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Learning Outside the Formal System - What Learning Happens in the Workplace, and how is it Recognised?

Future of Skills & Lifelong Learning

Evidence Review

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Learning outside the formal system - What learning happens in the workplace, and how is it recognised?

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Executive Summary

This report provides a summary of the evidence base on the question: 'What learning happens in the workplace, and how is it recognised?'. It draws on national and international research findings – both quantitative and qualitative – and identifies ten key messages.

1. The starting points are to recognise that: a) paradigms of learning differ; and b) workplaces are contested spaces in which what counts as 'learning', how it is facilitated, and who participates varies. In the 'acquisition' paradigm, cognitive skills are acquired at organised events with designated teachers, prescribed curricula and measurable outcomes. By contrast, in the 'participation' and 'construction' paradigm, learning is considered as a relational and dynamic process in which individuals improve their skills and work performance through practice and constant interaction with other people, tools and materials. This conceptual divide is reflected in the research evidence with quantitative inquiries focusing mainly on 'learning as acquisition' and qualitative research placing more emphasis on 'learning as participation and construction'. The evidence presented in this Foresight report reflects these tendencies, but also shows how both paradigms are important for effective learning.

Quantitative Evidence

2. Measures of 'learning as acquisition' include the incidence of workplace training, which rose in the 1990s and reached a peak of 15.1% of those in work in 2001. It has since fallen steadily, although in recent years it has stabilised at around 13.0%. However, training times have shortened over the same period – in 1995 a third of training episodes lasted less than one week, but by 2012 this had risen to a half. This suggests that overall training volumes have fallen significantly.
3. Real levels of training expenditure by employers have also moved downwards – between 2005 and 2011, there was a 14.5% real terms cut in training investment per worker. The 2015 figure suggests that this been halted with nominal training expenditure rising from £43.0 billion in 2013 to £45.4 billion in 2015, however, investment levels per head have not risen.
4. Despite the emphasis placed on training course attendance and the acquisition of qualifications, both are relatively low-rated by employees in terms of their helpfulness in improving work performance. Activities more closely associated with the workplace – such as doing the job, being shown things, engaging in self/collective-reflection and keeping one's eyes and ears open – are regarded to be more helpful in improving performance, reflecting the 'learning as participation' paradigm.
5. At a time when formal workplace training has been declining, the evidence suggests that the importance of learning on-the-job is rising – around a quarter of workers strongly agreed that learning was part-and-parcel of their jobs in 1992, but by 2012 this had risen to well over a third. European comparisons suggest that employers in Britain put more emphasis on this type of learning than employers elsewhere.

6. All sources of workplace learning from whatever paradigm are skewed towards those at the top of the occupational hierarchy, whether attending formal training courses or benefiting from everyday learning at work.

Qualitative Evidence

7. Much of the qualitative evidence shows that learning occurs naturally in all workplaces as part of everyday activity in line with the learning as participation approach. However, not all learning is recognised and valued. As research reveals, some workplaces are more capable of capitalising on their learning potential than others. This rests on a number of characteristics. These include employee involvement in decision-making, affording employees discretion to make judgements, distributed leadership and management, and constructive and regular feedback linked to employee rewards.

8. Workplace learning takes many forms stretching across a 'formal-informal' continuum. Learning is a collective process involving employees working together to solve problems, to find better ways of producing goods and services, and to create more efficient practices. This latter dimension also includes employees subverting procedures to 'get round' barriers to efficiency and/or to make their jobs more amenable.

9. International research evidence suggests that the key inter-related determinants in the variability of workplace learning environments (across both the public and private sectors) are context (including employer behaviour and employment relations) and individual behaviour. Every workplace is shaped by its position within a productive system whose demands affect the agency that managers and workforces have to develop and use their skills and knowledge.

10. External recognition and accreditation of workplace learning is problematic due to its largely collective and dynamic nature. What counts as 'learning' differs from one context to another. Workplace learning challenges the 'learning as acquisition' approach used in formal education and training programmes in which individuals are assessed against predetermined outcomes. However, there are models such as the Recognition of Prior Learning (RPL), which enable individuals to gain qualifications for competencies gained through everyday work practice.

I. Conceptual Perspective

Whatever the occupation – surgeons, engineers, lawyers, chefs and hairdressers – people say the best way to develop expertise is learning through practice in the workplace. The tacit nature of the knowledge and skills involved (Polanyi, 1967), however, raises considerable challenges for recognising such learning as, ‘its hallmark is its naturalness’ (Marsick, 2009). A growing body of quantitative and qualitative evidence shows how opportunities arise for learning within the workplace as part of everyday daily practices. These opportunities stretch across the ‘formal-informal’ continuum. These include: periods of structured supervised training; organised and accidental problem-solving and knowledge sharing encounters with colleagues; and the co-development and adaptation with clients and customers of products and services. Workplace learning can be enhanced through pedagogical strategies such as coaching, mentoring and the use of constructive feedback (Matsuo, 2014). Research on the role of Union Learning Representatives (ULRs) in the UK also provides evidence that trade union intervention can encourage both individuals and employers to engage with learning (formal and informal) can be effective (Saundry et al., 2016). Furthermore, unionised workplaces tend to have higher levels of training (Cooney and Stuart, 2013; van Wanrooy et al., 2013).

