a literacy skills gap, and 21% reported a numeracy skills gap. This means that 4.5% of employers reported a literacy skills gap and 4% of employers reported a numeracy skills gap.

In the 2009 employer survey, 16% of all vacancies were skill shortage vacancies (SSVs). Literacy was mentioned in connection with 30% of SSVs; numeracy was mentioned in connection with 26%. These figures represent an increase from 2007, when literacy and numeracy were mentioned in connection with 22% and 18% of SSVs, respectively.

England's 2007 National Employers Skills Survey found that literacy and numeracy deficits were most often reported amongst personal service, plant and machinery staff.

Another major national survey, and one which tends to generate considerable policy and media attention, is the annual Confederation of British Industry (CBI) Education and Skills survey (CBI, 2012), which questions employers about workplace basic skills gaps, among other related issues. Over the course of five surveys (2008-2012), the survey has polled CBI members at senior executive level across all employment sectors (735 employers in 2008, 581 in 2009, 694 in 2010, 566 in 2011, 542 in 2012). Based on these surveys, the CBI argues that the majority of employers suffer because of the poor basic skills of their staff. Year on year, increasing proportions of respondents to the CBI survey have expressed concerns about their employees' literacy and numeracy, as illustrated in Table 2.1.

Table 2.1 CBI survey findings, 2008-12

<i>Year</i>	<i>% of employers concerned about literacy</i>	<i>% of employers concerned about numeracy</i>
2008	41	39
2009	40	40
2010	52	49
2011	48	48
2012	56	55

For employers expressing concern about literacy skills, the quality of written English was consistently the major concern. In numeracy, spotting errors and rogue numbers was the main shortcoming. In the CBI surveys, employers in the retail and manufacturing sectors, and employers in larger organisations employing over 5,000 people, are more likely to report poorer literacy and numeracy among their employees.

Evidence from the CBI surveys suggests that poor literacy and numeracy are major problems for education leavers. For example, in the 2012 survey, two thirds of employers (65%) saw a “pressing need” (6) to raise literacy and numeracy standards amongst 14-19-year-olds. The survey report argues that only if literacy and numeracy “are properly addressed can young people begin to use their other skills and abilities to contribute in the workplace” (CBI, 2012, p. 18). The suggestion implicitly points to the UKCES’s theoretical framework which places literacy and numeracy as essential but not isolated aspects of employability. It also highlights issues raised in research on the nature of “academic” versus “real world” skills. For example, Mikulchecy et al (1994) have argued that there may be little transfer from literacy learned at school to literacy as practised in the workplace. Fitzsimons (2000) has made a similar argument with regard to numeracy. The CBI report (2012, p. 21) further argues that the apparently widespread weakness of young people’s literacy and numeracy “represents a major handicap at the start of their working lives”.

However, there is a possibility that the CBI is overstating the severity of employees’ literacy and numeracy skills gaps. CBI survey findings stand in marked contrast to

those of the National Employer Skills Surveys, in which only a small percentage of employers indicate that education leavers suffered from literacy and numeracy problems which affected their work performance. The CBI survey also differs greatly from the employer skills survey in its assessment of the scope of employer literacy difficulties. In the 2009 employer skills survey, only 4-5% of employers pointed to literacy/numeracy gaps in their workplace. In the 2011 CBI survey, however, “employers report[ed] widespread weaknesses in core skills among their existing employees – with almost half reporting problems with literacy and numeracy” (21).

Although the CBI appears to identify a worrying trend of increasing employer dissatisfaction with employee literacy and numeracy skills, caution is due as these surveys offer employers limited options for reporting their concerns, and the reports conflate the responses of employers reporting either that there are skills problems to some extent and to a significant extent within their establishment.

One possible explanation for the large differences between the Employer Skills Surveys and the CBI surveys may be found in the large-scale Skills Needs in Britain surveys conducted during the 1990s. In these surveys, employers with more than 25 employees were asked whether they believed a significant gap existed between the skills that their current employees had and those needed to meet the employer’s business objectives. Data from one sweep of this survey were used by the National Skills Task Force (1997) to argue that a large percentage of employers thought their employees lacked basic literacy and numeracy skills. As reported by Brooks et al (2001), Robertson (1997) challenged this conclusion, arguing that employer respondents were sensitised to literacy and numeracy issues by the concentrated focus of the survey. By averaging the findings from surveys conducted in 1994, 1995 and 1996, he showed that only 4% of respondent employers felt that their business objectives were impeded in this way, although 11% did express concern about employees’ ‘general communication skills’, a finding Brooks et al (2001) suggest could be taken as evidence of a larger employer concern over oral communication skills in the workplace.

One possibility for the large differences between the CBI survey and the National Employer Skills Survey is this issue of sensitisation. By focusing very heavily on

basic skills, the CBI survey may encourage employers to overstate the significance and centrality of literacy and numeracy to workplace performance and productivity. This is an area that requires further investigation.

2.2.2 Evidence on literacy and numeracy levels and skills and gaps (International)

A New Zealand study explored the job-specific literacy demands placed on employees, by investigating whether or not employees experienced difficulties performing workplace literacy tasks and whether these demands were increasing over time (Moore and Benseman, 2003). The study's sample consisted of 330 randomly chosen respondents (shop floor employees, supervisors and employee relations managers) at 17 companies representing a range of industries in New Zealand.

Moore and Benseman found that employees were much less likely to assess themselves as having workplace-related literacy difficulties than were supervisors and employee relations managers. That is, supervisors and employee relations managers identified a greater level of skills need in employees than the employees themselves did. This finding may have implications for staff recruitment when and if employers do offer workplace literacy and numeracy programmes. That is, while employers may see a clear need for Workplace Learning (WPL) programmes, employees may not, thus limiting enrolment.

The findings of the 2006 Australian Adult Literacy and Life Skills Survey (ABS, 2008) indicate that four million Australians who are in employment have literacy levels below the recommended government level, i.e. that required to 'meet the complex demands of everyday life and work in the emerging knowledge-based economy' (Statistics Canada 2005, cited in ABS, 2008a). Employers are aware of this and feel that it is impacting upon productivity. More than 75% of employers consulted in the Australian Industry Group's National Workforce Literacy Project said that their businesses suffered because of low levels of literacy and numeracy among employees; reported negative impacts included reduced productivity (Taylor, 2011; AIG, 2012).

Basic skills difficulties may be a particular issue for employees in insecure jobs, including those who move in and out of unemployment. In an American study, Holzer and Stoll (2001) surveyed 750 establishments that had hired adults who had previously been out of work and were receiving unemployment benefits. Holzer and

Stoll asked employers about a range of issues they may have experienced with this cohort of employees. Basic skills were cited by 12% of employers, making them the fourth most frequently cited problem, after absenteeism, attitudes to work and getting along with co-workers. Employers were much more likely to say that this cohort had some basic skills problems, rather than a lot.

2.3 Implications for research design

Area	Observations	Recommendations
i. Survey respondents and sampling unit (establishment vs enterprise)	<ul style="list-style-type: none"> • The evidence base for this review includes surveys that have been administered to supervisors, managers, employee relations managers (and others). Although who the survey is administered to influences the type and quality of data received, there is no clear message from the evidence that one specific type of respondent is more suitable for the current study. • 	<ul style="list-style-type: none"> • Because the current project methodology is based on short, twenty minute surveys, it is recommended that no final decision on survey respondents is made until the questionnaire is drafted.
ii. Staff recruitment	<ul style="list-style-type: none"> • A range of measures (objective and subjective) will need to be used to get close to an accurate assessment of the extent of basic skills need in the workplace. • One such measure is the extent to which employers specify basic skills in the recruitment process. 	<ul style="list-style-type: none"> • To build up a picture of employers who perceive no need for workplace basic skills training in their establishment, data could be gathered on the importance of basic skills at recruitment level. • The survey could determine the extent to which adults with low literacy and/or

Area	Observations	Recommendations
	<ul style="list-style-type: none"> • There is mixed evidence on whether the basic skills of education leaver(s)/younger job candidates are perceived to be particularly poor. • 	<p>numeracy skills fail to make it through the recruitment process, and in which sectors and occupations this is more likely to happen.</p> <ul style="list-style-type: none"> • The subject of basic skills and recruitment could be explored further in the employer case studies, particularly perhaps with employers who do not report skills gaps at their organisation. •
<p>iii. Employer perceptions of employee literacy and/or numeracy skills</p>	<ul style="list-style-type: none"> • This study faces two linked challenges: to isolate literacy and numeracy skills in assessing skills need/gaps and to evaluate the contribution of these two isolated skills to business productivity and profitability. • The evidence considered in this literature review strongly suggests that to most employers, literacy and numeracy skills form 	<ul style="list-style-type: none"> • Some attempt should be made to capture data on employer perceptions of how literacy and numeracy skills are distributed across their workforce, perhaps by asking for differentiation by employee level. The survey could be used to explore employer knowledge of employee basic skills. Are any basic skills assessments of in-work

Area	Observations	Recommendations
	<p>part of a larger platform of employability skills.</p> <ul style="list-style-type: none"> • An emphasis on the personal skills associated with employability (such as communication skills and problem-solving skills) may mask the role of literacy and numeracy. • There is some evidence to suggest that poor basic skills are associated with specific employee cohorts (younger employees, employees in insecure jobs). 	<p>employees carried out? If so, when (for example, prior to changes in job role, as part of the promotion process)? Do employers attempt to track skills' loss over time? These issues could be examined in depth in case studies.</p>
iv. Skills gap	<ul style="list-style-type: none"> • Survey respondents may have only a limited understanding of the literacy and numeracy skills that are required in the various job roles at their workplace; research has tended to focus on employee skills rather than the impact on employers. • Evidence on the scale of the skills gap in 	<ul style="list-style-type: none"> • The challenges involved in getting employers to think about the use of literacy and numeracy skills within their establishment suggest that more robust data on any skills gap may be captured if the survey instrumentation gives specific 'real world' examples of literacy and numeracy tasks employees may struggle

Area	Observations	Recommendations
	<p>English workplaces is contradictory. In the National Employer Skills Survey, fewer than 5% of all employers reported literacy or numeracy skills gaps in their organisation. The annual CBI Education and Skills survey show an increasing proportion of employers reporting concerns about the impact of poor literacy and numeracy, with over half of all employers expressing concern in 2012. This variation highlights the importance of question wording in the current survey. Broad brush questions can be insufficiently sensitive to capture data on the scale of need.</p> <ul style="list-style-type: none"> Evidence from various sources links basic skills gaps in the workplace to certain occupations (personal service, plant and machinery staff), sectors (retail and manufacturing) and to larger 	<p>with (for example, with writing reports, responding in writing to complaints, calculating percentages, spotting numerical errors).</p> <ul style="list-style-type: none"> Previous studies should be mined for examples of literacy and numeracy skills in practice. For example, self-assessment questions used with respondents to BCS70 may provide useful source material and a point of comparison. Other sources include the CBI's Education and Skills Survey and the National Employer Skills Survey. The possibility of developing composite indicators to represent literacy skills gaps and numeracy skills gaps using these (and other) variables should be explored.

Area	Observations	Recommendations
	establishments.	

3. Economic costs associated with poor English and maths in the workplace

This section offers an assessment of the economic impacts of literacy and numeracy skill deficits in the workplace. Offering such an assessment is a challenge, as there is little reliable evidence on the scale of such costs. Most of the research in this area has focused on basic skills requirements and gaps, rather than the monetising the cost to employers of skills deficits. International research has examined issues relating to the impacts of basic skills in the workplace (although without seeking to attach a cost to these problems). To this end, this section includes literature assessing estimated cost, for example through qualitative interviews with employers, as well as research seeking to accurately quantify economic cost.

3.1 Theoretical considerations: Possible costs to businesses who may be affected by poor literacy and numeracy

Studies such as the Skills for Life survey show that employees' basic skills levels differ significantly depending on their occupational category and the industry they work in. However, this does not in itself imply that particular occupations caused higher cost to firms because of skills gaps. For example, while workers in routine occupations may have lower basic skills levels, many may also have limited basic skills needs. Cleaners, for example, may need to read and write a little or even no English, and may only need a limited spoken vocabulary to function effectively in their job. On the other hand, skills needs in many occupations may negatively affect on product quality and/or company productivity.

Results from the 1993 survey of employers by Gallup for ALBSU showed that employers thought problems with basic skills impacted on employees at all levels. Around a quarter of employers reported that basic skills problems affected all blue-collar workers, and even for managerial/professional staff the proportion was as high as 14% of employers. These are estimations, however, and, as detailed below, this study suffers from a range of methodological problems.

3.1.2 What is affected

Efficiency: Literacy and numeracy skill deficits can have a range of impacts on workplace efficiency. Difficulties interpreting the information arising through production processes can result in inefficient use of technology (and potentially constraining introduction of more efficient processes or higher quality products). Employers may also find it challenging to deploy workers on a flexible basis, constraining managerial innovation. Finally, those with basic skills needs are more susceptible to making errors, resulting in greater levels of lost time and waste.

Time costs: Past research has also shown that basic skill needs amongst the workforce can depress productivity by unnecessary absorption of the time of line managers. This can occur via upward referral of basic work issues, additional time absorbed by quality assurance (supervision costs), or through dealing with higher volumes of customer complaints. The time absorbed will represent an opportunity cost to employers: the time of supervisory staff may be more productively employed on other tasks, leading to lower levels of total output (GVA).

Accidents: Errors driven by basic skill needs may cause additional costs through greater risk of accidents. These costs could include one-off costs associated with an accident (damage to machinery, for example), but may also to on-going costs for firms (such as higher insurance premiums). Accidents could also lead to lost output (GVA) where production is stopped or halted.

Sales or turnover: Basic skills needs in the workplace have been shown to negatively impact on customer relationships, leading to loss of sales (as consequences of staff error or misprocessed orders). These types of impact could potentially be costly to firms, and to the economy more widely if these sales are lost to foreign competitors.

Human resources: past research has also shown that a high prevalence of basic skills needs amongst the workforce has a range of human resource effects. For example, the 1993 study highlighted the recruitment costs associated with an inability to promote those high basic skills, while other studies have highlighted that those firms investing in basic skills training benefit from lower turnover of staff. Avoidance of recruitment costs can help boost productivity by boosting profits and reducing consumption of services.

