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Employee involvement, the quality of training and the learning environment: an individual level analysis

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Abstract

Theories such as human capital theory, the metaphors of learning and the high involvement work paradigm all suggest that the quality of training and learning varies along a number of axes. This paper shows how these theoretical insights have been translated into questions used in a UK survey of 6,829 employees carried out in 2006. Like other studies, the paper confirms that the incidence of training is related to a range of individual characteristics. However, the quality of the experience and the extent to which employees learn on-the-job is determined much more by the way in which work is organised and in particular, the extent to which employees are involved in workplace decisions. This suggests that the organisation of work is a crucial determinant of the quality as well as the quantity of training and learning.

Keywords: training, learning, work organisation, high involvement

1. Introduction

Statistics on training are regularly reported in a number of government publications which review the state of the labour market. For example, the 37th edition of *Social Trends*, an annual compendium of over a dozen areas of social policy, reports data on who gets job-related training by age, sex and qualification (ONS, 2007b: 44). Similar information is posted quarterly on the Office for National Statistics web site, where training is one of nine sub-themes under the broad heading of the labour market (www.statistics.gov.uk). Training statistics have also formed the basis of government commentaries and enquiries into skill formation in recent years (e.g., DfES, 2000; HM Treasury, 2005).

Although less widely used and reported, measures also exist on the intensity of training activity and its cost in terms of lost or reduced output, fees paid and wage costs. These indicators can modify, and even overturn, statements made on the basis of incidence data alone. International comparisons, for example, suggest that a greater proportion of UK employees are trained than in other countries. This puts the UK sixth out of 21 OECD countries. However, it slips into the bottom half of the league when the spotlight turns to hours spent training and the costs incurred (HM Treasury, 2005: 105). Similarly, statements about trends in training activity as a whole based on participation rates can be misleading since incidence may be rising at the same time as intensity is falling. In these circumstances, training is being spread more thinly among a higher proportion of workers which makes the actual trajectory of training volumes uncertain (Felstead *et al.*, 1999).

International evidence demonstrates that far less is known about the quality of the training provided. For example, a comparative analysis of the returns to training – measured in terms of wages and occupational position – in the UK, Denmark and Germany shows that the benefits of training are at best modest, at worst non-existent, in the UK (Dieckhoff, 2008). This finding suggests that the quality of the experience may differ across countries and that this may be an important explanatory factor, although not observed in the data. There is, then, an empirical case for more data on training quality. It is also, as we will show, of theoretical and conceptual importance that we know more about the quality of the experience itself. This includes measures of the usefulness of

training in: raising skill levels; helping to improve work practices; and whether it is undertaken as part of an on-going process or a one-off event. By the same token, we know relatively little about: whether pay is raised once training is complete; the extent to which training is certificated; the degree to which the skills learnt are transferable; and whether training increases enjoyment in the job. Survey evidence of on-the-job learning is similarly limited as 'training' tends to focus respondents on critical incidents or salient episodes which are divorced from normal everyday practice rather than focusing on how people learn to do their jobs (Campanelli *et al.*, 1994; Eraut, 2000).

The aim of this paper is to provide theory-driven evidence which advances our understanding of these issues. This is achieved in two ways. First, we show how the theories and concepts behind many of the training debates can be reflected in the design of large scale surveys. Secondly, we examine what employee characteristics and workplace features are significantly associated with raising the outcomes of training and widening the sources of workers' learning. Particular emphasis is placed on the organisation of work as an important determinant. By this we mean: what influence employees and their work group have over the execution of immediate work tasks; what say they have in any major changes to their job role more generally; and whether the organisation uses management practices designed to get workers more involved in the business (through consultation meetings, performance related pay, appraisal systems, suggestion schemes and other ways of canvassing their views). Collectively, workplaces which are organised in this way have been variously labelled, but given the emphasis on involvement we refer to them in this paper as 'high involvement' workplaces. The evidence that this style of work organisation is becoming more prevalent is mixed despite the attention it receives and the debate it generates. For example, the proportion of workplaces in Britain with teamworking, multi-skilling and problem-solving groups rose from 22% in 1998 to 29% in 2004 (Kersley *et al.*, 2006: 97). However, there has been little change in the extent of individual discretion over the pace of work, its content, the methods used and quality standards during this time (Green, 2008). Moreover, the evidence suggests that while teamworking has become more prevalent between 1992 and 2006, the proportion of employees working in teams with decision-making powers over their work activities has fallen sharply (Gallie *et al.*, 2008).