The nature of employment relations and work organisation clearly affects the nature and extent of employee participation as well as the nature of the learning involved (Sawchuk, 2011; Rainbird et al., 2004; Grimshaw et al., 2002). Evidence from the fields of political economy, the sociology of work, and industrial relations shows that many forms of work across both the public and private sectors have become increasingly precarious and subject to very tight forms of managerial and regulatory control (e.g., Grugulis and Bozkurt, 2011; Cappelli, 2008; Marchington et al., 2005). Furthermore, the UK suffers from other long-standing problems, including low employer demand for skills (Keep et al., 2006; Mayhew and Keep, 2014), inadequate management training (Hayton, 2015), and the lack of employee representation on company boards or through works councils (Williamson, 2013) compared with other countries in Europe.

Yet evidence is also emerging to support the concept of ‘employee-driven innovation’. Here innovation is seen as an incremental and collective process, rather than just the result of sudden individual flashes of inspiration or major technological change (see Høyrup et al., 2012). Here, the workplace is central since it is the site in which theories and concepts are not only utilised, but also transformed and new knowledge created (Guile, 2010). Ethnographic evidence suggests that everyday work varies considerably from the descriptions in organisational training manuals, job descriptions and mission statements. Yet, some have argued (e.g., Brown and Duguid, 1991) that organisations (particularly large ones) are still wedded to the formalised vision of jobs when trying to improve business performance. The challenge is to bridge the gap between these two accounts. In addition, Livingstone and Pankhurst (2009), drawing on findings from a major statistical and qualitative study of the relationship between learning in the workplace and employee prior educational attainment in Canada, provide evidence to support the case for giving employees opportunities to ‘demonstrate and be rewarded for the rich reserves of ability – notably the ability to change cognition – which are continually formed during

the experience of all forms of paid and unpaid activity'. Research from neuroscience on brain plasticity further challenges traditional notions of education as a front-loaded activity completed prior to starting work (see, for example, Royal Society, 2011).

These ideas represent a challenge to the traditional paradigm of learning underpinning most education and training systems where the human capital metaphor of 'learning as acquisition' dominates (Sfard, 1998). Rooted in cognitive traditions, this approach involves organised learning events with designated 'teachers' and prescribed curricula and outcomes. The outcomes can be externally measured through, for example, qualifications or attendance on training courses. Such measures form the basis of national surveys throughout the world (e.g., Eurostat, 2015). This approach also assumes that after a period of formal learning, the individual will seamlessly 'transfer' that learning to work.

In contrast, the metaphors of 'learning as participation' and 'learning as construction', rooted in socio-cultural traditions, present learning as a relational and dynamic process in which individuals improve their skills and work performance through practice, reflection and interaction with colleagues, tools and materials in 'communities of practice' (Fenwick and Nerland, 2014; Malloch et al., 2011; Hughes et al., 2007; Boud and Middleton, 2003). Engeström's (2004) metaphor of 'learning as construction' took these ideas forward. He stressed that participation should be a pro-active process as workplaces (and people) can become overly complacent and inward looking. Rather than rejecting formal approaches to learning in which experts pass on knowledge, Engeström argued that workplaces (and individuals) need an external stimulus. This can best be provided by employees crossing disciplinary and practice boundaries within their own organisations and/or into others. Strategies such as 'blended learning' and 'flipped classrooms' are similarly conceived and in addition they serve to bridge the acquisition-participation divide (Zitter and Hovee, 2012).

The use of the terms 'formal' and 'informal' (and also 'non-formal') learning can perpetuate a false dichotomy, privileging one form of learning over another, thus throwing the baby out with the bathwater (Manuti et al., 2015). In the 1980s in the US, Canada, Australia and the UK, arguments for enabling adults (particularly existing employees) to gain qualifications for their existing skills through the Accreditation of Prior Learning (APL), rather than having to attend a formal course to attain a certificate, contributed to the introduction of competence-based qualifications (Unwin et al., 2004). The term, Recognition of Prior Learning (RPL), is now more commonly used. Early pioneers in the UK such as the Open College Networks and adult education campaigning organisations saw RPL as central to their calls for a system of credit accumulation and transfer across post-compulsory education and training. Today, most further and higher education institutions operate some form of RPL process as part of their access arrangements for adult students.

Recent research on 'adult apprenticeship' has highlighted the problems for both individuals and workplaces if training for new skills is replaced by an assessment-led RPL approach (Fuller et al., 2015). Nevertheless, finding ways to accredit competence acquired through workplace learning is still high on the international agenda as countries try to address the disparate challenges of social and labour market mobility, productivity and an ageing population (see

Cedefop, 2015; for an OECD review of initiatives in 22 countries, see Werquin, 2010). The OECD review identifies four key benefits for national skills systems of RPL as follows:

- Economic benefits from reducing the direct and opportunity costs of formal learning and allowing human capital to be used more productively.
- Educational benefits that can underpin lifelong learning and career development.
- Social benefits by improving equity and strengthening access to both further education and the labour market, for disadvantaged groups, disaffected youth and older workers.
- Psychological benefits by making individuals aware of their capabilities and validating their worth.