3.2 Evidence from employers (UK)

Most UK research in this field has not sought to estimate costs, but has instead focused on the avenues through which firms might incur such costs. For example, employers responding to the CBI's Education and Skills surveys routinely express concern about the impact of poor basic skills on business performance: in 2008, for example, 40% of respondents reported poor customer service and 34% lower productivity linked to literacy and numeracy skills problems. Likewise, research on poor literacy and numeracy skills in the Armed Forces (NRDC, 2013) has found that individuals with poor basic skills can place a burden on the chain of command. Poor literacy and numeracy among service personnel is associated with: being detained at the Militarily Corrective Training Centre; being involved in accidents; being Absent without Leave; and being given lower performance ratings by commanding officers.

The main UK effort to estimate costs to employers (and industry as a whole) of poor basic skills is the survey conducted by Gallup, who were commissioned by the (then) Adult Literacy and Basic Skills Unit (ALBSU) in 1992 to conduct a survey of employers⁴. This survey (ALBSU 1993) aimed to establish the levels of basic skills difficulties among the workforce as perceived by employers; and to quantify and describe the costs to employers of poor basic skills and the effect of these on their operation. Data were gathered in telephone interviews with 400 managers in firms with 51 or more employees, using a randomly selected sample weighted to be representative for the UK.

Employers were asked three questions:

1. how many customer orders were cancelled per year because of errors, problems or misunderstandings?
2. how many orders were despatched/produced incorrectly?
3. how many customers were lost per year through errors, problems or misunderstandings?

⁴ This survey and its impacts have been ably summarised by Ananiadou et al (2003); our own summary draws heavily on that one.

Employers were then asked to estimate what percentage of these problems could have been avoided if their staff had better literacy, language and numeracy skills. Further questions were asked about the additional supervisory costs incurred because of poor staff basic skills, and the cost of recruiting staff externally because poor basic skills limit their own employees' potential for internal promotion.

ALBSU estimated the average overall annual cost of poor basic skills for a company employing 51 employees or more to be £166,000 (in 1993 pounds). Costs differed depending on company size: for smaller companies (51–100 staff) they were estimated at approximately £86,000 per year. For the largest companies, i.e. with more than 1000 employees, costs due to poor basic skills were estimated at roughly £500,000 per company per year.

Table 3.1 Average cost of poor basic skills per company

<i>Approximate number of:</i>	<i>(a) Number</i>	<i>(b) % which could have been avoided if basic skills were better</i>	<i>(c) Typical cost in £ of one cancelled order/lost customer/rectifying a problem order (1992 prices)</i>	<i>(d) Total cost in £ due to basic skills difficulties among staff* (1992 prices)</i>
Customer orders cancelled per year because of errors, problems or misunderstandings	30	38.7	2,397	27,600
Customer orders despatched or produced incorrectly each year	161	41.4	1,123	74,600
Customers lost per year because of errors, problems or misunderstandings	12.5	35.3	5,957	26,200
Members of staff employed whose main task is to check and approve the work of others	30.1	2.3	12,473	28,330
Employees needing to be recruited externally each year for posts which could otherwise be filled internally	35.9	11.2	2,183	8800

<i>Approximate number of:</i>	<i>(a) Number</i>	<i>(b) % which could have been avoided if basic skills were better</i>	<i>(c) Typical cost in £ of one cancelled order/lost customer/rectifying a problem order (1992 prices)</i>	<i>(d) Total cost in £ due to basic skills difficulties among staff* (1992 prices)</i>
			Total	165,530

ALBSU then used these data to provide an estimate of the total cost of basic skills problems to industry as a whole, i.e. all 40,000 UK companies estimated to employ 51 staff or more. As Table 3.2 shows, the overall cost was estimated to be £4.8 billion per year, in 1993 currency. ALBSU further argued that these costs were likely to be underestimates, as they did not account for a range of other costs, such as those associated with lost future business, the need for additional staff training, and the cost of repeating work that was done poorly because of basic skills problems.

Table 3.2 Summary of the estimated total cost to industry of poor basic skills for companies employing 51 or more people (from ALBSU, 1993)

<i>Grossed-up estimates (million pounds)</i>	
Cost of customer orders cancelled through poor basic skills	911
Cost of rectifying customer orders dispatched incorrectly through poor basic skills	2,500
Cost of customers lost through errors etc., due to poor basic skills	886
Cost of staff who could be dispensed with if basic skills were better	197
Cost of recruiting employees externally because poor basic skills limits internal promotion	334
Total	4,828

The Gallup/ALBSU study has been rightly criticised: there are important limitations to its findings and methodology. Indeed, in a report on literacy, numeracy and the workplace, Peter Robinson (1997) described the ALBSU calculation as “one of the least reliable figures in the whole debate”. Key criticisms include the fact that, in this study, costs to all employers were extrapolated from a low response rate: only 15% of the 400 companies in the

sample provided responses. Furthermore, almost three-quarters (71%) of those surveyed said that their company had never experienced a financial loss which they felt could be attributed to poor basic skills, and a further 16% said that while this had happened, it occurred only rarely. In addition, the survey was based on subjective estimates by employers, rather than objective measures of true costs.

3.3 Evidence from employers (International)

A study on the literacy and numeracy difficulties in the Irish workplace (Kelly et al 2012) used data from an Irish employer-employee linked the dataset, the October 2006 National Employment Survey (NES), to assess the impact of literacy and numeracy difficulties on companies' training expenditures. The study also sought to ascertain the overall incidence of literacy and numeracy difficulties in the Irish workplace, the correlations between literacy and numeracy needs and other skills gaps.

In 2006, 1.5% of Irish employees indicated they had a literacy difficulty, while 2% reported a numeracy difficulty. Similar proportions of public and private sector employees reported literacy difficulties, while private sector workers were slightly more likely to report numeracy problems. The highest incidence of literacy problems was reported by employees in the transport sector, while the lowest was in the financial and education sectors. Turning to numeracy, higher than average problems were reported in the wholesale and retail, transport, and other services sectors. The lowest incidence of self-reported problems was again in the education and financial sectors.

In this study, a private firm was regarded as having a literacy and/or numeracy skills gap of 20% or more of employees indicated that they needed literacy and/or numeracy training. By this metric, 1.4% of private sector firms had a significant literacy skills gap, while 2.4% had a significant numeracy skills gap. The researchers found no evidence that either literacy or numeracy skills gaps substantially raised private sector firms' training expenditures. This may suggest that firms did not see these gaps as having a significant impact on their bottom line. Alternatively, as the data on skills gaps was collected from employees rather than employers, the lack of training expenditure may

indicate a lower level of corporate awareness of basic skills problems in the workforce. That is, employers may have incomplete information about the gaps in their employees' basic skills, and these gaps may, in turn, have a negative effect on productivity and profitability.

There are clear difficulties with this study's methodology. First, the 20% figure appears to be an arbitrary cut-off point, and one that may be artificially high. The company may see negative impacts of literacy and/or numeracy gaps even if a much smaller percentage of employees struggle with those skills. Most importantly, however, is the self-reported nature of these skills needs. As has been rigorously documented elsewhere (see e.g. Bynner and Parsons 2006), individuals tend to perceive themselves as having better literacy and numeracy skills than they actually do, at least as measured on standardised tests. As the Irish workplace literacy and numeracy study is based on employee self-report of difficulties, it may significantly underestimate literacy and numeracy needs.

In Australia, O'Neill and Gish (2001) found that poor staff literacy was seen by employers as impacting on business in two ways. A lack of clarity of meaning in written texts was believed to expose companies to unnecessary risks and costs. Second, poor literacy was viewed as detracting from the image businesses wished to project to customers. Employers in this study said they wanted written text to be presentable in terms of legibility, accurate in terms of spelling and punctuation, and to have clear sentence cohesion in meaning. In workplaces where written texts – for example, inspection reports, service reports, quotations and correspondence with customers – were particularly important, the ability to produce high quality written documents was viewed as an essential skill. Managers did not want to spend their time correcting mistakes caused by poor literacy skills.

3.3 Implications for research design

Area	Observations	Recommendations
Cost	<ul style="list-style-type: none"> • There is a dearth of robust evidence on the economic costs to enterprises of poor basic skills in the workforce. Little evidence monetises the cost to employers of skills deficits; what evidence there is, is more likely to be based on costs estimated by employers in qualitative interviews than on quantitative data. • This suggests that respondents to the current study may also struggle to ascribe a monetary value to costs of basic skills. • A 1993 ALBSU/ Gallup study measured the costs of poor basic skills in five areas: 1) customer orders cancelled due to errors, problems or misunderstandings; 2) orders dispatched or 	<ul style="list-style-type: none"> • The survey should look at different cost types, such as HR, number of accidents, absenteeism, quits, sale costs, customer complaints etc. based on what the literature suggests) and see if the differences across firms are explained by their deficits in basic skills. • The five measures of the costs to business of poor basic skills used in the ALBSU/ Gallup study could be used in the current study to provide comparable data. In order to avoid replicating the earlier study's limitations, measures should be put in place to ensure that where possible objective

Area	Observations	Recommendations
	<p>produced incorrectly; 3) customers lost due to errors, problems or misunderstandings; 4) cost of supervisory staff needed due to poor basic skills; 5) cost of external recruitment due to poor basic skills in house.</p> <ul style="list-style-type: none"> • Most UK research in this field focuses on the avenues through which firms might incur costs from poor basic skills. These include: poor customer service, lower productivity, costs in management time, costs associated with poorly written texts (for example reports, correspondence), costs associated with understanding and interpreting information (for example quality assurance and health and safety requirements). 	<p>measures rather than subjective estimates are used to measure costs</p> <ul style="list-style-type: none"> • The scale used will be key here as respondents are unlikely to be able to specify exact numbers of cases of, for example, complaints, but are likely to be able to judge the extent to which this is an issue. • The greatest challenge will be in attempting to monetize such information. It is recommended that these measures are supplemented by additional items which may come from the areas of: time costs, supervision costs, costs due to errors, costs due to inefficient use of technology, costs due to accidents, sales costs, costs due to wastage, human resource costs.

Area	Observations	Recommendations
		<ul style="list-style-type: none">• Another possible area for inclusion is costs due to inefficient use of technology or increased supervisory costs.• Some previous studies will provide tried and tested items to include here (see for example Schick (2005)). It is recommended that the survey be scripted to filter respondents only to options relevant to their industry sector.

4. Motivations and incentives for employers to invest in basic skills provision

This section focuses on motivations and incentives for employers to invest in basic skills provision. By motivations, we refer to companies' stated reasons for implementing or maintaining WPL programmes – for example, the desire to improve product quality or increase productivity. By incentives, we mean external push/pull factors aimed at encouraging programme implementation – for example, government subsidies. Evidence on both these topics is discussed within the context of evidence on employer provision of workplace basic skills and the characteristics of companies providing it.

4.1 Theoretical considerations: human capital theory, general education and job-specific training

In Becker's seminal theoretical work (e.g. 1962), he divided human capital into two broad forms, general and specific. General human capital is portable – it is a skill or trait could benefit more than one firm. Specific human capital, on the other hand, has limited portability; at its most extreme, it can benefit only one firm. Broadly speaking, efforts to increase general human capital are considered to be education, while efforts to increase specific human capital are thought of as training. More practically, the lines between education and training are often blurred; this is particularly the case with workplace basic skills.

As Wolf and Evans (2011, p. 113) observe, “it is hard to think of anything more ‘general’ in applicability than basic skills”, particularly literacy.

Theoretically, therefore, firms should refuse to pay for basic skills programmes, as improving workers' basic skills could benefit other firms. Becker (1962) argued that in a perfectly competitive economy, all general human capital development should be financed by some combination of individuals and the state, while the development of specific human capital

should be paid for by some combination of the firm and the individual. The argument that the state should be responsible for workers' basic skills is evident in the CBI's regular conclusion that schools must do a better job of providing the workers of the future with good literacy and numeracy skills (see e.g. CBI 2012). It is also evident in the frequent use of government subsidies to incentivise the implementation of workplace basic skills programmes.

In theory, workplaces should not provide basic skills provision; in practice, some workplaces do. These workplaces clearly see such programmes as a rational investment. This may be because the economy is not perfectly competitive: for example, workers are not completely mobile, and those who improve their general skills may not be able to advertise that fact to competing firms. Furthermore, the available evidence does not appear to support the theorised impacts of workplace basic skills on turnover. If anything, the provision of such programmes appears to reduce turnover (Ananiadou et al, 2003).

4.2 Evidence from employers

4.2.1 What percentage of employers provide basic skills training? UK evidence

There is limited evidence on the amount of workplace basic skills training provided by English employers. Generally speaking, employer surveys collect data only on of the total amount of training provided to employees. The 2011 Employer Skills Survey, for example, found that 66% of establishments had trained some of their staff in the preceding 12 months, and that 53% of the workforce had received some training – figures consistent with findings from previous iterations of this survey. However, this survey does not attempt to ascertain the percentage of employers offering basic skills training.

Some other surveys have attempted to gather such data. For example, “Learning and Training at Work 2001” Survey (Spilsbury 2002) drew a sample of more than 3000 employers in England. Among all workplaces with five or more employees, learning opportunities in literacy were offered by 10%, while learning opportunities in numeracy were offered by 11%. The most popular forms of training were ICT, 40%, followed by Working with others, 37%.

Results from the survey showed that larger establishments were more likely to offer basic skills training: in workplaces with five or more employees, numeracy was offered by 11% and literacy by 10%, rising to 22% in both literacy and numeracy for establishments with 100 to 199 employees, 25% for numeracy and 27% for literacy for workplaces of between 200 and 499 employees, and 42% for numeracy and 44% for literacy with 500 or more employees.

In the Gallup/ALBSU survey (ALBSU, 1993), 27% of respondent companies indicated that they had a formal policy addressing the issue of basic skills difficulties among employees; 71% had no policy at all. Although 39% of responding companies reported offering some basic skills training, most employers reported that such training was not offered because staff already had adequate skills for their jobs, and it is likely that non-respondents to this survey are less likely to offer courses than respondents. Within companies offering basic skills training, instruction was most likely to focus on oral communication skills (71%), followed by numeracy (61%), writing (56%) and reading (41%).