The paper proceeds as follows. In the next section, we briefly review the theoretical and conceptual background to the current debates on training and learning. We pay particular attention to how a broader appreciation of these insights may shape survey designs which currently tend to focus on measuring the quantity of training without collecting complementary evidence on the 'quality' of the experience. By contrast, the survey – on which the results presented here are based – was intentionally designed to collect data on the 'quality' of training and learning experiences. The paper briefly outlines how the survey was carried out and what measures were taken to ensure that the results presented are representative of those employed in the UK. The paper then goes onto to show how some of the theories and concepts behind the training and learning debates were translated into a series of survey questions asked of this sample of employees. The substantive results section of the paper examines how the correlates of the quality of the training experience and the extent to which employees learn on-the-job differ from the more well-known determinants of who gets training and who does not. The results suggest that the organisation of work is of particular importance in explaining how the quality of training and learning varies. The paper concludes with lessons for researchers and policy-makers and calls for more outcomes-focused training questions to complement input measures in future surveys.

2. Theoretical and Conceptual Background

Training quality and learning environments

Training is a regular topic in the UK's quarterly Labour Force Survey (LFS) and it has become a 'must have' feature of similar surveys conducted across Europe for many years. These country surveys are combined in European Union's Labour Force Survey which allows comparisons across Europe to be drawn (Arulampalam *et al.*, 2004). This evidence tells us whether a respondent has participated in job-related training in a specified period before interview – such as the previous four weeks, thirteen weeks or the preceding calendar year. Follow-up questions about this training are then posed. These can include the time spent being trained, where the training was undertaken and who bore the costs. Many one-off surveys on the labour market across Europe and beyond collect similar data (Wooden and Vanden-Heuvel, 1997; Sels, 2002; Lucie, 2003; Evertsson,

2004). The European Community Household Panel training data covers much the same ground (Dieckhoff *et al*., 2007).

A common feature of all these studies is their focus on the occurrence or incidence of training activity and, to a lesser extent, its intensity. This encourages comparisons to be made across countries and between different socio-economic groups. Based on this evidence, there have been calls for government intervention to: (a) scale up national level training activity where it is relatively low through training levies on employers; and (b) close the 'training gap' between groups of workers by giving those who get least training statutory rights to get more (Senker, 1995; TUC, 2007). These calls, and the evidence on which it is based, assume that all bouts of training activity are of the same 'quality' in terms of the outcomes they have for skills. However, the read across from training incidence to skills outcomes is not straightforward. Previous research, for example, suggests that not all training episodes are intended to raise skills by the same amount and some are not about raising skill levels at all. Instead, some training is designed to enhance employee commitment and has little to do with raising skills, and some aims to ensure conformity with standardised and prescribed ways of working which restrict the skills used at work (Felstead *et al*., 2007). The quality of training can differ in other respects too. For example, even where skills are acquired as a result of training, their usefulness may vary across employers. This variability may be reflected in the extent to which the skills acquired are certified and whether the skills acquired are important enough for the employer to award a pay rise. The quality of training may also differ according to whether or not it raises levels of job satisfaction and enjoyment.

Furthermore, the theoretical and conceptual motivation to collect data on the quality of training is as powerful as ever. For example, a key question highlighted by human capital theory is whether the skills generated by training are usable in just one place of work or in a range of workplace settings; that is, whether the skills generated are firm-specific or general in nature (Oi, 1962; Becker, 1964). The answer depends on the degree to which workers can use the resulting skills to extract increased pay from their current employer and this, in turn, has implications for who might be expected to pay for the costs incurred. By definition, those receiving firm-specific training cannot generate

increased pay by threatening to quit in the pursuit of higher wages with other employers since the skills acquired only have relevance to the employer who provided the training. In these circumstances, workers will have no incentive to foot the bill for training. On the other hand, in a purely competitive labour market, general training will raise the marginal product of workers and with it pay levels will rise. In these circumstances, the individual has an incentive to pay for the training up to the point where these costs outweigh the benefits (measured here in terms of increased pay) (Barrett and O'Connell, 2001).

In addition, the degree of transferability has an important bearing on assessing how useful the acquired skills are to society as a whole. If, for example, the skills acquired are firm-specific, then this type of training is relatively weak at raising the skills of the workforce since there are, by definition, relatively few ways in which they can be put to use. The reverse applies to training that generates general skills which have applicability across a larger number of employers. This type of training is more likely to raise the stock of skills in the workforce as a whole since they can be0 deployed in wide range of settings (Stevens, 1994). Notwithstanding the debates surrounding qualification standards (Ainley, 2003; Leathwood and O'Connell, 2003), another related indicator of training 'quality' is whether it leads to some form of external certification. This can be taken to indicate that a certain verifiable standard of skill has been attained by the holder and used across a variety of employment settings.