The report also cautions, however, that the paradox at the heart of many RPL systems is that they become overly formalised in order to achieve the levels of validity and credibility demanded by stakeholders, thereby ensuring the resulting certification has the same exchange value as qualifications gained through formal education and training programmes. In the UK, there is a surprising lack of research on RPL so it is not possible to state here how widely it is used and at what levels. Given the numbers of adults in the UK workforce who have no recognised qualifications and continued concerns about the lack of a robust upper secondary vocational education system, there is a strong case for ensuring that RPL procedures are in place and widely accessible. From their cross-country analysis of data from international surveys of adult literacy and numeracy skills, Green et al (2015) show that 'England and the United States stand out for the fact that their younger adults have scarcely better skills than the 55- to 65-year-olds. Intercohort differences in numeracy skills show the same patterns across countries, with the older generation in England actually doing better than the younger one'. They argue that in addition to continued inequalities in schooling in England, the weakness of its post-compulsory vocational education and training system, including apprenticeship, means the country lacks the means to enable young people to extend their formal education once they enter work-based training and/or the labour market.

To examine the complexities of workplace learning, researchers have increasingly drawn attention to the interrelated importance of organisational context and the role of the individual (Fuller et al., 2003). This has generated greater awareness of the power of multi-disciplinary and mixed method approaches and the inadequacy of only relying on standard survey questions on 'training' within formalised off-the-job learning events to capture learning at and for work (Campanelli and Channell, 1994). Nevertheless, there have been developments in the design of quantitative methodologies, which attempt to embrace the broader concept of 'learning' (e.g., Skule, 2004; Felstead et al., 2005; 2007 and 2010; Green et al., 2013 and 2015). These are reviewed in the following section.

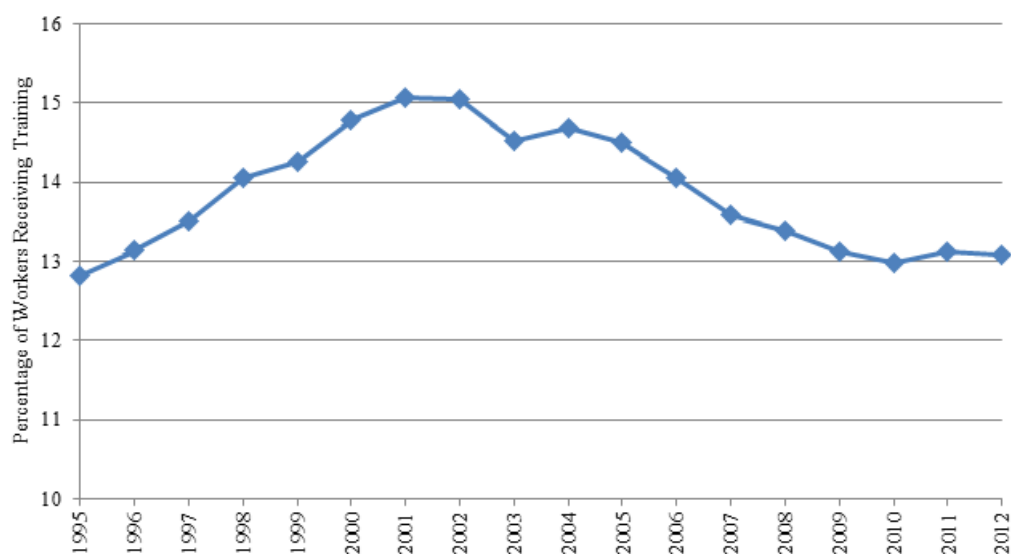
2. Quantitative Perspective

In this section of the report, we summarise the main quantitative findings using the metaphors of 'learning as acquisition' and 'learning as participation and construction' and the insights they provide for the question: 'What learning happens in the workplace, and how is it recognised?'

2.1 Learning as Acquisition

The longest running national series on trends in workplace training in Britain comes from the Quarterly Labour Force Survey (QLFS). Since 1984, the survey has asked respondents whether, in the four weeks immediately prior to interview, they have 'taken part in any education or any training connected with your job, or a job that you might be able to do in the future'. The data show that training participation rate rose throughout the 1990s from 12.8% in 1995 to a peak of 15.1% in 2001. It then fell by more than two percentage points to 13.0% in 2010, where it has remained ever since (see Figure 1). Figure 1 also suggests that despite concern that workplace training would fall in the 2008-2009 recession, this was not borne out by the evidence (Felstead et al. 2012).