4.2.2 What percentage of employers provide basic skills training? International evidence

In the US, a large (8467 establishments) nationwide random sample of employers undertaken in the 1990s found that 2.2% provided basic skills training (Frazis et al, 1995; Levenson 2004). Company size was a key factor in determining the presence or absence of WPL programmes: 19.3% of establishments with 250 or more employees provided basic skills training, compared to 7.2% of establishments with 50-249 employees and only 1.7% of companies with fewer than 50 staff. Industry-based differences were also apparent. More than 5% of manufacturing enterprises provided basic skills training, compared to 3% of companies in transportation/communication/public utilities, 3% in finance/insurance/real estate, 2% in wholesale and retail, and less than 1% in construction.

Bassi (1995) conducted a smaller (714 firms) national survey of American employers, finding that 6-7% had a workplace basic skills program. This is

approximately triple the rate found by Frazis et al (1995). As Bassi's sample was much smaller, it seems sensible to place more trust in Frazis et al's findings. Both Bassi and Frazis' surveys yielded similar results with regard to the impact of establishment size.

In another US national survey, this time of 2945 establishments with 20 or more employees, Lynch and Black (1995) found that 27% of such companies provided some form of basic education to staff. This very high training rate is likely due to sampling: Lynch and Black intentionally oversampled manufacturing firms (55% of their sample) and large (over 250 staff) firms (47% of their sample). Evidence from a number of studies indicates that these types of firms are more likely to offer workplace literacy programmes (Levenson 2004). While Lynch and Black did not investigate the impact of firm size, they did find that training rates varied greatly depending on industry: 50% of companies in the utilities, finance, insurance and primary metals sector offered some workplace basic education training, compared to fewer than 20% of companies in the business service, retail and construction sectors.

4.2.3 Who receives training?

Evidence from numerous studies in the UK and internationally suggests that employees with poorer literacy and numeracy skills are less likely to participate in education and training than workers with higher levels of literacy and numeracy (Ananiadou et al, 2003). Bynner and Parsons (1997) found that men and women in the National Child Development Study cohort (born in 1958) were much less likely to receive workplace training if they had poor literacy skills. 58% of men and women with very low literacy had never been on a training course, compared to 30% of men and 43% of women with low literacy and 20% of men and 25% of women with good literacy skills.

Canadian analysis of the IALS data found that in that country only 21% of adults with Level 1 prose literacy had participated in adult education or training, compared to 58% of those at levels 4 and 5 (Alberta Advanced Education and Career Development, 1997). Atkinson and Williams (2003), in their study of employer perspectives on the recruitment, retention and

advancement of low-paid, low status employees in the UK, found that the vast majority of individuals in unskilled jobs received no training at work.

Employers who do invest in training tend to focus their resources on higher skill employees.

4.2.4 Company readiness to invest in basic skills: what are the characteristics of companies that do and do not provide basic skills training

As indicated in the previous sections, training provision varies widely depending on a range of factors, including employee occupation, firm size and industry sector. Looking at all workplace training, not just that focused on literacy, language and numeracy, the 2011 National Employer Skills Survey (Davies et al, 2012) found that training was more likely to be offered at establishments that were more innovative and less price dependent. Training was also more common at establishments offering higher quality products services, or a high level of customisation – i.e. those at the higher end of the product market strategy scale. 71% of enterprises at this higher end offered workplace training, compared to only 47% of enterprises at the lower end of the product market strategy scale. Overall, 66% of enterprises offered some workplace training.

The most in-depth evidence on the characteristics of companies providing workplace literacy and numeracy training comes from countries other than the UK – the US and New Zealand in particular.

In the US, Bassi's 1995 survey of 714 firms attempted to discern the characteristics most commonly associated with employer provision of workplace basic skills programmes. This study found that:

- firms with workplace basic skills programmes tend to be larger
- companies with WPL programmes tend to employ a higher than average percentage of hourly workers
- firms with WPL programmes are more likely to promote from within than to hire from without to fill job openings

- companies with workplace basic skills programmes were slightly less likely to report turnover problems
- manufacturing firms that provide WPL tended to pay higher wages than manufacturing firms that do not provide such programmes
- firms with WPL programmes reported average profit growth as great or greater (depending on sector) than similar firms without such programmes.

In an earlier study, Bassi (1994, p. 96) also sought to investigate the differences between firms with and without WPL programmes. Noting that it was “a formidable task” to locate a sufficient number of small and medium-sized firms with WPL programmes targeted at hourly paid workers, Bassi hypothesised that firms with such programmes were likely to differ in clear and systematic ways from other SMEs. Looking at a wide variety of variables, including the firm’s recent history, expectations for its future, the type of market it was in, the nature of its workforce, wages, benefits, and managers’ and supervisors’ perceptions of skills needs amongst the workforce, Bassi found only a small number of statistically significant differences between comparable firms with and without WPL. Firms with basic skills programmes were:

- More likely to be closely held corporations
- Less likely to have a founder who was still active
- More likely to report that they had experienced an increase in certification requirements and foreign competition
- More likely to expect that training needs would increase in the future.

Wages and benefits were slightly better at firms offering WPL, but not to a statistically significant degree. While acknowledging that her sample size (72 firms, approximately 2/3 of which had basic skills programs) was small, Bassi

expressed surprise that so few differences were found. The principal difference, she concluded, appeared to be the “level of awareness” among managers (p. 73). Policy should therefore, she recommended, aim to increase employers’ understanding of the need for and benefits of workplace basic skills programmes.

In her case studies, Bassi did find differences between manufacturing and non-manufacturing firms. The former were more likely to say there was no need for workplace basic skills programmes. Even if they did not offer such programmes, they were more likely to say they were considering doing so in the future. Manufacturing firms were also less likely to cite cost of provision as a factor. However, they were more likely to be philosophically opposed to such programmes – i.e. they were more likely to feel that it was the responsibility of the government and/or the individual to provide basic skills training.

In New Zealand, Schick (2005) conducted a qualitative study seeking to investigate the reasons why employers do or do not invest in workplace basic skills programmes. Schick conducted face-to-face interviews with managers at 14 companies that had implemented WPL programs, and telephone interviews with managing directors or chief executive officers of 427 other businesses across a range of industries, all with 50+ employees. Based on his findings, Schick constructed a theoretical framework dividing companies into four phases of readiness to invest in workplace literacy programmes. These four phases were:

1. unaware and unfavourable
2. unaware and favourable
3. aware but inactive
4. active

Around a third (32%) of the companies surveyed were categorised as *unaware and unfavourable*. Employers in this phase did not perceive literacy

as a problem in their company, nor did they see any potential literacy problems as the company's responsibility to address. These companies would not consider workplace literacy training.

Just under one half (46%) of companies were *unaware and favourable*. That is, these companies reported a variety of concerns and conditions that could potentially be addressed by workplace literacy programmes; however, they had not considered this type of intervention.

One in ten companies (10%) were described as *aware*. These companies were aware that staff literacy problems existed and that these potentially affected the company's bottom line. They were open to the idea of WPL, but had not yet implemented a programme.

A slighter higher proportion (12%) of firms were *active*, in that they had initiated and invested in workplace literacy programmes.

In total, 68% of companies Schick surveyed were open to the idea of workplace literacy programmes. Roughly two-thirds of this group were aware of workplace problems that might be linked to poor literacy, but had not made the connection.

Those companies which were *unaware and unfavourable* tended to be:

- smaller;
- more likely to be in the wholesale and retail sectors;
- less likely to be working towards any type of industry standard;
- less likely to report problems with employees filling out forms or reports accurately;
- less likely to report problems with oral communication;
- less likely to report problems with employees contributing in meetings;

- more likely to report that literacy training had never come up as an issue in collective bargaining.

It is probable, therefore, that some companies in this category do not have literacy problems that impact on their business.

For companies in the unaware and favourable category, , skills shortage was seen as a key human resource issue. These employers reported problems recruiting workers with adequate literacy skills (30%); problems with wastage, reworking staff errors, staff following instructions (80%); problems with employees filling out forms or reports, explaining or giving instructions, customer service compliance, or problems complying with health and safety (70%); and problems with oral communication. However, despite these problems, these companies had neither thought of literacy training as a way of addressing these issues, nor had they not associated changing skills requirements with literacy needs. For example, they had not linked literacy training with the deployment of new equipment, new technologies, skill shortages, employee turnover, productivity or employee attitudes towards the company.

Companies in the second set of categories recognized the link between literacy, employees' job demands, and business issues.

Companies in Schick's third category were seen as aware, but inactive. These will companies who knew they had a basic skills problem, but did not know how to effectively address it. These companies, which accounted for 10% of Schick's sample, were not more likely than other companies to experience literacy-related problems among staff, but were more likely to have thought of workplace training as a way of improving the basic skills problems they did experience. These companies were also:

- more likely to provide other forms of training to front-line workers
- more likely to see literacy skills as extremely important to individual workers and the future success of their business

- more likely to have found it difficult to recruit line workers with sufficient reading and writing skills.

When asked what had made them aware of literacy issues within their workforce, employers pointed both to difficulties arising in training and problems on the job. These problems included troubles filling out forms and challenges with compliance issues, such as health and safety. In particular, employees with poor spoken and oral English skills were less likely to contribute in staff meetings and were seen as less likely to understand oral instructions.

In Schick's study, 12% of companies already had workplace literacy programs. Schick found that three primary factors had led these employers to invest in workplace literacy training:

- a committed champion within the company, who was in senior management or had the support of senior management
- contact with an Industry Training Organisation (ITO) and a training provider
- information about and access to providers, funding and appropriate programmes

Schick found that companies which had invested in workplace literacy training had at least one "champion" who drove the literacy training and was usually the person who presented the programme case to senior management, negotiated with providers and industry training organisations, and liaised with line managers and supervisors. In many cases, these literacy champions had a special interest in literacy as an issue. Literacy champions had a variety of roles in the different companies. Schick emphasised that a literacy champion could not be effective in isolation; he or she needed broader organisational support.

Some companies got this information about providers and programmes through Industry Training Organisations (ITOs). Other found information from other sources, including the Ministry of Education, local media, training

consultants or industry contacts. Although some companies had been contacted directly by providers, a number said that they had tried several providers before finding one that offered a suitable package. Employers also gained information about and access to funding through formal and informal routes. As other studies (e.g. Schick, 2005) highlight, employers are often unaware of available funding.

4.2.5 Motivations

By motivations, we refer to companies' stated reasons for implementing or maintaining WPL programmes – for example, the desire to improve product quality, increase productivity or increase staff loyalty. Such motivations may be the result of competitive pressures or higher expectations on the part of customers or service users – e.g. an expectation that all company employees will have good communication skills. They may also reflect company goals and objectives, or a desire to give poorly paid employees some form of benefit.

In Wolf and Evans' (2011) study, employers were primarily motivated by non-economic reasons. In the study, managers at all 53 sites were asked to choose from among a list of 11 possible outcomes they hoped to achieve by offering a workplace literacy course. These outcomes include a mix of economic rationales – e.g. “improve job-specific skills of staff”, improving employees' “soft skills”, e.g. “teamworking in communication”, and “reducing the number of errors at the workplace.” The list also included largely non-economic outcomes, such as increasing staff morale. From this list, managers were asked to choose as many options as was relevant at their site. On average, managers selected seven of the 10 possibilities. However, only half of employers chose “improve job specific skills” as one of their options,. Two of these managers were from employers working in the care sector, which is heavily regulated and requires most staff to have NVQ two qualifications, which themselves require evidence of good basic skills. The third Employer also had NVQ-related reasons for implementing the programme.

These findings are consistent with those of an American study. Hollenbeck and Timmeney (2009) found that employers' primary motivation for providing WPL programmes was non-economic. Rather, employers provided the programmes as benefits to staff, partly in the hope that it would improve morale. Ultimately, the business logic was that providing this benefit for employees would pay off for businesses. However, there was little or no effort to measure this payoff.

Levenson (2004, pp. 89-91) summarised four "small-scale" surveys investigating companies' motivations for providing WPL programmes. The surveys are reported in full in Bassi (1994); Frazis (1995); Moore et al (1997); and Abelmann (1996). Levenson notes that while the samples were drawn from different populations and were not consistent with regard to questionnaire design (and thus allowable responses), a number of key messages can be discerned. The responses from these four studies are summarised in Table 4.1.

Table 4.1 Employer motivations for implementing a workplace basic skills programme

<i>Study and Sample</i>	<i>Frazis et al. (1995)</i>		<i>Bassi (1994)</i>	<i>Moore et al. (1997) Abelmann (1996)</i>	
<i>Reasons</i>	<i>National Random Sample</i>	<i>Manufacturing, National Sample</i>	<i>Nonmanufacturing National Sample</i>	<i>National Sample of Federally Funded Programs</i>	<i>Manufacturing, Mississippi State-Funded Programs</i>
To reduce errors and waste and low productivity	56%	54%	33%	61%	40%
To meet an increased emphasis on quality					98%
Because of organizational innovations				54%	
As a benefit to workers		46%	75%		
Because a subsidy became available		46%	50%		
Because of pressure from customers		43%	25%		
Because it was needed as a result of changes in production		40%	25%	48%	
As a part of a transformation of corporate culture		29%	17%		
To deal with increased competition					91%
Because it was required by customers		29%	17%		61%
Because of low revenues					26%
Because training became available		26%	33%		
Basic skills are critical to technology and/or production methods	52%				
Because it was needed as a result of new technology		29%	33%	41%	89%
Because of employee job dissatisfaction					29%
Unable to hire employee with adequate	15%				

<i>Study and Sample</i>	<i>Frazis et al. (1995)</i>	<i>Bassi (1994)</i>	<i>Moore et al. (1997)</i> <i>Abelmann (1996)</i>	
<i>Reasons</i>	<i>National Random Sample</i>	<i>Manufacturing, National Sample</i>	<i>Nonmanufacturing National Sample</i>	<i>National Sample of Federally Funded Programs</i>
				<i>Manufacturing, Mississippi State-Funded Programs</i>
skills				
To attract new workers		23%	42%	8%
To attract new customers		23%	17%	
To meet new certifications		20%	33%	
To meet new health and safety requirements	24%	23%	33%	11%
To improve the skills of limited English proficiency speakers				45%
Because of changes in the available work force		26%	17%	25%
To meet increased competition		20%	17%	
Because workers identified the need and to meet worker requests		17%	17%	25%
Because of an agreement with labor and a collective bargaining agreement	5%	20%	8%	5%

As Levenson (2004) notes, the most common incentives or objectives in all four surveys were profit-focused. However, in Bassi's (1994) study, nonmanufacturing firms said that providing a benefit to employees was their primary motivation for implementing a WPL program. As Levenson observes, this may be a reflection less of economic theory and more of the management literature, which views employee benefits, including training programmes, as an effective tool for increasing employee loyalty, commitment and (potentially) productivity, while reducing turnover.