In addition to scrutinising the quality of training, recent developments in workplace learning theory suggest that researchers also examine everyday learning at work. In-depth studies of a wide variety of jobs – such as engineers, accountants, nurses, miners and teachers (Eraut *et al.*, 1998; Fevre *et al.*, 2001; Boud and Middleton, 2003; Hodkinson and Hodkinson, 2004) – suggest that a great deal of learning goes on at work that is not picked up by standard survey questions. This is mainly because surveys have tended to focus on gathering data on formal training courses and rather less attention has hitherto been paid to on-the-job learning. This contrast is encapsulated by the respective metaphors of 'learning as acquisition' and 'learning as participation' (Sfard, 1998). The former refers to a conceptualisation which views learning as a product with a visible, identifiable outcome, often accompanied by certification or proof of attendance. The

latter perspective, on the other hand, views learning as a process in which learners improve their work performance by carrying out daily work activities via interacting with people, tools, materials and ways of thinking as appropriate.

Organisation of work

In a related theoretical development it is frequently suggested that the quantity and quality of an employee's training and learning experience may be explained by the way in which work is organised. This is referred to as the high involvement paradigm which consists of four principles. These are: employee involvement in decision-making about the completion of immediate work tasks; feedback on work performance and opportunities for development; systems designed to reward performance and improve motivation; and mechanisms for sharing information and knowledge throughout the organisation (Ashton and Sung, 2002). These principles are in stark contrast to Taylorist management techniques where the opposite is the case. This is exemplified by strict job demarcation, tight job descriptions, limited and firm-specific training, and minimal employee discretion exercised individually or as a team. There are now numerous studies which make the link between high involvement working and the incidence and intensity of training (*inter alia*, Frazis *et al.*, 1995 and 2000; Lynch and Black, 1995 and 1998; MacDuffie and Kochan, 1995; Osterman, 1995; Whitfield, 2000).

The explanation given for this strong association is that high involvement requires that employers give workers the tools and abilities to take on more responsibility for their own work performance and that this is evidenced by employers' greater commitment to training. For example, take the successful operation of a quality circle; that is, a structure through which employees examine and develop solutions to problems traditionally dealt with by management and a commonly used indicator of high involvement working. This requires that employees have problem-solving abilities and that they know about the broader aspects of the production process in order to make a meaningful contribution to the discussion. We would therefore expect to see training in these workplaces leading to real effects in the way work is carried out and the skills that are applied. Theoretically, this would also be reflected in training which increases pay, produces skills that can be

applied widely, results in certification and enhances enjoyment in the job thereby eliciting higher levels of discretionary effort.

In addition to formal training, the high involvement literature places great stress on in situ learning with the suggestion that it is often more effective (MacDuffie and Kochan, 1995: 165-167). However, this feature of the debate is largely based on a theoretical argument rather than quantitative evidence (e.g., Appelbaum *et al.*, 2000: 230-231; Ashton and Sung, 2000: 92-93). The theoretical connection is based on the idea that learning is enhanced when employees are involved in organising, planning and/or checking the quality of their own work. This may be through teams that have their own responsibilities and are given the freedom to determine how work is organised or through individuals given the autonomy to organise their own work tasks, pace and standards. Either way, problems have to be resolved as and when they arise, and the solutions communicated to fellow colleagues. The solutions found will be more effective in enhancing organisational performance when knowledge about the production process and the organisation's prospects is widely known, and effective feedback mechanisms are in place. This is secured through practices such as consultation meetings, performance related pay, appraisal systems, suggestion schemes and other ways of canvassing employees' views. Despite the fact that the high involvement paradigm puts stress on learning at the point of production through daily work experience and from other colleagues as the work is carried out, there is surprisingly little empirical evidence to connect the two. Instead the connection largely remains a theoretical possibility rather than an empirical finding (cf. MacDuffie and Kochan, 1995: 155).

3. Data Source

The evidence presented here is based on data collected for the 2006 Skills Survey which involved over-sampling in Wales, Scotland, the East Midlands and Northern Ireland. The sample was drawn using clustered random sampling methods to select households within which one respondent was randomly selected. The resulting data set comprises a high quality, large and representative sample of working individuals living in the UK aged 20-65. A total of 7,787 respondents participated in the survey, 6,829 of whom were employees. All interviews were conducted in people's homes and lasted for just under

one hour with a response rate of 62% of eligible respondents interviewed. Interviews were completed between March 2006 and March 2007. However, three-quarters of the interviews were completed in the first six months of the fieldwork period (Felstead *et al.*, 2007: Table A2.1; Felstead and Green, 2008: Table A4). Sample weights were computed to take into account the differential probabilities of sample selection according to the number of dwelling units at each issued address, the number of eligible interview respondents and the over-sampling of the boost areas. The distribution of the achieved sample was compared with the most appropriate quarterly Labour Force Survey according to age, ethnicity, working time, occupation and industry. Distributions were found to be acceptably close. However, weights for sex and 20-29 year olds were added to the sample weights, in order to correct for a slight under-representation of men and young adults in the sample. Where possible, all of the analyses that follow are weighted accordingly. The results are therefore based on a high quality, randomly drawn and representative data set (for further details see Felstead *et al.*, 2007).