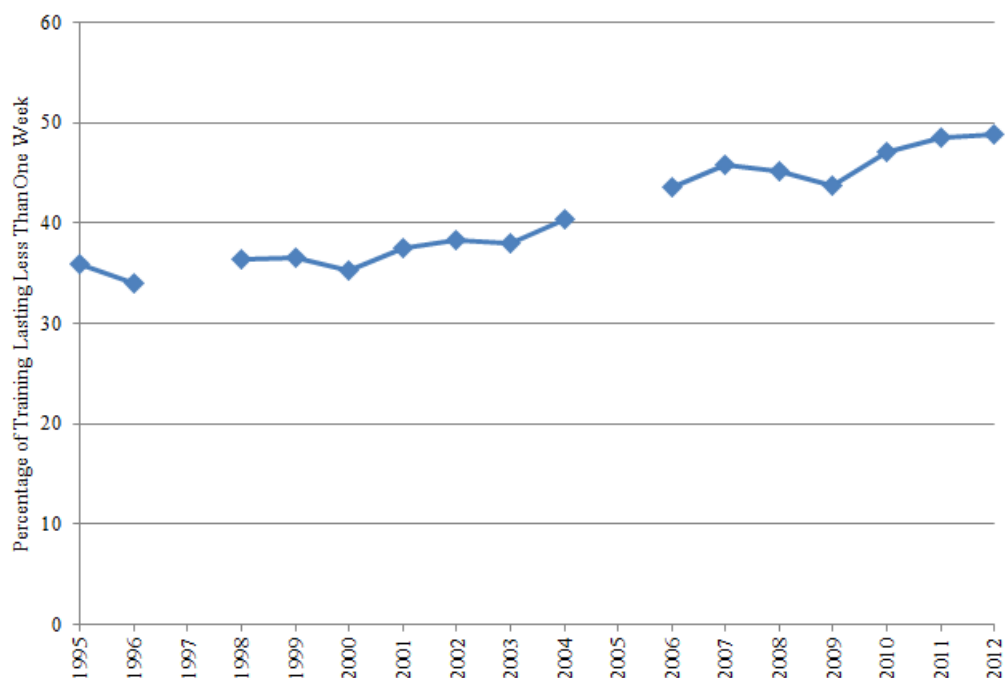
Figure 1: Four-Week Training Participation Rate Among Workers in the UK, 1995-2012



Source: adapted from Felstead et al (2013). Data originally extracted from the Quarterly Labour Force Survey.

Respondents who had received training in the four previous weeks were asked to state the total length of the most recent training episode. The results show that the proportion lasting less than a week has risen steadily over time. In the mid-1990s, around a third of training episodes lasted less than one week, but by 2012 this had risen to almost half (see Figure 2). Taken together, the QLFS results suggest that training volumes have fallen significantly over time, although we currently have little data on the conceptual nature of training undertaken – such as whether it is discretionary or non-discretionary (Felstead and Jewson, 2014).

Figure 2: Training Length in the UK, 1995-2012



Source: adapted from Green et al (2015). Data originally extracted from the Quarterly Labour Force Survey.

Employer surveys also provide quantitative evidence on the volume of workplace training organised, arranged and funded by the employer. The National Employer Skills Survey (NESS), begun in 1999, surveys over 90,000 employers biennially. From these data, it has been estimated that employer investment in training in England was £33.3 billion in 2005 rising to £40.5 billion in 2011 (Davies et al., 2012: iii). However, once inflation is taken into account, this represents just a 4% increase, and since the workforce rose over the same period, this equates to a real terms cut of 14.5% in training investment per worker (Green et al., 2015). A further 7% cut in nominal employer expenditure was reported between 2011 and 2013 (Winterbotham et al., 2014: 168). However, recent results suggest that while the fall has been halted, it has not been reversed. For the UK as a whole, training expenditure rose in nominal terms from £43.0 billion in 2013 to £45.4 billion in 2015, but investment levels per head have remained unchanged (Vivian et al., 2016: 11, 15).

Qualitative interviews with employers suggest, however, that despite the 2008-2009 recession, many found ways to maintain training levels (Felstead and Jewson, 2014). An overwhelming majority recognised that their enterprises were subject to a range of 'training floors'; that is, forms of training which are indispensable and which they were determined to defend. These included:

- compliance with legal requirements;
- meeting operational needs;
- countering skills shortages;

- addressing market competition;
- fulfilling managerial commitments;
- satisfying customer demands.

This suggests that broad macro-level forces are crucial in shaping workplace learning (see Section 3.1).

Furthermore, the 'read across' from training incidence to skills and performance outcomes is not straightforward. Case study research suggests that not all training episodes are intended to raise skills and some are not about raising skill levels at all (Callaghan and Thompson, 2002; Felstead et al., 2009; Grugulis, Bozkurt and Clegg, 2011; Leidner, 1993; Royle, 2000; Taylor and Bain, 1999). Instead, training can be used as a 'reward' to enhance employee commitment, but with no expectation of transfer to the workplace, or to ensure conformity with standardised ways of working which intentionally limit the skills used at work. Furthermore, one in eight workers report not having enough opportunity to use the skills they already have (Felstead et al., 2013).