Summarising these four surveys, Levenson (2004) notes that the negligible influence of unions as a force influencing the implementation of workplace basic skills programmes. This likely signifies a significant contextual difference from the UK, where unions and union learning representatives play an important role in encouraging basic skills development.

Looking specifically at Bassi's (1994) findings, which included manufacturing and nonmanufacturing firms, that a key underlying factor was a "growing concern about the quality of the products" that the firms produced (65). In particular, manufacturers of original equipment, who were providing parts to larger manufacturers, were being required to more clearly integrate quality control into the manufacturing process. This gave rise to an increased need for a technique known as statistical process control, which in turn required that workers develop a better understanding of basic maths. The statistical process control movement thus served as a catalyst driving the implementation of basic skills initiatives.

Several studies have cited increasing literacy demands at work as a key motivation for employers to implement workplace basic skills programmes. Wolf (2005) herself observed a rising demand for literacy skills, even in occupations such as caretaking that had formally not required them. However, Wolf and Evans' (2011) workplace literacy study did not find such a motivation in its 53 employers. They report that only a small minority of managers reported any meaningful change in literacy requirements in the workplace in the previous years.

In Canada, The Measures of Success: Workplace Literacy and Essential Skills Initiatives project (SRDC) reported on evidence from Manitoba between 2002-2009 on the drivers behind workplace basic skills programmes. These included:

- skilled labour shortages
- quality issues for employers
- new industry standards (ISO certification, health and safety)
- greater emphasis on team-work and leadership skills
- recruitment efforts targeting immigrants
- recruitment screening
- greater awareness of the skills needs of Aboriginal communities to transition to the workplace
- greater interest in recognizing and validating prior learning
- government drive to raise awareness and better market ES (Essential Skills) solutions to employers, and enhance human resource practice in the workplace by integrating ES
- an increase in apprenticeship numbers and the need to increase success in technical training and certification by raising ES levels
- need in unions to support member training needs in transferable skills

4.2.6 Policy incentives

It is instructive that Schick (2005) characterised companies as being in different “phases” of readiness to invest in WPL, rather than categories. “Phases” implies a developmental process, in which a firm moves from being less than ready to invest, before eventually doing so. While this metaphor may be overly optimistic for many employers, many others may be open to

considering or even adapting basic skills programmes. Policy incentives may play a key role in this process.

This section summarises research evidence on the facilitators and success factors that encourage employers to provide or fund workplace English and maths training. It includes evidence on the recruitment of employees with low skills. It includes research on policy initiatives aimed at encouraging workplace English and maths provision, including how employers can be motivated to invest in this kind of support for their staff, and to change employer behaviour with regard to recruiting and investing in staff.

In the UK, a range of initiatives have been introduced in recent years to encourage employers to increase basic skills training, including Train to Gain. Under this initiative, employers were also encouraged (although not compelled) to sign the Skills Pledge and make a public commitment to support employees to improve their skills and gain new qualifications. Government-funded brokers actively sought to encourage employer take up of training opportunities. The Train to Gain programme met with mixed success – the National Audit office reported in 2008 that employers were not yet taking full advantage of the scheme, with only a little more than half the expected learners on it by March of that year (41,100 learners compared with an expected profile of 73,470). Moreover, an evaluation of the impact of Train to Gain conducted by Ofsted found that

‘The provision of skills for life training was a particular weakness. Those employees with language, literacy, or numeracy (skills for life) needs rarely received sufficient training or encouragement to improve their skills. Around a third of the providers surveyed were unclear about the extent to which skills for life provision was eligible for funding through Train to Gain. Few of the providers had sufficient specialist staff to develop, as distinct from support, employees with skills for life needs’ (Ofsted 2008, p. 4).

Train to Gain was cancelled by the Coalition in its skills review. Other initiatives have included the BIS-funded Employer Ownership of Skills Pilot, the Growth and Innovation Fund and the UKCES led Employer Investment

Fund. However, these initiatives have focused primarily on the development of vocational skills. In order to improve the effectiveness of skills provision, further exploration of how employers might best be encouraged to address basic skills needs in the workplace is needed.

Hollenbeck and Timmeney (2009), along with many others, suggest that government subsidies are likely to play a key role in increasing the incidence of workplace basic skills programmes. In Bassi's (1994) study, 65% of firms with workplace basic skills programmes received at least some government subsidy. Subsidies typically focused on start-up cost: only 38% of firms paid all of their own start-up cost.

One of the primary roles of government subsidies is to incentivise firms to act in ways that do not appear to be in their interest, but which genuinely are. In particular, subsidisation may help firms overcome fears of employee poaching, as well as their natural inclination to avoid investing in general rather than workplace-specific skills. Human capital improvements, unlike physical capital improvements, do not appear on a company's financial statements; however, if those human capital gains can be translated into greater productivity, a solid justification for workplace learning programmes exists.

Bassi (1994) asked managers about a wide range of policies that might potentially influence their willingness to implement, continue or expand a workplace literacy program. This was asked both of managers in companies with such programmes and those without. With only a small number of exceptions, firms with and without WPL programmes were nearly identical in their ranking of policies that would promote WPL. The policies that firms reported as potentially being effective were:

- Local forums or networks of employers to discuss successes/challenges of such programmes (69%)
- Evidence from other companies that such programmes improve job performance and increase productivity (68%)

- Design and provision of appropriate programmes by providers (67%)
- Availability of technical assistance when implementing programmes (65%)
- Employer-sponsored education and training Consortium show (64%)
- Grants to greatly reduce or eliminate company's' out-of-pocket costs (63%)
- Using part of the company's unemployment insurance contributions to offset the costs of the programme (56%).

One significant difference between firms with and without programmes was with regard to tax credits. 61% of firms with programmes believed that tax credits would encourage programme implementation and expansion; only 32% of firms without programmes felt the same.

Among the policies that the majority of both types of company felt would have little or no influence were:

- Policies and/or agreements that would enable firms to cut wages or benefits in exchange for providing WPL programmes
- Employees contributing directly to a training fund
- Tests certifying employees' basic skills levels. As Bassi observes (73) "firms expressed little interest in policies that would provide portable credentials certifying an applicant's basic skills levels".
- Contracts that would require workers to stay with the company longer enough for the firm to recoup its training investment.

In all five US states in her study, Bassi (1994, p. 72) found policies aimed at reducing companies' fixed costs so as to encourage programme

implementation. These policies, she argued represented “good news. The fixed cost can and should be shared collectively; a public subsidy (perhaps through community colleges) could be a wise investment.” Policies that reduce the “uncertainties and false starts that employers face when they attempt to implement a workplace education programme would be welcomed”, she concluded.

Finlay et al (2007) could not prove, but thought it highly likely, that without public funding the basic skills provision at the sites in their study would not have taken place. National government initiatives were “an essential stimulus” to the provision (p. 244). However, this reliance on funding made the provision vulnerable to any changes in funding meaning that courses were no longer sustainable; also the nature of funding streams means that only some learners may be eligible and for limited periods of time. While some of the companies in the study had been proactive in tackling these issues (for example, through the choice of training providers) others had been demotivated by the bureaucratic and administrative processes. This study argues that learning basic skills in the workplace requires a long-term funding settlement, although the limited evidence of the study suggests that the public purse should not be wholly responsible for this investment

Hollenbeck and Timmeney (2009) evaluated a set of workplace literacy pilot programmes funded by the American state of Indiana. The “21st Century Workplace Skills Initiative” encouraged employers to offer workplace literacy schemes, and awarded certificates to employees who achieved particular levels of proficiency in reading, maths, critical thinking, problem solving and computer skills. The study included qualitative and quantitative elements. On the qualitative side, researchers visited worksites at an early stage of programme planning and/or implementation, and a second time near the end of the intervention.

One of the largest debates in the field, writes Levenson (2004), is the degree to which government subsidies serve to incentivise programme implementation and sustainability. As Wolf and Evans (2011) argue, these are often two separate issues: in their UK study, a number of companies were

happy to implement programmes utilising government funding, but did not continue those programmes once the funding ran out. Writing in 2004 and focusing on the American context, Levenson concluded that very little robust evidence was available on this topic. However, based on the available evidence, Levenson observed that the fixed cost of getting a programme launched may be a more significant barrier than the ongoing costs of programme maintenance. A similar conclusion was drawn by Bassi (1994), based on her detailed case studies of 72 American employers. Levenson suggests that subsidies which focus on limiting the costs to companies of programme design and setup may be the most effective form of funding. However, encouraging companies to continue running programmes after this initial period is likely to require demonstration of positive benefits. These benefits may focus on the corporate bottom line, or may centre around other expectations, such as the ability of programmes to provide low paid workers with a sense of company commitment to them.

In Bassi's 1994 set of case studies, approximately 2/3 of the companies providing WPL were receiving some type of financial assistance to support curriculum design and/or instruction. In Bassi's study, 93% of firms with a WPL programme said they plan to continue it, and 20% said they plan to expand it. Of the firms receiving government subsidies, 76% said they would continue the programme even if the subsidy ended. However, as this was a cross-sectional survey, Bassi is unable to provide data on whether these ambitions were realised. Based on firms' stated desire to continue programmes even in the absence of subsidies, Bassi concluded that, while subsidies played an important role in incentivising companies to implement programmes, subsidy loss may not significantly disincentive firms "once [the program's] utility is established" (69).

Levenson (2004) suggests that, because large firms are much more likely to provide training in any way, public dollars are best targeted at small and medium-sized firms. However, this assertion does not take into account the relative likelihood of small and medium-size firms taking up this offer. In the UK, the Train to Gain programmes found that incentivising small to medium

sized firms was often exponentially more challenging than incentivising larger firms. Therefore, it may be the case that a more effective strategy would be to target larger firms that do not currently offer workplace basic skills training. However, the evidence for any assertions on this topic appears to be negligible.

New Zealand has devoted extensive LLN policy efforts to developing the field of workplace literacy (see e.g. Benseman, 2010). The NZ Literacy, Language and Numeracy Action Plan has two primary objectives, both of which have implications for the provision of workplace LLN. The first objective focuses on demand and the second on supply (TEC, 2008):

1. raising employers' and employees' awareness of the benefits of improved literacy, language and numeracy
2. increasing the number, quality and relevance of literacy and numeracy training opportunities.

Objective one seeks to target employers, employees, industries and regions which feature high numbers of workers with poor basic skills.

Beginning in 2001, the NZ Workplace Literacy Fund has subsidised as much as 85% of the cost of workplace programmes designed to improve employees' work-related literacy skills (Walker, 2010). An evaluation of the programme (Gray and Sutton, 2007) found limited but growing demand for LLN programmes from employers. Participation was largely driven by providers actively searching for and recruiting clients, a process which providers criticised as costly and inefficient. This recruitment structure also incentivised providers to target larger companies. Gray and Sutton's evaluation concluded that firms needed more information and support in areas including: LLN problems in the workplace; how those problems can be addressed; and the benefits of improving employees' LLN. However, demand has risen, and the 2010 programme was fully subscribed (TEC, 2010).

In a survey of manufacturing firms in the American state of Mississippi, Abelman (1996) compared a sample of sites using state funding to provide

workplace literacy programmes with a matched sample of sites not doing so. Among plants utilising government funding, 40% had provided some workplace basic skills training on their own before receiving government assistance. Among plants not drawing government funding, 20% were providing some workplace basic skills training. Based on this, Levenson (2004) concluded that, while government subsidies are not a pre-requisite for programme implementation, they may stimulate it. However, in their own study of American government-funded workplace literacy programmes, Moore et al (1997) found markedly reduced employer provision of programmes once government subsidies expired. They also found that programmes that continued to exist after the grant expired tended to change significantly. The former finding is similar to that of Wolf and Evans (2011) in England.

Wolf and Evans (2011) concluded that, contrary to policymakers' expectations, employers of low skilled individuals were not particularly concerned about their literacy levels. Employers were only willing to provide the courses so long as they were paid for by the government. Wolf et al concluded that the programmes used "an extremely costly approach, and left no lasting legacy", therefore the policy of subsidising workplace literacy training was "seriously defective".

4.3 Implications for research design

Area	Observations	Recommendations
i. General	<ul style="list-style-type: none"> • Datasets more commonly record information on the total amount of training offered by employers rather than the type of training offered. • Evidence from the UK and internationally suggests that the larger a firm is the more likely it is to offer basic skills training. Basic skills offer is also likely to be related to industry sector. • International studies associate workplace literacy and numeracy training with a wide range of company characteristics including proportion of hourly paid workers, manager level of awareness, company history and so on. 	<ul style="list-style-type: none"> • The employer questionnaire should ask respondents specifically about any basic skills training offered and gather data to allow this to be viewed in context alongside the wider training offer at each enterprise. • It should be noted that there are many complexities in gathering additional data about the basic skills provision on offer, especially where employers offer multiple courses, not least because this information may be difficult for respondents to access and to interpret in a short CATI interview. It may be possible to capture information from other sources (including the ILR) retrospectively, should budgets permit.

Area	Observations	Recommendations
ii. Push and pull factors	<ul style="list-style-type: none"> • Evidence suggests that employers are not primarily motivated by economic factors when offering workplace basic skills programmes; courses were more often provided with the expectation that employees' soft skills would be improved. Although it was hoped this would bring business benefits in the longer term, these benefits were rarely measured. • There is evidence that employers offer basic skills training where they have concerns about the quality of their products. • Government subsidies play a key role in motivating employers to offer basic skills training. 	<ul style="list-style-type: none"> • The literature review compiles a table of possible employer motivations for providing workplace literacy and numeracy programmes. It is proposed that this table generates a list of scaled items for respondents to prioritise in terms of their actual or likely motivation. Those areas which emerge in analysis as most important can be explored further in case studies. • The motivating role of financial subsidies is critically important and should be addressed (separately to the above list). • In addition, questions could be asked to gauge the scale of employer awareness of government initiatives and policies on basic skills. Are the messages on the importance

Area	Observations	Recommendations
	<ul style="list-style-type: none">• The short-term nature of funding is one reason why basic skills provision is vulnerable. The evidence suggests that programmes do not continue over a sustained period of time.	<p>of literacy and numeracy skills impacting on employers? Which policy drivers have an impact and which do not?</p> <ul style="list-style-type: none">• It is important to include a question gathering data on whether those employers who have provided workplace learning programmes are motivated to continue this training offer, and how dependent this offer is on continuing subsidies. The survey will also include a re-contact question to allow the possibility of longitudinal follow-up with employers providing basic skills training for their employees.