4. Theory-driven Indicators

The 2006 Skills Survey's aim, like those before it (see Ashton *et al.*, 1999; Felstead *et al.*, 2002), was to gather information on the skills used at work via questions directed at workers themselves. The 2006 version contained an additional set of questions focusing on the quality of job-related training undertaken by respondents in the year before interview, alongside questions on the possibilities for on-going learning as well as questions on how respondents' work is organised. These three sets of questions directly connect with the theoretical literatures discussed above. They, therefore, provide the empirical basis for the results which follow. In this section, we outline how the questions posed were influenced by and reflect these theoretical and conceptual concerns.

Training quality and learning environments

Respondents to the 2006 Skills Survey were asked a number of questions about the training they had received and what training expectations they had for the future. The key starting point for this part of the data collection exercise was to ascertain who had received training and who had not. This was achieved by asking respondents: 'In the last

year (that is since [Month] 2005), have you done any of these types of training or education connected with your *current* job?' Respondents were shown a card listing a number of options. These included a range of activities designed to get respondents to think more broadly. This is in line with workplace learning theorists who are concerned that there is an under-reporting of more informal modes of training such as on-the-job instruction.

Furthermore, the assumption that training unproblematically raises skills and abilities that are then exercised at work needs to be tested empirically, particularly as the difficulties of transferring knowledge between settings has sparked a long-running debate in educational circles (Lave, 1996; Eraut, 2004). The 2006 Skills Survey, therefore, asked respondents a series of follow-up questions designed to capture the outcomes of training as perceived by those who undertook it. These individuals – the 'trainees' – were asked directly whether the training had improved their skills. They were also asked to evaluate the extent of this improvement by saying whether their skills had improved 'a little' or 'a lot' and whether they were able to use these enhancements in their current job. Similarly, trainees were asked whether they agreed or not with the statement that 'the training has helped me improve the way I work in my job'.

Human capital theory suggests that there are additional ways in which the quality of training can be assessed. For example, skills enhancing training will lead to a pay rise since, theoretically at least, pay is determined by the marginal product of labour. Respondents were therefore asked whether they agreed or disagreed with the statement that 'I received a pay increase as result of my training'. According to the theory, those in agreement with the statement have received skills enhancing (and general) training, while trainees not in agreement have received training which is skills neutral (or firm-specific) as evidenced by the absence of a pay rise.

However, some skills are more transferable than others with the potentiality that those in possession of these skills can go on to command higher rates of pay. This type of training is particularly beneficial to society at large since it adds to the stock of skills. To get a handle on the degree of transferability of skills learned, respondents were asked how useful these enhanced abilities would be to two types of employer: (a) those operating in the same industry or service; and (b) those operating in a quite different

industry or service. Respondents were given a five-point scale ranging from 'very useful' to 'not at all useful' from which to choose. In what follows, we denote firm-specific producing training as that which would be only of some, a little or no use to similar employers. General skills training, on the other hand, is taken to be training which produces skills that would be 'very useful' or 'fairly useful' to many different types of employer.

In a similar vein, the survey asked whether the training would lead to qualification or a credit towards one. Once again, the theoretical motivation for such a question relates to the theory that a certificated programme of learning provides evidence that trainees have reached a certain standard and that these skills are recognised well beyond the confines of the employer who provided the training.

Training may also be delivered to enhance workers' enjoyment in the job. This is not based on purely altruistic motives but by enhancing enjoyment at work, employers may be able to extract more discretionary work effort from employees. Trainees were therefore asked whether or not they agreed with the statement that 'the training has made me enjoy my job more'.

Workplace learning theory suggests that learning can also take place outside the confines of traditional training events and activities. This encompasses other types of activity – such as watching, listening and learning from others – which can only be undertaken on an on-going basis as an active participant in the workplace (Boreham *et al.*, 2002; Fuller and Unwin, 2003; Felstead *et al.*, 2005). To gauge this form of learning respondents were asked whether they strongly agreed, agreed, disagreed or strongly disagreed with a number of statements. These included: 'My job requires that I keep learning new things'; 'My job requires that I help my colleagues to learn new things'; and 'I am able to learn new skills through working with other members of my work group'. It is frequently claimed that this type of learning is engendered most effectively in high involvement workplaces. However, this proposition tends to be based on theory rather than evidence.