2.2 Learning as Participation

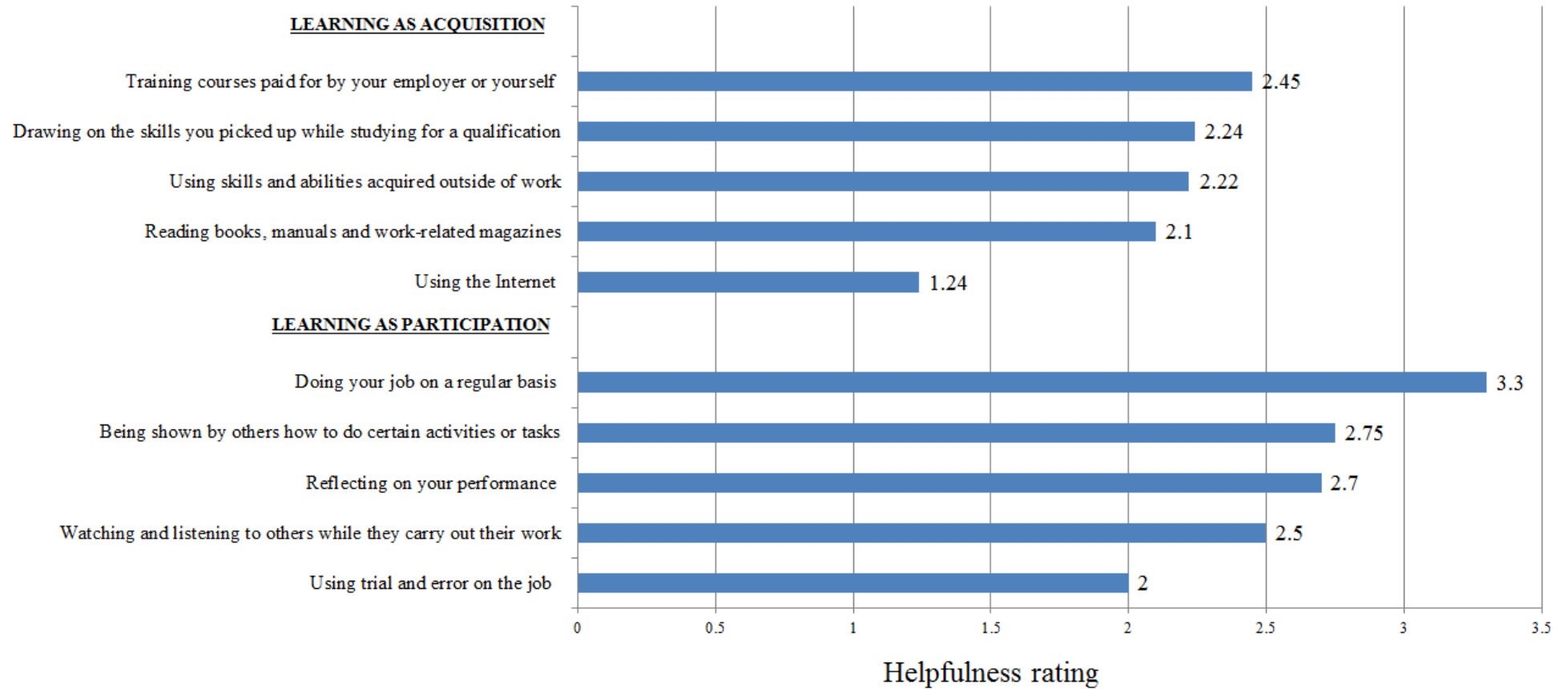
In the surveys reported above, respondents are asked to report their involvement in a particular activity or the existence of such activities in the workplace. To give the resulting measure precision, respondents are typically asked to give their response in respect of a particular time period – for individuals, the four weeks immediately prior to interview, while employers are frequently asked to cast their minds back over the last year. This gives emphasis to the (detectable) existence of activities rather than their usefulness for prompting a significant change in capability or understanding.

An alternative approach was used in a module added to the NIACE Adult Participation in Learning Survey in 2004. It asked respondents to rate a list of activities in terms of how helpful they were in improving work performance (Felstead et al., 2005). This enabled the process and the outputs (and their relationship) to be captured. Questions were organised round five activities associated with 'learning as acquisition': i) training received; ii) qualifications studied; iii) abilities acquired outside of work; iv) work-related reading undertaken; and v) the internet as a source of information. Respondents were also asked to rate the usefulness of five activities associated with 'learning as participation': i) doing the job; ii) being shown by others how to do things; iii) reflecting on one's own performance; iv) watching and listening to others; and v) using trial and error on-the-job.

The results showed that over half (51.8%) reported that doing the job had helped them learn most about how to improve. The use of the Internet to download materials, participate in e-learning and seek out information was regarded as being of no help at all to almost half the sample (49.7%). Tellingly, attending training courses and achieving qualifications were relatively low-rated for improving work performance compared to many of the 'learning as participation' activities (see Figure 3).

Exposure to training is heavily skewed towards those at the top of the occupational hierarchy where the incidence of formal training is higher, longer and of better quality (Felstead et al., 2010). Thus, 'Managers' rate training courses more highly as a source of learning than those in 'Sales', 'Operative' or 'Elementary' occupations (see Table 1). However, 'Managers' also rated 'learning by doing' more highly as a source of job improvement than those working in 'Elementary' occupations. Nevertheless, the pattern of responses within occupational groupings suggests that those lower down the occupational hierarchy drew relatively more insights from their daily activities in the workplace than those acquired via external sources.

Figure 3: Usefulness of Activities in Learning on the Job



Source: adapted from data presented in Felstead et al, 2005.