5. Disincentives, constraints and market failure

This section examines the evidence on the disincentives, programme and policy constraints, and market failures preventing or limiting employer investment in workplace English and maths programmes. In doing so, this section seeks to identify a range of potential explanations for suboptimal investment in relevant training

5.1 Theoretical considerations: market failure and suboptimal investment in workplace literacy and numeracy

The literature gives a range of competing and complementary explanations for suboptimal investment in skills provision by employers: including poaching externalities (loss of trained staff to competitor firms), information asymmetries (an inability of firms to discriminate between different suppliers of training), and other forms of imperfect information (a lack of awareness amongst managerial staff around the extent and impact of poor English and maths may contribute to suboptimal investment in training). Each of these scenarios require different types of policy response: while lack of awareness of the benefits of basic skills provision may support a case for an approach based primarily around communication and awareness raising, the presence of information asymmetries may imply alternative strategies such as improved market signalling through the development of appropriate quality standards.

5.2 Evidence from employers

As Wolf and Evans (2011) note, one of the primary justifications for subsidising workplace basic skills programmes is the argument that, because of market failure, employers tend to underspend on general education training (e.g. basic skills courses), because they do not expect sufficient benefits from these courses to accrue directly to them, but rather to individual employees or even other employers. Likewise, employers may expect the benefits from such programmes to be less than their costs. This section looks at a range of

disincentives cited in the research literature. Many of these disincentives were cited by employers in Bassi's (1994) case studies:

- 52% of employers said they did not feel there was a need for such a program
- 41% said a programme would cost too much
- 33% said they lacked the personnel infrastructure to implement and maintain a WPL program
- 22% said they were too busy
- 22% said they did not know what basic skills their employees needed, or how to arrange for those skills to be taught
- 19% said that providing such a programme was not an employee's responsibility – i.e. they were philosophically opposed
- 11% felt that staff turnover was too high, meaning that the firm would not recoup its investment.

In Schick's (2005) study of companies' readiness to invest in workplace basic skills programmes, 10% of companies said they were aware of literacy problems amongst their staff, but had not implemented workplace basic skills programmes. The key barriers to investment were:

- Cost, or perceived cost
- Lack of awareness of funding. Even in New Zealand, where extensive funding for workplace literacy programmes is typically available, only one third of these businesses were aware of government funding opportunities
- Philosophical arguments. Some countries reported being philosophically against providing basic skills training, which they saw as the responsibility of the government

- Questions about the business benefits of WPL. In many cases, the inability to make a well-evidenced cost-benefit argument to senior management meant that programmes could not get approval
- A lack (whether real or perceived) of employee interest.

5.2.1 Awareness of skills gaps

One constraint on investment in basic skills training by employers is lack of mechanisms to diagnose need.

As the National Audit Office (NAO 2004) and the House of Commons Public Accounts Committee (2006) have highlighted, people who are in employment rarely have their literacy and numeracy skills needs routinely assessed and identified unless they approach a learning provider themselves. A later NAO report (2008b) noted that skills brokers carry out analyses of overall training needs at an organisational level while providers carry out detailed analysis of individual employees' skills needs, and suggested that skills brokers could improve their ability to identify possible literacy and numeracy needs by focusing more on the needs of employers. When assessing the impact of Train to Gain on workforce skills, Ofsted (2008) found evidence of employers not recognising workforce skills deficits or their implications for productivity. The Public Accounts Committee (2006) also found that employers need help in identifying needs and helping individuals in their workforce to overcome any stigma about needing help with literacy or numeracy.

In Schick's (2005) study of New Zealand employers, 32% of employers said they were unaware of any literacy problems amongst their staff. It was not possible for Schick to investigate the degree to which this percentage was shaped by a true lack of problems among staff, or lack of awareness amongst employers.

5.2.2 Lack of awareness about connection between low literacy in the workplace and job performance and productivity

An analysis of literacy and numeracy difficulties in Irish workplaces (Kelly et al 2012) found that private sector companies with basic skills difficulties often did not invest in training to address their skills gaps. Reasons included: not recognising the existence of these skills gaps, fearing that skills gaps did not sufficiently impede productivity, or the feeling that the potential gains from improving basic skills were less than the cost of implementing and maintaining a program.

5.2.3 Cost, time, resource and personnel constraints

In Bassi's (1994) study, three of the top five reasons provided by employers for non-investment in basic skills training relate to costs and resources: 41% said a programme would cost too much, 33% said they lacked the personnel infrastructure to implement and maintain a program, and 22% said they did not know what basic skills their employees needed, or how to arrange for those skills to be taught.

Bassi found that while many firms said that the cost of programmes was not a significant barrier, the absence of technical assistance in setting up such programmes was. Bassi suggests that one viable interpretation of this is that "while the operating (i.e. marginal) cost of a programme may not be viewed as prohibitive, the start-up costs (e.g. assessing workers' needs and designing appropriate curriculum) may be prohibitive. This is likely to be particularly relevant in small and medium-sized firms, since start-up (i.e. fixed) costs may be large relative to operating costs. The start-up costs of a workplace education programme for a large firm are undoubtedly less of an issue since firms can spread this cost over more workers" (Bassi 1994, p. 66).

Bassi (1994, p. 72) concluded that many SMEs face substantial barriers to implementing WPL programmes. Most of these barriers were associated with the start-up effort, time and skills required to get programmes running – e.g. doing a needs analysis, finding developing appropriate curricula, locating effective, responsive providers, and addressing logistical problems such as where the classes would be held. She notes that many firms "reported

substantial difficulty in overcoming these barriers. These problems – which essentially represent fixed costs that can be insurmountable, especially for small firms.”

Wolf and Evans (2011, p. 127) found that the start-up costs of workplace literacy programmes (at least those are based on the Skills for Life model) tended to be “extremely, if not prohibitively, expensive”. (See section 6.2.) Wolf and Evans also point to the high cost to the government of brokerage activities such as those characterising Train to Gain. In order to stimulate programme implementation, brokers typically had to engage in mailshots, make numerous phone calls to employers, visit employers, and liaise with education providers. The high upfront costs to government of such activities might be justified, Wolf and Evans suggest, if employers both implemented programmes and then continued to run them after government subsidies ran out. However, in their study, programmes which were part of the government funded Skills for Life provision were not sustained after the funding ended.

Bassi (1994, p.65) listed the reasons why employers in her study did not provide workplace basic skills programmes, even though similar companies were. Bassi found differences between manufacturing and non-manufacturing firms. The latter were less likely to say that there was no need for workplace basic skills programmes. Even if they did not offer such programmes, they were more likely to say they were considering doing so in the future.

Manufacturing firms were also less likely to cite cost of provision as a factor, and were less fearful of turnover limiting the value of the program. However, they were more likely to be philosophically opposed to such programmes – i.e. they were more likely to feel that it was the responsibility of the government and/or the individual to provide basic skills training.

A 2009 survey of more than 1000 employers by the Learning and Skills Network (Payne, 2009) found that while employers are willing to pay to help staff develop job-specific skills, they are not prepared to fund training to help people develop skills that employers see as a basic requirement for employment. However, there were significant differences in employers'

willingness to fund training for various employability skills. Whereas the vast majority of employers were not willing to pay for training to develop generic soft skills such as timekeeping and commitment, only 37% said that it was an individual employee's responsibility to pay for the development of their literacy skills, and only 36% said that it was an individual's responsibility to fund the development of their numeracy skills. This suggests that employers are more willing to pay to support training for basic skills, than for generic employability skills.

Employers' attitudes to basic skills may be influenced by geography. In a case study-based study of rural employees and employers, Atkin and Merchant (2004) found that poor basic skills were seen as a fairly inevitable aspect of rural life. Employers in this study reported that there were limited means through which rural employees would be able to improve their basic skills, and little interest on the part of those employees to do so.

5.2.4 Short-term nature of funding and/or other forms of support

Bassi (1994) found that only 41% of the programmes in her study were one or more years old. The relative youth of these programmes, she suggests, has two possible explanations. First, it could be a product of the relative youth of the workplace basic skills field in the early 1990s. Another possibility is that it signifies a sector in which programmes are short lived – that is, most of the programmes in this sample were young because few programmes in the broader population last for long. This was the conclusion drawn by Wolf and Evans (2011) in their longitudinal (two waves) UK study of workplace literacy schemes.

In their research on workplace basic skills courses, Wolf and Evans (2011) found no stable legacies or outcomes that could be ascribed to government activity, either in the form of ongoing provision or in changes in employers' training activities. These findings are consistent with those of both other researchers who have examined the institutional impact of workplace-oriented initiatives in the skills sector (Finlay et al., 2007) and of evaluations of their impact using national datasets (Abramovsky et al., 2005). However, it should be noted that Wolf and Evans mostly examined short courses funded in the

short term only, whereby recipients would expect one project, or one tranche of funding.

Given the many difficulties associated with accurately evaluating programme impact, Wolf and Evans argue, the real test of efficacy is whether or not employers continue funding workplace basic skills programmes after subsidies are removed. In their own study, Wolf and Evans found little evidence of continued activity. Of the 46 employer sites which were still extant at the time of their follow-up interviews, only six were still providing workplace basic skills programmes. All six of these employers had been providing such programmes prior to receiving Skills for Life funding. Four of the six had a learning centre. Levenson (2001) concluded, based on his own American case studies, that the presence of a learning centre made it more likely that employers would implement it and maintain workplace basic skills programmes.

Few individual enterprises are in a position to develop stable learning institutions. In just over two years the authors found that 14% of their sites had closed altogether. In over half, there was no manager in post who had any recollection of or knowledge about the courses which had taken place.

A similar conclusion was drawn in England by Finlay et al (2007) in their study of eight sites of workplace learning. The authors described the provision they studied as 'flowers in the desert' in that "provision that grows, develops and blossoms quickly with the injection of funding [...] is very susceptible to changes in resourcing and, like flowers in the desert, can wither as quickly as it grew' (p. 231).

Bassi also noted that more than one third of the programmes in her study appeared to be "marginal in nature, either because they [were] expected to be a 'quick fix', or because they lack[ed] vision, clear management commitment, carefully articulated goals, or any measurement of outcomes" (62). Employers whose programme seemed more substantial will typically characterised by a unified vision from management. They also typically occurred within the context of "a fairly substantial reorganisation of work" (125). Of the 12 firms in

her study categorised as having exemplary programmes, nine were in the midst of a workplace reorganisation, and the basic skills programme was considered an integral part of that reorganisation, rather than an isolated initiative.

5.2.5 Problems with training partners/ collaborations with other employers

One of the key challenges to the greater provision of workplace basic skills programmes is the economic challenge for providers. Wolf and Evans (2011) found that providers faced significant obstacles which serve to dis-incentivise their involvement in employer-focused learning. Two barriers stood out. The first was cost to provide. Workplace literacy and numeracy courses tend to have small numbers of learners. In Wolf and Evans' (2011) study, fewer than 10 employees typically signed up for a course, and this tended to be followed by high dropout rates. Providers' teaching and administrative costs are fixed, but their payment from the government is often on a per learner basis, meaning that small classes often cause them to lose money. As Wolf and Evans observe, within-college courses with fewer than 10 recruits would normally be cancelled, but such low participation figures are the norm for workplace courses. Furthermore, when funding is tied to the completion of a qualification, this put additional pressure on providers, as well as employers and employees. Such "output related" (125) funding often does not fit the needs or desires of employees or employers, who were interested primarily in skill or personal development, rather than certification of basic skills. From the employers' perspective, colleges in Wolf and Evans' study were overly focused on ensuring that they met the requirements to receive government funding.

The high cost of WPL for education providers suggest that one potential solution is to bring multiple employers together in order to increase course numbers. Hollenbeck and Timmeney (2009) found that programmes involving multiple employers were particularly difficult to administer. Coordinating the involvement of more than one employer required extensive administrative time and resources, suggesting that any apparent cost savings were lost. Also lost was goodwill and enthusiasm on the part of employers. In the end, the

attempt at a multiple employer programme documented in the study failed, with only one employer from this group continuing to provide WPL.

As highlighted by Wolf and Evans (2011), a number of factors, including the generally small number of learners in workplace literacy courses, conspire to make them economically unrewarding for providers. Sufficiently subsidising providers, in turn, may prove economically prohibitive for government. Alternatively, government could insist on provider involvement in workplace literacy schemes – i.e. use a “stick” incentive rather than a carrot – but this in turn might negatively affect the quality of provision. For example, providers who are losing money on workplace literacy schemes are unlikely to contextualise their teaching, as this requires still further resources.

Government support for workplace basic skills schemes, however, presents a range of challenges, such as how to provide appropriate incentives for employer uptake while also making the service financially worthwhile for colleges or other education and training providers. This can be a particular challenge if employers have small numbers of learners and want provision delivered on-site and at particular times. Another challenge – as discussed above – is how to provide the short, focused training packages employers seem to prefer, while also providing policymakers and the Treasury with quantifiable evidence of LLN improvements.

5.2.6 Demonstrating gains

Levenson (2001, 2004) argues that though companies may benefit from providing workplace basic skills programmes, the payoff, as with any investment in training, is uncertain. This lack of guaranteed bottom-line benefits adds to the difficulties associated with convincing companies to experiment with WPL provision.

One serious challenge faced by any workplace LLN course is time. Workplace LLN courses subsidised by the government tend to be short, averaging no more than 30 hours (Wolf and Evans, 2011). This presents a conundrum for workplace literacy: the short-to-medium-length courses generally seen as most suitable by the majority of employers may be too brief for the majority of

employees to experience significant literacy gains. If engagement and participation are the goals, then workplace literacy clearly works – and works with a hard to reach group of adults. But if government funders subsidise workplace literacy schemes, and directly or indirectly link these subsidies to objectives such as qualifications or quantifiable basic skills gains, the benefits which are typically produced by such schemes may not be those sought by government funders.