Organisation of work

Unlike training, and to some extent learning, the notion of a high involvement workplace cannot be directly observed from one or two questions (as above) but is a latent feature of response patterns across a larger number of questions. The identification of such workplaces has therefore triggered considerable debate among scholars in the field (see, e.g., Wood, 1999; de Menezes and Wood, 2006). A common approach is to select, based in *a priori* reasoning, survey questions which indicate the degree of decision-making employees are permitted to make as individuals or members of a group and the human resource management practices there are in support. Once selected, responses to these questions are scored in ascending order in line with the level of participation they indicate or are expected to generate. These scores are then standardised so that all questions are of equal weight (either by creating z-scores or binary variables). Finally, they are added together to produce an overall measure of involvement which is sometimes divided arbitrarily into groups such as high, medium and low. Tests of reliability typically accompany these types of analyses with Cronbach's alphas reported for each question battery. Correlations between the individual questions which make up the scale and those which remain (i.e. corrected item-total correlation) and/or the extent to which responses to individual questions can be predicted from responses to those remaining (i.e. squared multiple correlation) are then used to diagnose the usefulness of the scale. This evidence is used to determine whether removing any of the questions from the construction of the scale would enhance or reduce its reliability. A high Cronbach's alpha suggests the summary score captures a reasonable level of correlation between the separate items and therefore is deemed to perform well (see, e.g., Ramsay *et al.*, 2000; Felstead and Gallie, 2004; Forth and Millward, 2004; Bryson *et al.*, 2005; Kalleberg *et al*., 2006; Harley *et al.*, 2007).

An alternative, if less widely used, approach is to identify groups or types of case that share an underlying orientation to the way work is organised based on observed data through a technique known as latent class analysis (LCA). Unlike the additive approach (or the use of factor analysis) which is concerned with the structure of *variables* (i.e. their correlations), this approach is concerned with the structure of *cases* (i.e. their latent taxonomic structure). In other words, the former is focused on the column (variable)

structure of the data set, while the latter focuses on the structure of the rows (cases). Both approaches have similarities worth noting. First, both are useful for data reduction: the former because it produces scales based on several variables; and the latter because it allocates cases to classes within each latent variable based on how each case behaves against a number of selected variables. So, when analysed against the manifest variables, cases within the same latent class are similar, while cases in different latent classes are dissimilar from other classes in the model. Second, latent classes, like factors or scales, are unobserved/latent constructs inferred from observed/manifest data. Third, determining the number of latent classes is analogous to determining the number of factors to extract since the more classes/factors there are, the better the model fit from a statistical point of view. Hence, judgement and interpretability based on *a priori* reasoning has to be taken into account and models based on superior statistical fit dropped in favour of those easier to interpret and use.

A latent class variable for work organisation was extracted from the 2006 Skills Survey in the following way. To capture the degree of personal decision-making respondents have in their daily work, the survey asked respondents how much personal influence they exercise over specific aspects of their work. These aspects included: how hard to work, deciding what tasks to do, how the task is to be done and the quality standards to achieve. Respondents were given the following options: 'a great deal', 'a fair amount', 'not much' and 'none at all'. Conceptually, this captures the extent of 'delegative' involvement exercised by individual employees; that is, the extent to which 'management gives employees increased discretion and responsibility to organize and do their jobs without reference back' (Edwards *et al*., 2002: 93). Of course, this can involve groups of employees who may make these decisions together with their peers. Respondents were therefore asked whether they usually worked with other employees in a similar position. Those who answered 'yes' were asked a series of questions about the influence the work group had over the same four aspects of work: its pace, content, the methods used and the standards set (these mirrored word for word questions asked of individuals). In addition, these respondents were asked what influence they had in selecting group members, its leaders and setting the group's targets. Taken together these questions capture the extent to which the group is the focus of 'delegative' involvement.

However, this type of involvement may extend to another level by including participation in wider decisions that may have a bearing on the job (Gallie *et al.*, 2004). Respondents were therefore asked: 'Suppose there was going to be some decision at your place of work that changed the way you do your job. Do you think that you personally would have any say in the decision about the change or not?' Those answering 'yes' were then asked how much of a say they thought they would have. Three options were given: 'a great deal', 'quite a lot' and 'just a little'.

Another aspect of employee involvement is the extent to which management 'encourages employees to make their views known on work-related matters, but retains the right to take action or not' – this is referred to as 'consultative' involvement (Edwards *et al.*, 2002: 93). The 2006 Skills Survey collected data on some of the prominent human resource management practices associated with this kind of involvement. However, it is important to recall that our unit of observation is the individual employee rather than a management respondent. While this ensures that we get a more accurate measure of whether certain work practices are experienced by individual employees in the workplace, rather than relying on management's estimates of their prevalence, it inevitably limits the human resource management information we were able to collect (cf. Osterman, 1995 and 2000). Nevertheless, we did ask a total of seven questions on such practices, which were subsequently used to derive a latent variable for the organisation of work (see below). The seven are binary variables covering whether or not: respondents belonged to a group of employees which regularly meets to discuss improvements to the work process; respondents had been appraised in the year before interview; respondents had made a least one suggestion in the last year about how to improve work efficiency; management organises meetings to inform the workforce of organisational developments; management holds meetings where workers can express their views and opinions; bonuses are paid according to individual work performance; and bonuses are paid according to the work performance of the group and/or workplace.[1]

[1] LCA runs which drop the two financial participation variables – as suggested by some authors (e.g. Wood, 1996) – fail to isolate adequately low involvement regimes and the distinction between group and individual-level delegative decision-making which makes conceptual interpretation of the data difficult. For this reason and the fact that they are integral to other interpretations (e.g. Appelbaum *et al.*, 2000; Ramsay *et al.*, 2000), they remain in the analysis that follows.