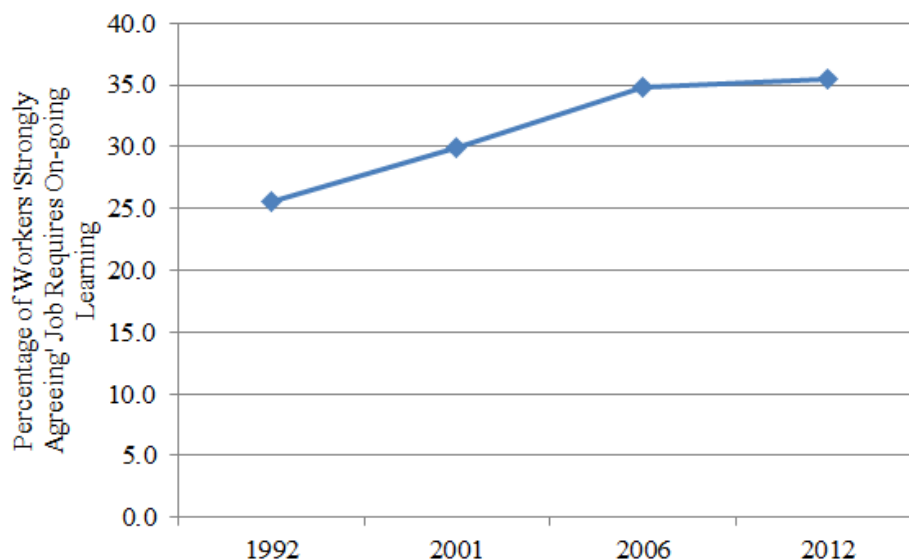
Table 1: Usefulness of Sources of Learning by Occupation

Source of Learning	Managers and Senior Officials	Professionals	Associate Technical	Administrative and Secretarial	Skilled Trades	Personal	Sales and Customer Service	Machine Operatives	Elementary
	Helpfulness Rating								
<u>Learning as Acquisition</u>									
Training courses paid for by your employer or yourself	2.89	2.93	3.28	2.42	2.45	2.74	2.05	1.72	1.71
Drawing on the skills you picked up while studying for a qualification	2.62	2.97	2.90	2.41	2.57	2.40	1.72	1.34	1.28
Using skills and abilities acquired outside of work	2.69	2.73	2.53	2.38	2.09	2.55	1.90	1.63	1.67
Reading books, manuals and work-related magazines	2.45	2.90	2.90	2.02	2.25	2.22	1.80	1.34	1.18
Using the internet	1.79	2.19	1.97	1.75	0.92	0.76	0.92	0.42	0.41
<u>Learning as Participation</u>									
Doing your job on a regular basis	3.49	3.53	3.54	3.29	3.34	3.28	3.21	3.15	2.96
Being shown by others how to do certain activities or tasks	2.53	2.83	3.12	2.80	2.84	2.75	2.91	2.51	2.52
Reflecting on your performance	2.97	3.11	3.08	2.71	2.66	2.79	2.58	2.29	2.20
Watching and listening to others while they carry out their work	2.73	2.63	2.84	2.52	2.74	2.73	2.59	2.20	2.09
Using trial and error on the job	1.94	2.21	1.98	1.98	1.92	2.02	2.04	1.99	1.92

Source: Felstead et al, 2005.

On examination, other survey questions also capture 'learning as participation'. Since 1992, for example, the Skills and Employment Survey has asked respondents how strongly they agree or disagree with the statement that, 'my job requires that I keep learning new things'. Data shows that the importance of the workplace as a site of learning has increased over time, although the trend has not risen significantly since 2006 (see Figure 4).

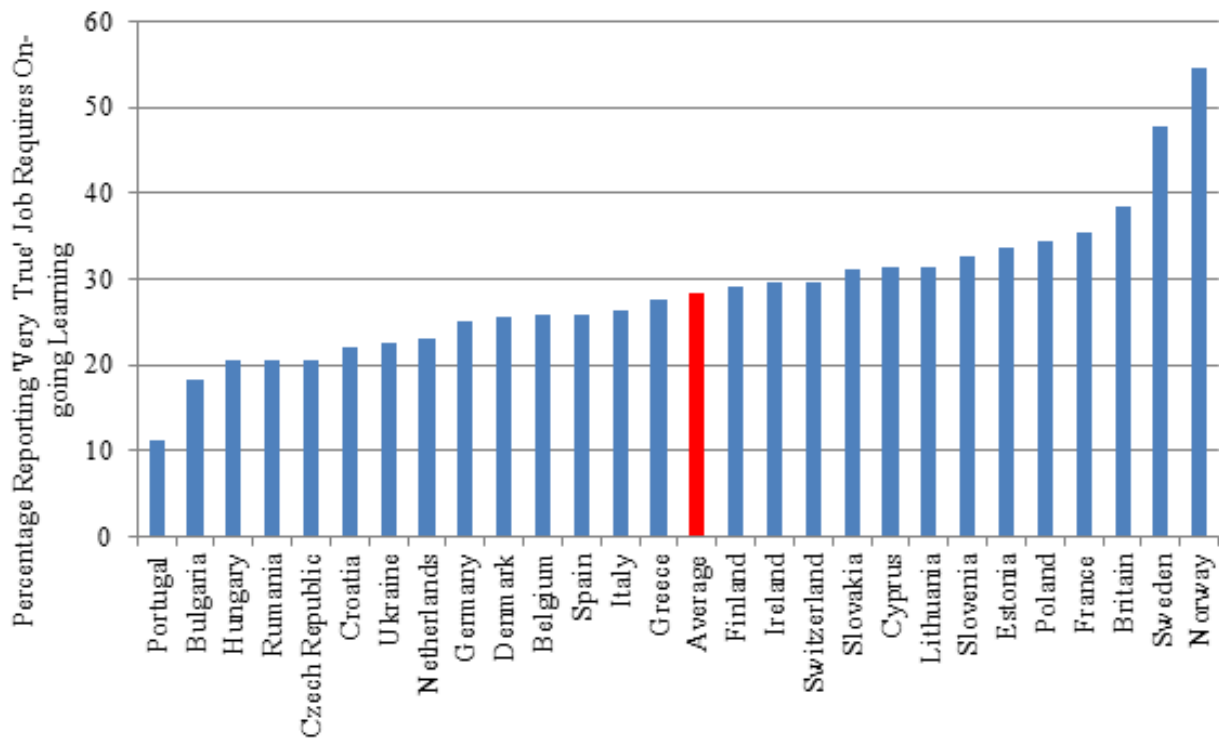
Figure 4: In-built Requirement to Keep Learning, Britain, 1992-2012