5.2.7 Philosophical opposition

There is widespread disagreement over who should pay for particular types of employment related training. In the UK, the Leitch Report (2006) argued in favour of a shared responsibility for increased future investment in skills, in which there was a higher percentage of government investment in improving low skill levels, with employers and employees gradually taking on more of the cost burden as skill levels increased and returns from education and skills were concentrated more privately.

In Bassi's (1994) study, 19% of employers who did not provide WPL programmes said that doing so was not an employee's responsibility – i.e. they viewed basic skills training as the responsibility of the government and/or the individual.

5.3 Implications for research design

Area	Observations	Recommendations
<p>I. Employers who report that there are no basic skills problems within their enterprise.</p>	<ul style="list-style-type: none"> • Evidence on why investment in workplace basic skills provision is suboptimal is limited. • The evidence base suggests that some enterprises, in some sectors, may have no need for workplace literacy and numeracy programmes. In some enterprises, only very few employees have low basic skills. 	<ul style="list-style-type: none"> • Where employers' perceive no basic skills need in their organisations the survey
<p>II. Lack of awareness of or recognition of basic skills problems.</p>	<ul style="list-style-type: none"> • Employers require more information on how basic skills problems may manifest and how to identify workers whose low skills may be impacting on productivity • Several studies suggest that a proportion of enterprises do not view the improvement of literacy and numeracy skills as the employer's responsibility. Rather basic skills are viewed as 	<ul style="list-style-type: none"> • The survey will need to give examples of areas in which basic skills problems may manifest themselves rather than just asking whether employers have identified basic skills problems. • When asking about training provision the survey should collect

Area	Observations	Recommendations
	the responsibility of formal schooling/the government.	reasons why employers have not run basic skills training, perhaps against an agreed list of reasons such as,
<p>III. Insufficient understanding of the impact of low skills on the enterprise.</p>	<ul style="list-style-type: none"> • Literacy and numeracy programmes are a lesser training priority than more obviously workplace related training. This is exacerbated by the fact that several studies have shown little or no literacy and/or numeracy skills gains for those undertaking programmes in the workplace and little or no impact of these programmes on an enterprise's bottom line. • Employers may require guidance on how to assess and monitor the impact of poor literacy and numeracy within their enterprise. • Employers need evidence of the potential gains to business rather than potential gains to individual employees, which may be more 	<ul style="list-style-type: none"> ○ <i>no need – staff skills good,</i> ○ <i>no need – job roles don't require such skills,</i> ○ <i>not our responsibility,</i> ○ <i>not a priority,</i> ○ <i>such training has no impact,</i> ○ <i>available training not relevant to the workplace,</i> ○ <i>contact with training providers difficult etc..</i>

Area	Observations	Recommendations
	obviously associated with general training.	
IV. Constraints due to issues with understanding or accessing funding	<ul style="list-style-type: none"> Disincentive of funding dependent on qualifications/certifications completion; employers less concerned about this than government which needs quantifiable evidence of improvement to justify the expenditure 	
V. Constraints due to issues with understanding provider landscape or with accessing training		
VI. Constraints due to limited budgets/resource		<ul style="list-style-type: none"> Survey questions should identify what these cost constraints are, which ones are most and least

Area	Observations	Recommendations
s (costs, lack of the right personnel to implement, staffing costs.		likely to disincentivise employers and create barriers to provision (eg set-up costs, operating costs, technical assistance needed, staffing replacement).

6. Costs and benefits of workplace English and maths programmes

This section explores evidence of employer perceptions and experiences of the costs and benefits of providing workplace literacy and numeracy training. Drawing on evidence from the UK, Canada, New Zealand and other countries, this section looks at qualitative and quantitative evidence on perceived programme impacts, both in absolute terms and in terms of return on investment and/or expectations. This section also includes analysis of the challenges to accurately measuring programme costs and benefits. For example, to what degree does the research evidence suggest that programme impacts can be objectively measured, and to what extent must we rely on employers' perceptions?

This section contributes to the theoretical framework by helping to establish a rich list of areas that could be considered when working out the tangible and intangible costs and benefits of workplace basic skills learning. The intention is to be able to give more robust estimates in the findings of this study than would normally be expected through an employer self-report exercise.

6.1 Theoretical considerations

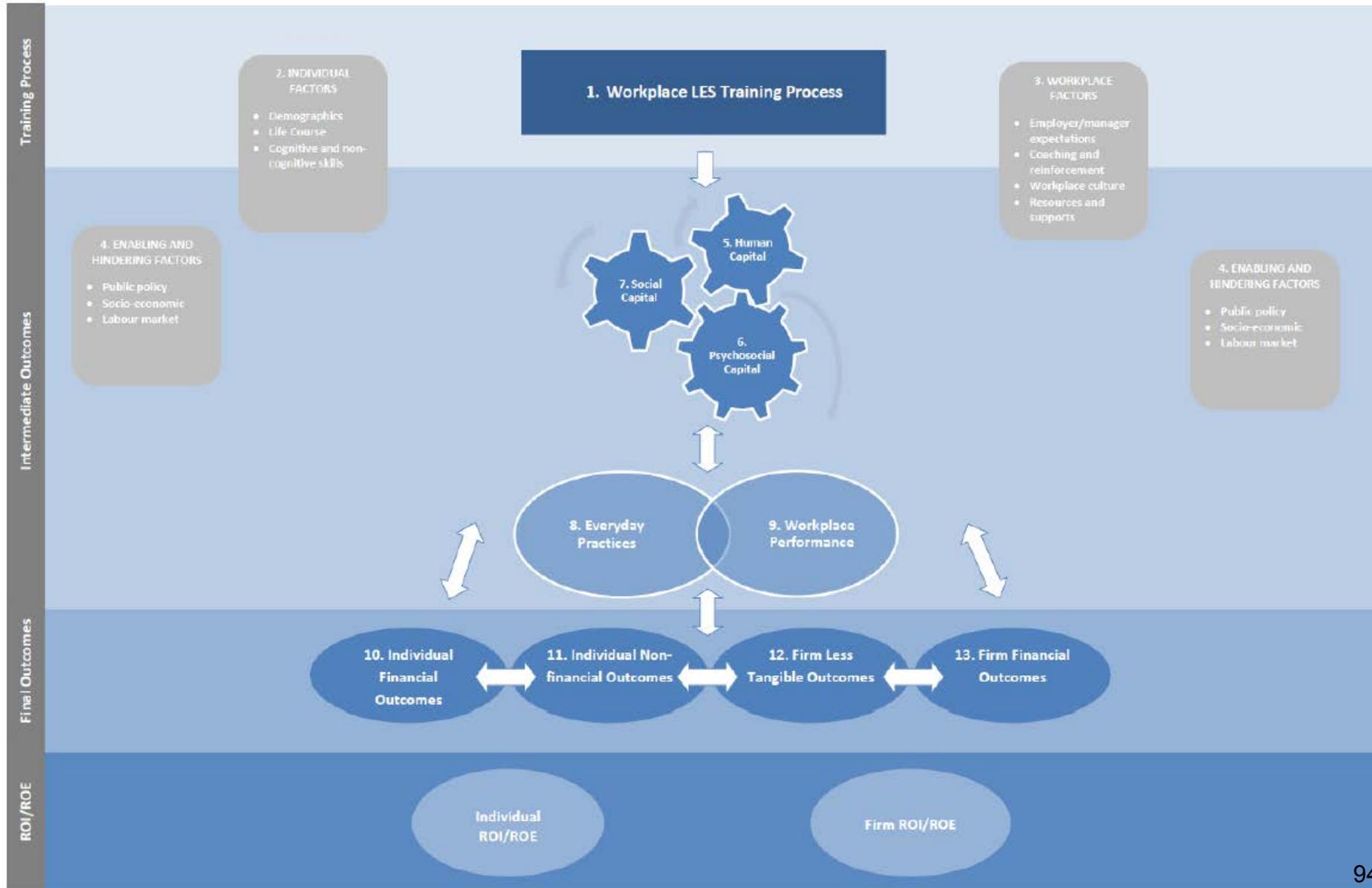
Employers investing in training incur a range of resource costs including the direct financial costs of providing training as well as opportunity costs (there may be lost output, for example, where staff have spent time away from productive activities). In return, they expect one or more of a range of potential benefits, including increased productivity, increased sales, cost control, improved product quality, improved customer service, worker retention, reduced absenteeism, improve health and safety, and improved worker morale. The widely-used Kirkpatrick evaluation model provides a useful summary of the potential benefits of workplace training.

KILPATRICK'S FOUR LEVELS OF EVALUATION	
<i>LEVELS</i>	<i>INDICATORS</i>
1. Learner reaction to the programme ("smilesheet" – most commonly evaluated level)	<p>Learners:</p> <ul style="list-style-type: none"> • were satisfied that programme met their needs, goals • were satisfied that with the implementation of the program • were satisfied with: the program's relevance to their work, curriculum, pedagogical approach, instructors, scheduling, facilities • completed the program • would recommend the programme to others

KILPATRICK'S FOUR LEVELS OF EVALUATION	
<i>LEVELS</i>	<i>INDICATORS</i>
2. Learning/knowledge acquisition	<p>Skill gains – skills were upgraded or new skills were learned</p> <ul style="list-style-type: none"> • LES or specific components of LES (however defined where the programme is offered, for example as defined by HRSDC in Canada) • job-specific knowledge and skills ('hard skills') • changed learner attitudes ('soft skills) – improved morale, self-confidence, job-satisfaction, interest in further learning
3. Learning/knowledge transfer (to many, the "truest assessment of a program's effectiveness")	<p>Skills learned were applied to work – learners improved at:</p> <ul style="list-style-type: none"> • performing and completing job tasks • understanding, organizing, planning, problem-solving • team work • working independently • interacting with others (written and oral communication, e-mail) • using new technology • taking initiative (participating in workplace committees, union activity)

KILPATRICK'S FOUR LEVELS OF EVALUATION	
<i>LEVELS</i>	<i>INDICATORS</i>
4. Impact on the business or productivity (the "bottom line" – least evaluated level)	<p>Productivity improved</p> <ul style="list-style-type: none"> • less absenteeism • fewer workplace accidents • less waste • increased employee retention • better sales • cost savings • quality improvements • improved customer service • more promotions and wage increases
<i>Source: Social Research and Demonstration Corporation, 2011</i>	

In determining how these benefits might be arrived at, it is useful to develop a theory of change. Such a theory highlights the underlying assumptions through which programmes are expected to produce their desired effects – i.e. the links that exist among programme inputs (e.g. learner characteristics), processes (e.g. instructional strategies), outputs (e.g. certificates) and outcomes (e.g. improved productivity) (Social Research and Demonstration Corporation, 2011). A theory of change can help illuminate the various processes and steps that are required before the desired programme benefits can be achieved. The following logic model provides a graphical representation of the theory of change utilised in the Canadian Measures of Success evaluation of workplace basic skills programmes (Social Research and Demonstration Corporation, 2011).



6.2 Costs of provision

There is some information on the overall costs to employers of workplace training. For example, the 2011 Employer Skills Survey found that employer expenditure on training in the previous 12 months was £40.5bn, equivalent to £1,775 per employee and £3,300 per person trained. Only a small proportion of this – 8% – was accounted for by fees paid to external training providers. Half the total expenditure was accounted for by the cost of paying staff while they were being trained. The Employer Skills Survey found that, in comparison to larger establishments, smaller ones spent more per trainee, perhaps because of a lack of economies of scale. Moreover, a greater proportion of SMEs' training expenditure was on "non-tradeable" costs, such as management time required to arrange training.

There is very limited evidence on the costs to employers of workplace basic skills provision. With the exception of Bassi (1994), we found no studies, either in the UK or internationally, that sought to measure the true costs to employers of WPL programs. In that one study, Bassi conducted case studies at a total of 72 firms, with approximately 2/3 offering workplace literacy programmes and one third not doing so. Bassi (p. 63-64) estimated the "average direct cost to the firm for a worker in the education program" at "about \$600" (in 1994 USD). However, she provides no detailed information as to how she arrived at this figure. Given the case study design of this research project, it is possible that she asked managers to estimate direct cost to the firm per worker, and then took a mean of those estimations. Bassi further noted that managers in companies with workplace basic skills programmes "frequently stated that... they did not consider the cost of the programme to be a major issue." That being said, managers in this study did consider start-up costs to be a disincentive, and three of the top five reasons given by employers for not investing in a workplace basic skills programme were related to costs and resources. (See section 5.2.3.)

Wolf and Evans (2011, p. 127) concluded that the start-up costs of Skills for Life workplace literacy programmes (at least those are based on the Skills for Life model) tended to be "extremely, if not prohibitively, expensive". Citing

data from an early pathfinder project that involved workplace learning, Wolf and Evans note that it typically took 20-30 hours of negotiation with an employer before workplace basic skills programme could be implemented. To this was added the cost of paying for the course itself, which included teaching expenses and any context-specific curricula and materials development.

Synthesising evidence on workplace literacy programmes in New Zealand, Benseman and Moore (2007, p. 7) criticised the lack of information on programme costs. As they observed, this information could be collected in programme evaluations, but rarely is, “presumably for issues of commercial sensitivity”. Some New Zealand data was available to Benseman and Moore, however. The Ministry of Social Development funded a broad range of programmes in 2003-04, spending an average of NZ \$1850 per learner⁵. Unfortunately, “there was little detail or breakdown of the cost structures and comparisons across types of programs”. Furthermore, it is unclear how much direct cost there was to employers, on top of this government funding. Another evaluation, of the New Zealand ESOL program, reported that cost per learner ranged from NZ \$500 to \$1000.

6.3 Benefits of provision

Wolf and Evans (2011, p. 114) are critical of some previous government claims regarding the impacts of workplace basic skills programmes, and argue that few employers accept the validity of such claims. They point, for example, to former Skills Minister David Lammy’s assertion at the 2008 Skills for Life conference that there are “unambiguous” evidence of benefits. In this speech, Lammy highlighted a Ford plant in Dagenham, asserting that this plant had experienced “a 22% reduction in energy consumption since the implementation of its Skills for Life strategy”. Wolf and Evans argue that such a bold assertion needs to be based in hard evidence if it is not to be

⁵ In April 2013, when our report was being drafted, 1 NZ dollar = 0.55 Great British pounds.

dismissed by employers as hyperbole. However, collecting such hard evidence is extremely difficult.