We carried out a latent class analysis procedure on the 19 categorical variables so produced. Seven of these were binary taking values of 0 or 1 and 12 were ordered taking discrete values ranging from 0 to 3. Two, three, four, five and six class solutions were extracted from the data using Mplus v5, a software package which iteratively sets class parameters so as to maximise the chances of accounting for the observed results. The statistical properties and interpretability of all five models were compared. On purely statistical grounds, the five class solution performed best with the Lo-Mendell-Rubin Adjusted Likelihood Ratio Test suggesting against dropping the five class solution in favour of the four class model. However, the resulting probability patterns for the constituent variables across the five classes were difficult to interpret since each of these classes failed to capture different levels and types of employee involvement. Therefore, on grounds of interpretability, we chose to adopt the four class solution instead. The classification quality of this model is high; its entropy value is 0.86. Put another way, on average cases have a greater than 0.90 probability of being placed in their allotted class. Under LCA all cases have a conditional probability of being in each class. The nearer the probabilities and entropy values are to 1, the better the classificatory power of the model. On this basis, the four class solution is very effective in allotting cases into classes and produces a model that is theoretically meaningful (see below).

The four class solution places 27.5% of the 6,558 employees on which we have full data into class 1, 24.0% were allocated to class 2, 21.9% are allotted to class 3 and 26.6% are put in class 4. In order to interpret these classes, we then examined the conditional probability estimates for the responses to the 19 variables we entered. Table 1 presents these results. It shows that those in class 3 have the highest probability of claiming that their work group has at least 'a fair amount' of influence over the work process (pace, content, methods and standards), the constitution of the team and the targets set. For example, those in class 3 have a 0.78 probability that the team to which they belong has 'a great deal' or 'a fair amount' of influence over the intensity of work. This is much higher than the 0.52 probability estimate for those in class 2 and much higher still than the estimates for classes 1 and 4 where the equivalent probability estimates are close to zero.

Table 1: Conditional probabilities of manifest/observed variables by latent class

Manifest/ observed variable	Conditional probabilities			
	Latent class 1 'high individual involvement'	Latent class 2 'moderate group involvement'	Latent class 3 'high group involvement'	Latent class 4 'low involvement'
'A great deal' of individual influence over:				
Work intensity	0.80	0.33	0.67	0.29
What is done	0.61	0.10	0.46	0.02
How it is done	0.82	0.21	0.61	0.12
Quality standards	0.81	0.32	0.69	0.26
'A lot' of say in decisions affecting job	0.22	0.04	0.20	0.04
'A great deal' or 'fair amount' of group influence over:				
Work intensity	0.04	0.52	0.78	0.06
What is done	0.01	0.31	0.63	0.01
How it is done	0.00	0.22	0.55	0.01
Quality standards	0.01	0.31	0.66	0.01
Selecting members	0.01	0.10	0.44	0.01
Selecting leaders	0.00	0.04	0.33	0.00
Setting targets	0.02	0.15	0.60	0.01
Presence of:				
Suggestion scheme	0.83	0.71	0.87	0.62
Appraisal system	0.51	0.51	0.63	0.45
Quality circle	0.45	0.35	0.63	0.27
Information meetings	0.77	0.70	0.89	0.61
Expressive meetings	0.75	0.65	0.86	0.56
Individual bonuses	0.15	0.15	0.22	0.09
Group bonuses	0.28	0.26	0.33	0.19

Notes:
This table reports the conditional probabilities that members of each of the four classes will respond in a particular way to the manifest variables shown in the left hand column . It is produced from a mixture LCA model using 19 manifest variables (see text) and run using Mplus v5. Given the number of manifest variables, the default settings of 10 random starts and 2 final optimisations were raised to 100 and 10 respectively.

A similar pattern is repeated for the influence the group has over other aspects of work such as deciding its content, the methods used, the standards set, selecting group members, its leaders and setting the group's targets. Class 3 respondents also have a high likelihood of reporting individual-level involvement as well as a high probability of reporting that problem-solving groups, such as quality circles and group bonus schemes, are in operation. This suggests that class 3 respondents enjoy high levels of involvement across a number of different dimensions, but especially at group level, hence we have given this class the label of 'high group involvement'.