Source: own calculations from the Skills and Employment Survey series.

The same question also appears in the European Social Survey (ESS) – albeit with a different response scale. According to this dataset, Britain is well above average in terms of the emphasis placed on on-going workplace learning, with around four in ten workers (38.5%) reporting that it was 'very true' that their jobs required them to keep learning new things. This outstrips the European average by ten percentage points. However, this still falls short of the percentages reached by Swedish and Norwegian workers where over half said that it was 'very true' that in their jobs learning was an on-going requirement (see Figure 5).

Figure 5: In-built Requirement to Keep Learning, Europe 2010



Source: own calculations from the European Social Survey 2010.

3. Qualitative Perspective

By its very nature, the qualitative evidence base is much more fragmented (often comprising studies within sectors and occupations) and variable in terms of scale and scope than its quantitative counterpart. In this section, we provide a summary and highlight the key messages about how workplace learning is shaped and organised.

3.1. Role of Context and Employer Behaviour

There are two traditions of case study evidence providing insights into how workplace learning is shaped by the constraints and opportunities afforded by the productive system in which organisations operate. This provides the context for workplace learning, which is difficult to capture from surveys focused on workers or managers whose knowledge of the product market, the different ways in which work may be organised, and the lateral and vertical pressures under which the employing organisation operates may be patchy.

The 'top-down' tradition concentrates on the views of senior managers and analysis of their corporate mission statements in order to position the organisation in the product market in which it operates. Comparisons are made between organisations offering a similar product, but differentiated by the level of standardisation, price sensitivity and level of product innovation. For example, airlines can be classified as 'full service' or 'low fare' providers (Poon and Waring, 2010). Hotels can be positioned along a continuum from 'luxury' to 'budget' (Mason, 2011; Sung and Ashton, 2015). Organisations are also classified according to the emphasis they place on simply getting the tasks done versus developing the people who carry out the tasks. However, the drawback of this approach is that it is carried out at such a high level that it cannot capture workplace learning in practice; for this, a 'bottom-up' approach is required.

The 'bottom-up' approach examines how learning occurs at work through worker interviews, shadowing, and participating in work activities. This involves all layers from the operative workforce through to managers, corporate leaders and sector representatives in order to examine the way work is organised and conducted and the wider pressures organisations face: the 'context for leaning'. In their ESRC-funded study of workplaces across eleven sectors of the economy, Felstead et al. (2009) adopted such an approach. In addition to the nature of the product market highlighted by the top-down approach, this study revealed the importance of vertical and horizontal dimensions of the productive system. The vertical dimension consist of layers of control connecting micro, meso, and macro stakeholders involved in the production of goods and services. The numbers of layers will vary depending on the nature of the business. Where regulation is top-heavy, the scope for discretion and independence throughout the organisation is limited. The horizontal dimension refers to the steps or stages through which raw materials are transformed into goods and services that are consumed by end-users. The locus of control within such sequences can be of crucial significance. For example, large-scale retailers – such as supermarkets – may exercise powerful control over firms engaged in raw materials extraction, product manufacture, storage or transport with implications for workplace learning.

For analytical purposes, the horizontal and vertical dimensions can be treated as axes. The position of a workplace at the point where the two dimensions meet conditions employer behaviour regarding the extent to which they plan and make decisions for the short, medium or long-term, the risks they are prepared to take, the levels of discretion they are prepared to give to employees, and the amount and type of employee involvement in decision-making. For example, a workplace within an organisation whose owners are based in another country or whose shares are bought and sold on the stock market may be quite detached from the place where decisions are made about how the workplace is managed (Gospel and Pendleton, 2005).

Fuller and Unwin's (2004 and 2010) concept of 'expansive and restrictive learning environments' connects these contextual variables to the potential for workplace learning. Again derived from case study research in a range of sectors, it offers an analytical framework for employers and training providers to examine how they can adjust the way work is organised to encourage an optimal mix of formal and informal learning practices. For example, Ahlgren et al. (2008) applied the concept in their study of 14 Scottish small to medium enterprises (SMEs) (in care, manufacturing and services) and confirmed findings from other studies that external regulation (whether by supra-national agencies such as the EU, national government, professional body, owners and so on) is a major trigger for both formal and informal workplace learning. This is particularly the case in the health, which continues to generate a substantial body of qualitative research (see inter alia, *Creating Learning Environments for Compassionate Care (CLECC)*: <http://www.nets.nihr.ac.uk/projects/hsdr/130748>; Bridges and Fuller, 2014; McLaren et al., 2008).