6.4 Barriers to robust evidence on the impacts of workplace basic skills programmes

Research evidence on the full impacts on employers of improving literacy, language and numeracy skills is far from comprehensive. The specific relationships between basic skills improvements and operational effectiveness, business efficiency, retention and training ability, for example have only rarely been tested objectively, and the wider benefits remain uncosted. The vast majority of published evidence concerning the benefits of workplace basic skills training is qualitative, subjective or even aspirational. However, the general message is that businesses that have undertaken literacy and numeracy training programmes for their employees have rated the experience highly. As Ananiadou et al (2003) note, this is a meaningful finding: such programmes can be both disruptive and costly, so positive feedback from the employers bearing those costs suggests meaningful benefits, whether direct or indirect. However, as Wolf and Evans (2011, p. 121) argue, companies who are receiving free or heavily subsidised programmes are likely to express satisfaction, even if they do not consider the programme to be good value for money once the subsidy runs out: “Most people, when asked their opinion of something they have received for free, tend to tick the ‘highly satisfied’ box. In general, people do not like to look gift horses in the mouth (especially if there might be more coming), nor, for the most part do they want to hurt people’s feelings for no good reason or return. Equally, no one likes to feel they have wasted their own time and effort to no good purpose.” Wolf and Evans therefore argue that employer self-reports are likely to overstate satisfaction levels. This must be taken into consideration when evaluating programme impacts.

6.5 Perceived benefits

6.5.1 UK evidence

Wolf and Evans (2011) found that Skills for Life workplace basic skills courses produced small average gains in perceived work performance, and that perceived performance continued to improve over the next two years.

Ananiadou's (2003) review of evidence on workplace LLN programmes – which included evidence from within and without the UK – suggests that such programmes do not lead to increased turnover; in contrast, companies that offer more training appear to be better at retaining their staff. Wolf points to the positive impact of training on motivation: access to training can persuade employees that they are with a good employer who cares about their potential for advancement. This reflects evidence (e.g. Levenson, 2001) showing that some employers provide WPL courses as a way of giving something back to employees and showing them that they are cared about.

6.5.2 International evidence

Bassi (1994: 67) highlighted the challenges of collecting reliable evidence on programme impacts: “The impact of workplace education programmes is known to be extraordinarily difficult (if not impossible) to quantify rigorously.” In case studies, Bassi's strategy was to ask managers, supervisors, providers and employees to assess programme impacts on a range of factors directly or indirectly affecting productivity and profits. On these criteria, managers were asked to report whether there had been no impact, a moderate impact or a significant impact. Managers reported a moderate to significant impact on the following outcomes. The second column indicates the percentage of managers citing this benefit.

Table 6.1 Perceived benefits of workplace basic skills programmes, as reported in Bassi 1994

<i>Outcomes</i>	<i>%</i>
Worker morale	65
Communication ability	59
Company loyalty	57
Reading ability	56
Quality of output	51
Ability to use new technology	51
Problem solving skills	48
Workers potential for advancement	48
Ability to work in a team	43
Error rates	41
Work effort	41
Customer satisfaction	35
Time savings	33
Safety	33
Ability to compute	33
Worker retention	28
Ability to work independently	26
Absenteeism and lateness	15
Recruitment of new employees	4

There is some evidence in the literature that workplace training may lead to improved tangible financial outcomes for firms. Hollenbeck and Timmeney (2009), in a study of a state-funded workplace literacy programme in the US state of Indiana, found that employers and workers reported productivity gains.

In terms of meeting the specific skills needs of the participating workplaces, the trials the Australian Industry Group conducted on the National Workforce Literacy strategy appear to have been a success. Return on Investment measures were used from the beginning of the project to allow trainers to plan their programmes around the needs of the enterprise. Using these measures, employers identified specific skills gaps that were impacting upon diverse areas such as productivity, compliance and safety. Trainers then developed programmes to address these concerns. Reported outcomes for both individuals and the enterprises included productivity gains and time saving, increased employee confidence, including the confidence to speak up and ask questions, improved communication, improved documentation, improved compliance, positive impacts upon teamwork (particularly for teams who had participated in training together), individual skills gains, and promotion opportunities for participating employees (AIG, 2012).

Outcomes such as workplace morale, social inclusion, improved manager-worker relations/trust, and a culture of learning, do not directly affect income or equity, but may have an indirect effect. As summarised in Measures of Success, Hollenbeck and Timmeney (2009) found that employers and workers reported significant morale gains. In their review of two survey-based Canadian studies Kuji-Shikatani and Zori (2007) identified improved labour-management relations as an outcome of workplace LES training. Improved worker-union and worker-management relations were also outcomes reported in evaluations of Nova Scotia's Workplace Education Initiative (WEI) (Kelly, 1999, and CCS, 2005; cited in Centre for Literacy, 2010). A 2006 survey of Canadian businesses (Plett 2007; cited in Centre for Literacy, 2010) found

that employers valued how their programmes enhanced workers' lives, personally and at work, and thereby contributed to a culture of lifelong learning in the workplace.

Several recent international and Canadian studies have documented significant learner outcomes in soft skills, such as improved confidence, morale, self-esteem, job satisfaction, engagement, initiative, teamwork and interest in learning. These studies have also shown that employers value these outcomes and are able to link them to business success, such as an improved bottom line.

Morale as an outcome attractive to employers, and perceived as conducive to the profitability of business, also surfaces in a recent report on the impact of workplace LES programmes in small and medium-sized enterprises (SMEs) in Nova Scotia (Praxis 2008: 69-70). When asked to identify the "direct benefits to the company" of the workplace LES training programmes they had offered, employers "focused on improvements in self-confidence, self-esteem, morale, job satisfaction and communications 'soft skills'".

In their view, the improved attitude and behaviour of their employees, "non-technical and somewhat intangible changes", translated into "significant changes in the workplace as a social environment...that provided the basis for downstream outcomes", i.e. outcomes evident much later. These outcomes related to:

- communication and interaction in the workplace
- the ability to adapt to ongoing changes in workplace technology and processes
- the management of workflow and technical problems
- management understanding of employee capacities, talents and limitations
- the trainability and opportunities to promote from within the company

Although these employers were not able to quantify the positive changes, they expressed confidence that [LES] training was generating significant gains in productivity and bottom line business outcomes “down the road”.

In a similar vein, a 2009 American report on a workplace literacy programme funded by the State of Indiana underlined a “notable” tendency among the employers involved:

Despite their understanding of the strategic nature of training, perhaps the most notable observation about employer involvement was the lack of interest in or attempt to measure potential business outcomes ... It became apparent through interviews that businesses became engaged in the initiative mainly as a benefit for employees. They saw it as a way to improve employee morale. Most of the business representatives understood and articulated the fact that if workers would improve their basic skills and exhibit higher levels of morale, then they would likely be more productive... (Hollenbeck and Timmeney 2009: 18).

A 2006 survey of Canadian businesses found that employers valued how their programmes enhanced workers’ lives, personally and at work, and thereby contributed to a culture of lifelong learning in the workplace. Most of those surveyed were also “reluctant to try and measure the economic benefits of workplace literacy training or tie the results too closely to the bottom line”, doubting that such programmes were capable of producing an “immediate” impact, i.e. one that could be demonstrated and measured at the end of a workplace basic skills training initiative (Plett 2007: 65-6).

A 2008 survey of European employers offering workplace literacy and essential skills training notes the connection some have drawn between “happier” employees and business outcomes. For example, in Ireland, while most interviewees believed that evaluation of organizational/financial impact, referred to as “hard measures”, was “important” or “essential”, they strongly supported evaluations that capture so-called “soft measures” or “intangibles”, such as positive changes in employees’ attitudes and behaviours. Employers in this study were interested in an evaluation model that would help them

identify evidence of increased morale, self-esteem, confidence and job satisfaction, greater participation and initiative, and a willingness to continue work-related training (Pye and Hattam 2008: 49-50).

In the United Kingdom, employers who have offered their workers training programmes, including basic skills education, through the national Train to Gain service indicated that, through such programmes, they could demonstrate their commitment to developing their staff and therefore promote an “employee-friendly culture in their business,” which they apparently assumed to be important and beneficial to their employees and their organizations (LSC 2008: 8-9).

These findings suggest that employers may be less focused solely on “bottom line” outcomes for workplace training investment than most governments seem to assume. If that is the case, then there is a need to develop more varied evaluation methods to measure a broader range of outcomes.

In Benseman’s 2010 study, most learners reported a range of positive benefits and non-cognitive gains, including improved confidence, communication skills, job satisfaction and attitude towards their job (Benseman, 2010). Supervisors reported a similar range of workplace-related gains, and in the final evaluation company managers rated the course highly. In 12 of the 18 courses involved in this evaluation, supervisors rated the course participants before and after the course. Around 60% of all supervisor ratings of the participants increased. Providers reported that the most notable outcomes for their course participants were increases in personal confidence and job confidence, improved communication with other workers and a greater interest in training. These four outcomes were also in the top five outcomes reported by managers most of whom also commented that communication between management and workers had improved.

In a survey of 30 different Australian workplaces representing 13 industries, Pearson (1996, as reported by Ananiadou et al, 2003) found that language and literacy training was considered to have had a positive effect on five aspects of the workplace: direct cost savings; access to and acceptability of

further training; participation in teams and meetings; promotion and job flexibility; and the value of training (which included issues such as worker morale, confidence to communicate etc.).

Asked for a quantitative estimate of savings, 70% of respondents said that their organisation had made perceptible cost savings as a result of language and literacy training in the workplace. The nature of these savings varied, but the most consistently cited ones were related to time-saving (both of supervisor and worker time) when carrying out language or literacy work tasks. The type of saving which received the second most mentions was related to more accurate and fuller completion of workplace documentation. The amount of savings also varied among organisations; however, the estimated savings on 'unproductive' labour costs per participant per week for each skill surveyed were: A\$9–A\$77 (£3–£28) per training participant per week (average range) or A\$16–A\$28 (£5–£9) per training participant per week (median range).

In the UK Army, 50% of line managers reported that basic skills training for selected members of their team had been very or fairly effective in improving these individuals' operational effectiveness and day-to-day efficiency at work (NRDC, 2013). However, Army learners themselves tended not to identify an immediate impact on their day-to-day performance.

6.5.3 Quantitative evidence of benefits

Hollenbeck (1996) provides an overview of the very small amount of work – particularly quantitative work – that had been carried out on the productivity impact of workplace basic skills training up to the mid-1990s. Only one was quantitative; this is an unpublished case study of one US company, with the study methodology not reported. Doing his own calculations from the data provided in the paper, Hollenbeck estimated that the firm in question experienced 4.67% annual growth in productivity over a five-year period, 31% of which the study authors ascribed to basic skills training. However, this is very much an estimation.

Using data from two large nationally representative surveys, the National Household Education Survey (NHES) and the Current Population Survey (CPS), Hollenbeck (2006) estimated the impact of workplace literacy programmes. This research found that workplace literacy programme participation increased earnings by an estimated 17% (NHES) or 11% (CPS). Part of the impact comes from the industries and occupations of participants. However, impacts remain substantial even when industry and occupation are controlled for, with the estimated increase falling to 13% (NHES) and 8% (CPS).

Estimates from the two data sets are inconsistent. Estimates from the NHES data set show that males receive a 20% higher earnings payoff from participation in literacy programmes than otherwise identical males who do not participate. The return is only slightly less when industry and occupation controls are added to the model. In the CPS estimates, males are shown to receive no payoff. On the other hand, from the CPS estimates, women receive a 14-17% earnings payoff that hardly changes when industry and occupation are added to the model. But from the NHES, the payoffs for women, while positive, are not statistically significant.

Moore et al (1999) conducted a well designed evaluation of federally funded workplace literacy programmes in America. The study involved an experimental research design in which course applicants were randomly assigned to treatment or control groups at three programme sites. Moore et al found employee skills gains, and positive impacts on absenteeism, team work and supervisor performance ratings. Levenson (2004) argues that particular attention should be paid to these findings, because this study is unique in its use of an experimental design and random assignment. Further, Levenson argues that the positive findings of this experimental investigation lend credence to the benefits found in other, less rigorous studies: "the strong implication is that workplace education programmes can indeed have positive impacts" (p. 98).

In one of the few high quality studies on the benefits to employers of literacy and numeracy training, Krueger and Rouse (1994, 1998) carried out research

in the US comparing outcomes for recipients/non-recipients of basic skills training. As reported in Ananiadou et al (2003), a basic skills tuition programme was delivered to 480 low-skilled, hourly-paid workers at two mid-sized American companies (one service, one manufacturing). It ran for approximately 16 months and classes were taught on-site in five 8–12 week blocks. The programme was subsidised by the federal government, so employers only had to meet indirect costs.

The researchers found small, positive effects of the programme on all outcomes investigated (although note that the follow-up period was quite short). Results appeared context specific. Returns to wages were especially strong for those who undertook training with a strong company-specific focus (e.g. blueprint reading). Workers who participated in the programme had a lower absenteeism rate during the weeks in which they had classes and this effect continued for the next two months. Participation in training did not appear to make workers either more or less likely to leave the company after training.

As Ananiadou et al report, the authors were not able to measure changes in productivity directly, but did try to take indirect measures by querying participants about their own self-perceived productivity as well as about other relevant issues, such as: attitude towards their job, desire to take additional classes, satisfaction with their company and membership of community organisations. For almost all of the variables measured, differences between training programme participants and non-participants were insignificant. One exception was that training participants at both companies were significantly more likely to report that they planned to take additional classes in the future compared to non-participants. This finding is consistent with other research which has found that participation in training begets further participation, and is indicative of positive experiences employees report from education and training.

This study attempted to provide estimates of the rate-of-return to the employer of the training expenditure. On the basis of the actual costs incurred, based

on the fact that the federal subsidy covered approximately half the costs of the training, the authors concluded that, at least in the manufacturing company, the training paid for itself but may not have done so without the subsidy. This rough estimation is based on a conservative estimated initial return to the training.