Class 2 exhibits many of the features of 'high group involvement', but not to the same degree. Delegation of responsibility to the group is moderate rather than high and is supported by relatively high probabilities that 'consultative' human resource management practices are in place (as compared to class 4). On the other hand, decision-making delegation to individual workers is relatively low – here the probabilities that individuals exercise 'a great deal' of influence over the pace, content, methods and standards of work are lower than either class 1 or class 3 but higher than class 4. Hence, we label this class as indicating 'moderate group involvement'.

On the other hand, those in class 1 have the highest probability of exercising 'a great deal' of influence over the pace of their work, its content, the methods used and the standards set as well as more of a say in decisions affecting their work. For example, their probability of having 'a great deal' of influence over how to carry out their work tasks is 0.82 compared to 0.61 for those in class 3, 0.21 for those in class 2 and 0.12 for those in class 4. However, the work groups to which individuals in class 1 belong are relatively weak – the probability that these groups have 'a great deal' or even a 'fair amount' of influence over a number of work-related matters is close to zero. Nevertheless, class 1 individuals enjoy high levels of 'consultative' involvement – for example, over three-quarters of them are estimated to have their views canvassed in meetings or through suggestion schemes. We have, therefore, labelled members of this class as experiencing 'high individual involvement'.

Finally, class 4 has low probabilities of delegative involvement exercised individually or collectively – without exception, these probabilities are at their lowest level across the four classes (see Table 1, column 4). In addition, respondents in this

class have a much lower probability of experiencing the human resource management practices which indicate a high involvement strategy. For example, while those in classes 3, 2 and 1 have a 63%, 35% and 45% chance respectively of being in a quality circle, the chance of doing so falls to 27% among those in class 4. Similarly, class 4 is differentiated by the relatively low chances compared to the other three classes that its members have been appraised in the last year, are paid bonuses based on individual or collective performance and have consultative or information disseminating meetings called by management. For these reasons, this class is referred to as 'low involvement' regime since it is characterised by a low level of employee involvement exercised individually or in teams and management practices that do little to encourage or facilitate it.

The occupational and industrial distribution of these different types of work organisation follows the pattern found in other studies, albeit using other measures. This provides a reliability check for our measure of employee involvement and confirms its validity. Like other studies (e.g. Kersley *et al.*, 2006: 96), we find that employee involvement is more prevalent among those who work in the top three occupational groups and least prevalent among those who work in the bottom three job categories. For example, only one in ten (11.3%) 'Managers' are classified as working in 'low involvement' environments compared to almost a half (47.3%) of those working as 'Operatives' (see Table 2). The pattern by industry is less variegated. Nevertheless, over half of those working in 'Construction', 'Health & Social Work' and 'Education' are in environments with high levels of employee involvement exercised by the group. This finding is in common with other studies and therefore provides further reassurance that our employee involvement measure has validity (e.g., Kalleberg *et al*., 2006).

Table 2: Distribution of types of work organisation, UK, 2006

	Organisation of work			
	High group involvement	**Moderate group involvement**	**High individual involvement**	**Low involvement**
All	21.9	24.0	27.5	26.6
(a) Occupation				
Managers	30.4	17.4	40.9	11.3
Professionals	25.1	21.7	30.6	22.6
Associate professionals	25.4	25.5	30.1	19.0
Administrative & secretarial	15.6	24.7	30.0	30.1
Skilled trades	23.3	25.0	27.6	24.2
Personal service	27.8	27.9	22.5	21.8
Sales	16.9	31.3	17.9	34.0
Plant & machinery operatives	16.9	18.9	16.9	47.3
Elementary occupations	11.6	28.4	17.7	42.4
***(b) Industry*[1]				
Manufacturing	22.6	23.1	28.5	25.8
Construction	28.6	23.2	23.3	24.9
Wholesale & retail	16.5	28.2	25.3	30.0
Hotels & restaurants	20.1	30.1	22.8	27.0
Transport & storage	16.5	21.0	23.6	38.8
Financial	18.0	37.7	22.5	21.7
Real estate & business services	21.3	19.3	31.0	28.4
Public administration	18.4	25.2	28.0	28.5
Education	25.7	18.4	33.1	22.8
Health & social work	27.4	26.1	25.2	21.3
Personal services	24.6	20.3	33.1	22.0

Notes:
1. Industries are classified by SIC92: only those with sample size above 100 are shown.