3.2. The Role of the Individual

An individual's employment status, their level of discretion to make judgements, the extent to which they are involved in decision-making, and the nature of the power relations within the workplace, all contribute to the nature of the workplace as a learning environment. As a result, individual identities and levels of engagement change and develop (see, inter alia, Billett and Somerville, 2004). Hence, simplistic claims that some people are more motivated than others to learn both at work and over the life course are unhelpful. Research by the CIPD (2011) reveals how engagement varies according to both context and employees' individual circumstances, including age. Engagement with the job is highest when tasks are varied and have meaning, and when there is a degree of autonomy (see Milligan et al., 2015 for research on 'self-regulated learning'). Engagement with line managers and colleagues is highest when employees are able to voice their concerns and when they respect the capability of colleagues. Engagement with the organisation depends on reputation, being well-treated and financial reward. Research on ageing and older workers shows that long-held (and often negative) assumptions about work, learning and age need to be challenged in the light of extended life spans and changes to retirement age (Unwin et al., 2015; Field et al., 2013; Felstead, 2011).

A key way in which individuals exert agency is through subverting work procedures. A Canadian study of new computerised systems in the public sector found that welfare benefit case officers developed collective strategies ('work-arounds') to maintain the level of service they believed their clients deserved (Hennessy and Sawchuk, 2003). Fuller et al's (2011) research showed

that, despite being on the bottom rung of the National Health Service job ladder, hospital porters subverted their very narrow job descriptions to utilise their much broader range of knowledge and skills. Case study research on the 'Skills for Life' initiative to improve adult literacy and numeracy has shown that some workers in low-paid routine jobs developed their own strategies to enable them to practise their basic skills in the workplace (Waite et al., 2014). The EU-funded Learning Layers Project focuses on the use of mobile and social technologies to unlock and enable peer-production within and across employers (see: <http://learning-layers.eu>).

There is consensus in the workplace learning research literature that line managers are pivotal. Eraut's (2007: 421) summary is useful: 'Their role is to develop a culture of mutual support and learning, not to provide all the support themselves. They need to share this role with experienced workers, and this implies some form of distributed leadership'. Eraut's research identifies how managers can enhance the quantity and quality of workplace learning by:

- Avoiding over-challenging and under-challenging individuals, as both are bad for learning and morale.
- Enabling workers to consult with colleagues and work in teams.
- Developing the skills to relieve tensions that threaten the group climate and seek advice if they themselves are directly involved.
- Ensuring workers receive and contribute to on-going feedback about their own and their workplace/organisation's performance.

Research shows that changing managers' reluctance to rethink work processes and the use of job descriptions that limit employee capacity can be encouraged through targeted interventions. For example, Hoyles et al. (2010) worked with UK companies in financial services, pharmaceuticals and automotive engineering to improve employee understanding of the statistical models that underpinned many of the procedures they were expected to follow. Similarly, McLaren et al. (2008) worked with 24 primary care trusts in England to develop more effective learning cultures.

4. Policy Perspective

The research evidence suggests that the concepts underpinning the formulation of policies for lifelong learning and skills in the UK need to be broadened. The current dominance of the 'acquisition' model of skill formation is inadequate on its own as it only captures evidence of prescribed skills and knowledge at the individual level. While it is important for the state to gather information on the numbers and types of formal qualifications being achieved by individuals and on the volume of participation in episodes of formal training, this evidence does not capture the full range of learning activity and the nature of skills utilisation at the level of the workplace. As a consequence, there is insufficient policy attention on the role of the workplace as a site for learning.

At the same time, attempts to measure and accredit 'informal learning' using the 'learning as acquisition' approach fall into the trap of artificially separating learning that is an embedded part of everyday work from its social context. RPL initiatives can encourage individuals to engage in learning by boosting their confidence and assist with labour market mobility. However, they only do so if individuals, employers and the wider labour market value the type of accreditation involved. The costs of establishing robust procedures for assessment and validation have to be weighed against the benefits (Cedefop, 2015; OECD, 2012). Developing a fuller understanding of the formal-informal continuum of learning activity within workplaces is required in order to develop policies that can support organisations to enhance the quality of their learning environments. Workplaces need internal and external sources of knowledge, experience and inspiration. Swinging the pendulum from formal to informal learning will only perpetuate the narrowly defined parameters within which lifelong learning and skills policies are designed.

The key message from this review is that workplace learning is a highly contingent phenomenon. In order to improve both the quality and quantity of workplace learning, more needs to be done to explain how it is manifested and the crucial role that managers and organisational strategies and values more generally play in its facilitation. This will require greater effort to bring together and learn from the evidence found in the top-down and bottom-up research literature. As Fuller et al.'s (2003) review of the case study literature found, informal learning plays a central role in the establishment of effective learning cultures in organisations, and that where such cultures are sustained through time, they are driven by business needs not policy initiatives.

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