There is little evidence of short-term workplace LLN programmes improving participants' Language, Literacy and Numeracy (LLN) skills enough to show significant gains in quantitative skills assessments (Vorhaus et al, 2011). One of the most ambitious studies investigating literacy gains was an evaluation of 18 workplace basic skills courses established by 16 New Zealand businesses (Benseman, 2010). The evaluation, which took place over three years, collected quantitative and qualitative data, including pre-and post-testing of reading and writing skills. Benseman found that 86% of learners who took both the pre-and post-test showed an improvement in their reading skills, with average scaled scores increasing by 10.1 points out of 100. Two-thirds of participants made gains in their writing scores. However, these improvements were statistically insignificant, and there was no clear dose-response relationship: participants attending courses for an average of 40-60 hours averaged no greater improvements than those attending courses for only 12-20 hours. This led New Zealand government statisticians to declare that these gains could not be attributed to the workplace literacy program.

From 2009 to 2012, the Australian Industry Group conducted the National Workforce Literacy strategy (AIG, 2012). This research project consisted of consultations with employers to establish their views on workplace literacy and numeracy, followed by workplace literacy and numeracy training trials at eleven enterprises in Victoria, New South Wales and Queensland. The enterprises were drawn from the manufacturing, engineering, printing and packaging, glass packaging, and community aged services industries. Practitioner hours at each site ranged from 80 to 120 hours.

Many employees did make gains. In reading, for example, 13.5% of workers who were pre- and post- tested gained a full level on the Australian Core Skills Framework, which is used to assess adults in some LLN programs.

However, employees were only submitted for post-testing if trainers felt they had made progress; this selection bias is likely to provide a falsely inflated picture of programme impact. On the other hand, many participants did make LLN gains within a level, and employers felt that workplace-specific literacy needs were successfully addressed (AIG, 2012) .

Measuring Return on Investment (ROI), a relatively new Level 5 in the Kirkpatrick model is being advocated more often, but remains on the margins of practice because of the complexity and substantial expense of the exercise, particularly for smaller organizations (Social Research and Demonstration Corporation, 2011). Some recent literature on workplace training evaluation also calls for cost and efficiency analyses to help employers make financially feasible training choices and “use existing resources more efficiently.” Such analyses, described by some experts as “a matter of urgency”, are also seen as important in terms of informing policy (Tsi and Shang 2008, p. 214-15)

An alternative to measuring Return on investments is to measure the Return on expectations (ROE) – that is, to estimate the returns to training relative to stakeholder (in this case, employer) expectations. The term ROE was created to highlight the importance of aligning training goals and content to the specific needs of the organization by ensuring that the training aims to address the causes of performance gaps and in turn contribute to the business goals employers care about.

6.6 Implications for research design

Area	Observations	Recommendations
General	<ul style="list-style-type: none"> • Evidence on the benefits of workplace learning programmes on individual workers vastly outweighs evidence on the benefits to enterprises. • Evaluations of workplace learning programmes tend to be heavily reliant on qualitative rather than quantitative evidence, to draw on perceived and self-reported benefits. They also often lack in rigour. 	<ul style="list-style-type: none"> • For employers who have funded workplace basic skills programmes we should ask: <ul style="list-style-type: none"> ○ how long the funding lasted and whether it continued when one programme was completed? ○ whether procedures for evaluating the learning programme were/are included in its design?
I. Impact on literacy and numeracy skills and wider employability	<ul style="list-style-type: none"> ○ Reading skills ○ Writing skills ○ Communication skills ○ Number skills ○ Use of technology/IT 	<ul style="list-style-type: none"> • Need to understand that there is a difference between statistically significant skills gains, skills gains needed to improve by one level (measure attached to funding) and the skills gain required by the employer (addresses specific needs of the

Area	Observations	Recommendations
skills and soft skills	<ul style="list-style-type: none"> ○ Problem solving skills ○ Team working skills ○ Comprehension skills ○ Working independently 	<p>workplace).</p> <ul style="list-style-type: none"> ● Include items such as these when exploring employees' opinions on the benefits of workplace basic skills programmes.
<p>II. Observing tangible benefits (direct effects on productivity and profit)</p>	<ul style="list-style-type: none"> ○ Increased productivity ○ Operational effectiveness ○ Work effort ○ Increased sales ○ Reduced error rates ○ Improved quality of product ○ Cost control ○ Time savings (both supervisor and worker times) ○ Wage growth 	

Area	Observations	Recommendations
	<ul style="list-style-type: none"> ○ Increased employee retention (reduced turnover) ○ Easier employee recruitment (reduced turnover) ○ Potential for employee advancement/job upgrades ○ Improved health and safety ○ Reduced absenteeism and lateness ○ Increased customer satisfaction ○ Fewer accidents at work ○ Less waste 	
III. Observing intangible benefits (indirect	<ul style="list-style-type: none"> ○ Improved morale/loyalty ○ Greater confidence/Self-esteem ○ Performance awards 	

Area	Observations	Recommendations
effects on productivity and profit, such as changes in attitudes and behaviours)	<ul style="list-style-type: none">○ Operational effectiveness○ Attitude towards education/training (improved culture of learning)○ Improved labour-management relationships○ Improved job satisfaction	

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Appendix: search and retrieval strategy

The literature review search strategy built upon the search strategy carried out for the 2011 BIS “Review of research and evaluation on adult literacy and numeracy skills” (Research paper 61), led by NRDC (Vorhaus et al, 2011).

In order to ensure thorough coverage of the evidence base, three types of sources were searched:

- bibliographic databases
- websites of key organisations
- publication and reference lists compiled by subject experts and earlier literature reviews.

Bibliographical database search

Bibliographic databases were searched using a selection of keywords. Table A1 provides a summary of the databases used.

Table A1: Databases searched

Database	Description
Australian Education Index (AEI)	AEI is Australia’s largest source of education information covering reports, books, journal articles, online resources, conference papers and book chapters.
British Education Index (BEI)	BEI provides information on research, policy and practice in education and training in the UK. Sources include over 300 journals, mostly published in the UK, plus other material including reports, series and conference papers.
British Education Index	The free collections search interface of the BEI

Database	Description
Free Collections	(formerly the British Education Internet Resource Catalogue) includes access to a range of freely available internet resources as well as records for the most recently indexed journal articles not yet included in the full BEI subscription database.
Campbell Collaboration	The free collections search interface of the BEI (formerly the British Education Internet Resource Catalogue) includes access to a range of freely available internet resources as well as records for the most recently indexed journal articles not yet included in the full BEI subscription database.
Education Resources Information Center (ERIC)	ERIC is sponsored by the US Department of Education and is the largest education database in the world. Coverage includes research documents, journal articles, technical reports, programme descriptions and evaluations and curricula material.
Dart Europe E-theses	The Dart Europe E-theses database provides access to research theses from 530 Universities in 27 European countries.
Ethos: British Library Electronic theses online service	Ethos provides access to UK PhD theses.
Google scholar	Google scholar will be used primarily for its “cited by” feature, which provides a list of articles that have cited key publications.
PsycINFO	PsycINFO contains references to the psychological literature including articles from over 1,300 journals in psychology and related fields, chapters and

Database	Description
	books, dissertations and technical reports.
Social Science Research Network (SSRN)	Social Science Research Network (SSRN) is devoted to the rapid worldwide dissemination of social science research and is composed of a number of specialized research networks in each of the social sciences.

It should be noted that the ERIC database was far less useful than expected. Because of security problems with this database, most items can no longer be downloaded directly from the database. Instead, ERIC request that researchers manually request each desired item. ERIC will then, it is promised, deliver those items to the request via email. This promise did not prove to be realised. Over a three-week period, the research team requested 18 items from ERIC. As of yet, we have neither received any of those items nought or received any information from ERIC about when those items might be delivered.

As ERIC is the primary American database for the social sciences, and the US has produced a relatively large percentage of the world's research on workplace basic skills programmes, this has presented a problem. In particular, it has proved difficult or even impossible to access some technical reports and appendices, meaning that it has not been possible to review some survey questionnaires.

Search keywords/descriptors were developed through a two-part process:

- utilising relevant keywords from previous known searches, such as the "Review of research and evaluation on adult literacy and numeracy skills" (Vorhaus et al, 2011) and those used in a 2005 review conducted in New Zealand (Benseman et al, 2005)
- developing additional keywords by investigating the keywords/subjects/descriptor lists for a number of key publications, in order to get a list of relevant keywords associated with those publications.

Because this project focuses on the relationship between the workplace and basic skills, the search strategy incorporated both these elements. The research team categorised search terms into three areas: skills, contexts and impacts/outcomes. The first category relates to the skills of Adult English and maths (i.e. Adult Literacy, Language and Numeracy). The second category concerns the workplace itself, or the labour market more generally. The third category focuses on the employer-related impacts associated with poor English and maths and the workplace-related outcomes of LLN programmes. Table 1.2 contains a full list of search terms in each category.

Table A2 Search terms and categories

Skills	Context	Impacts/outcomes
Adult basic skills	Business*	Benefit*
Adult literacy	Education employment	Constraint*
Adult numeracy	near training	Cost*
Basic skills	Employer*	Disincentive*
Basic skills training	Employee*	Economic
Communication skills	Job applicants	Economy
Foundation skills	Job seekers	Employee
Functional literacy	Labour market	Employee productivity
Functional English	On the job training	Employability
Functional numeracy	Policy	Employment
Functional mathematics	Train near Gain	Employment potential
Literacy	Union*	Incentive*
Literacy skills	Vocational	Investment
Mathematics skills	Vocational education	Market failure
Numeracy	Work	Productivity

Skills	Context	Impacts/outcomes
Numeracy skills	Workplace	Return on investment
Oracy	Workplace learning	Salaries
Skills for Life	Work based learning	Skill gap
Writing skills	Workplace based literacy	Skill need
	Workplace based numeracy	Staff retention
	Workplace based skills	Wages Workforce performance

The search strategy utilised the following formula:

- Category 1 (skills) AND Category 2 (workplace context) OR Category 3 (workplace-related impacts and/or outcomes).

This strategy was arrived at through testing a number of different approaches in the British Education Index (BEI) database. First, the research team conducted a search of that database using the following formula: Category 1 (skills) OR Category 2 (workplace context) OR Category 3 (workplace-related impacts and/or outcomes). Using a publication period of 1994-2013 and a broad variety of eligible publication types, this search yielded a return of 521 documents, the vast majority of which were irrelevant – for example, addressing workplace issues, but not adult basic skills.

The research team then narrowed the search significantly by using the following formula: Category 1 (skills) AND Category 2 (workplace context) AND Category 3 (workplace-related impacts and/or outcomes). This produced 58 results, and a much higher proportion of relevant publications. However, it was felt that this search ran the risk of being overly restrictive, and that it would serve the project better to conduct a broader search that, while bringing in a greater percentage of irrelevant results, also captured some publications missed by a more restrictive approach. Therefore, the research team will use the search strategy listed above: Category 1 (skills) AND Category 2 (workplace

context) OR Category 3 (workplace-related impacts and/or outcomes). In the BEI database, this search produced 168 results, with a good mix of broadness and relevance.

Searches were amended as appropriate for each database, in order to achieve the most accurate and useful results. This was done by reviewing the suggested keyword/descriptors/thesaurus terms for each database. The research team will also enter a number of known key publications into each database – for example, Ananiadou et al's 2004 review of research on workplace basic skills literature ([The benefits to employers of raising workforce basic skills: a review of the literature](#)) – in order to review and include the search terms associated with those publications.

Additional searches

Database searches were supplemented with searches of key organisations' websites, in order to find grey and other literature produced by these organisations. Websites were searched on main keywords, and/or the publications/research/policy sections of each website were browsed, as appropriate. Table 1.3 provides a list of organisations whose websites were searched.

Table A3 Websites of key organisations

Organisation	URL
Department for Business, Innovation and Skills (BIS)	http://www.bis.gov.uk/
Skills Funding Agency	http://skillsfundingagency.bis.gov.uk/
UK Commission for Employment and Skills	http://www.ukces.org.uk/
Confederation of British Industry (CBI)	http://www.cbi.org.uk/
CfBT Education Trust	http://www.cfbt.com/
Department for Education (DfE)	http://www.education.gov.uk/
Excellence Gateway (Learning and Skills)	http://www.excellencegateway.org.uk/

Organisation	URL
Improvement Service)	
International Labour Organization (ILO)	http://www.ilo.org/
National Audit Office (NAO)	http://www.nao.org.uk/
National Resource and Development Centre for Adult Literacy and Numeracy (NRDC)	http://www.nrdc.org.uk/
National Centre for the Study of Adult Learning and Literacy (NCSALL)	http://www.ncsall.net/
Organisation for Economic Co-operation and Development (OECD)	http://www.oecd.org/
Scottish Government	http://www.scotland.gov.uk/
Welsh Government	http://wales.gov.uk/?lang=en
Trades Union Congress (TUC)	http://www.tuc.org.uk/
UNESCO Institute for Lifelong Learning (UIL)	http://www.uil.unesco.org/home/
Cedefop	http://www.cedefop.europa.eu/EN/
US Commission for Skills	http://www.skillscommission.org/
US Office of Management and Budget	http://www.whitehouse.gov/omb/
World Bank	http://www.worldbank.org/

Inclusion criteria

Publications dating from 1994 to the present were included. This allowed incorporation of any research seeking to build on the 1994 employer survey. 1994 also appears to

have marked the beginning of a brief but intense stage of American research on workplace basic skills programmes.

Publications were only incorporated into the study if they addressed: 1) Adult English and maths; AND 2) employers/the workplace. Within these criteria, a large number of studies focused on curricula, pedagogy and other aspects of effective practice. As these topics were outside the scope of our study, such studies were excluded. The emphasis was not on what happens in workplace literacy programmes, but on the motivating factors for the existence of such programmes.

Only English-language publications were included. Publications came from a range of countries, particularly the UK, the US, Canada, Australia and New Zealand.

At the initial stage of document retrieval, publications were included/excluded on the basis of one criterion: the relevance of the publication, as judged by a reading of the publication abstract or, in the absence of an abstract, a reading of the title and a scan of the executive summary. Publications selected for inclusion were then subjected to another inclusion/exclusion round. In round two, publications were assessed a rating of High, Medium or Low on each of two criteria: quality and relevance. All publications scoring at least a Medium on both criteria were included in the study. Judgments of quality (in particular) were of necessity subjective, but were based on the research team's extensive experience reviewing and synthesising literature in this field.

Case studies of individual employers or small numbers of employers were excluded. However, studies reporting the findings from a large number of case studies were included. For example, Bassi (1994) conducted an important and influential set of case studies of 72 American firms, and was included in our review.



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