5. Results

Many studies have spent considerable effort uncovering the determinants of who gets training and who does not. Internationally consistent patterns emerge. For example, study after study shows that the highly educated are significantly more likely to receive training than lower qualified workers. Similarly, training incidence is closely related to an individual's position in the wage distribution – the higher pay, the greater the likelihood of their being in receipt of training. Training is also related to employer characteristics. In general, working for a relatively small employer, for example, markedly reduces the likelihood of receiving training, as does working for an employer who does not recognise trade unions for collective bargaining (Green *et al.*, 1999; Booth, 2003; Böheim and Booth, 2004; Hoque and Bacon, 2006). Other features of labour market flexibility such as temporary or part-time working also dampen an individual's chances of receiving training (Arulampalam and Booth, 1997a; Draca and Green, 2004). In addition, an individual's characteristics have a bearing on whether or not training is received. The most frequent research question here is whether particular groups of worker are discriminated against compared to comparable others. Such groups of workers have included women, ethnic minorities and those towards the end of their working lives (Machin and Wilkinson, 1995; Shields, 1998; Taylor and Urwin, 2001).

Although our training incidence measure covers a longer time period and contains additional options likely to prompt more affirmative responses than other studies (see above), the pattern of training incidence confirms previous research. Training incidence rises with the level of qualification held by the respondent and their position in the occupational hierarchy. The survey also corroborates the finding that women in the UK have a higher incidence of training than men (see Table 3, column 1). The data also allow us to examine the association between the organisation of work and the incidence of training which is only possible through periodic surveys such as the 2006 Skills Survey due to the inclusion of suitable questions. This shows that, depending on the definition used, around two-thirds to three-fifths of respondents working in situations in which they are involved in decision-making have undergone training in the last year. This compares to just over a half (55.4%) of those in 'low involvement' environments.

Table 3: Training and its immediate skills outcomes, UK, 2006

Characteristic	Training incidence[1] (%) (1)	Immediate skills outcomes (%)	
		Has raised skills used at work a little or a lot[2] (2)	Has improved working practices[3] (3)
All	67.1	91.2	86.3
(A) Sex			
Male	66.0	90.6	85.9
Female	68.2	91.7	86.7
(B) Working time			
Female full-time	73.2	91.8	86.8
Female part-time	60.7	91.6	86.4
(C) Occupation			
Managers	74.5	93.1	89.9
Professionals	84.2	94.0	88.4
Associate professionals	83.8	93.6	88.3
Administrative & secretarial	70.7	91.9	83.8
Skilled trades	54.8	90.9	85.1
Personal service	70.1	89.9	87.2
Sales	59.9	91.3	83.8
Plant & machinery operatives	47.3	80.8	80.7
Elementary occupations	39.8	81.8	79.5
(D) Highest qualification held			
Degree or equivalent	79.7	92.1	88.5
A level or equivalent	69.0	90.9	85.9
GCSE grade C or equivalent	61.5	92.6	82.9
NVQ level 1 or equivalent	56.5	86.0	84.8
None	39.9	88.6	84.6
(E) Organisation of work[5]			
High group involvement	81.3	95.6	92.4
Moderate group involvement	69.8	93.2	87.8
High individual involvement	66.4	90.7	85.6
Low involvement	55.4	83.7	78.1

Notes:

1. Respondents were asked: 'In the last year (that is since [Month] 2005), have you done any of these types of training or education connected with your current job?' The card of options included the following: 'received instruction or training from someone which took you away from your normal job' (off-the-job); 'received instruction whilst performing your normal job' (on-the-job); 'taught yourself from a book/manual/video/computer/cassette' (self taught); 'followed a correspondence or Internet course (such as Open University (at a distance)'; 'taken an evening class' (out of hours class); 'done some other work-related training' (other work related); and 'none of these'. The table presents the proportion of the sample reporting at least one of these activities.
2. For this column, we report the percentage of trainees who responded 'a lot' or 'a little' to the question: 'Would you say that this training or education has improved your skills…' (the other alternative response was 'not at all') and confirmed that they 'are able to make use of these skill improvements in your current job'.
3. For this column, we report the percentage of trainees who agreed with the statement: 'The training has helped me improve the way I work in my job'.
4. See text for derivation.

These differences are statistically significant. This corroborates other work which suggests that for involvement to be effective employees need the abilities and capacities to participate fully in decision-making processes. Training is assumed to be the means through which these abilities are developed.

These bivariate findings are confirmed by multivariate models in which the four-class work organisation variable is entered as three dummy variables into a logistic regression with the reference category 'low involvement'. The results suggest a strong and statistically significant association between regimes of involvement and the incidence of training (see Table 4, column 1). These results remain significant even when other variables – also thought to have an association with the receipt of training – as well as a host of control variables are added to the analysis (see Table 4, column 2). The odds ratios for the work organisation variables fall slightly, but they remain statistically significant. According to these results employees in 'high group involvement' workplaces have over three times the odds of receiving training compared to those working in environments where employee involvement is low. They also confirm that training is more likely to be given to those at the top of the occupational hierarchy and to those with higher qualifications. On the other hand, those in lower status jobs are far less likely to get training as are those with relatively low qualifications and those working part-time.

Table 4: Profiling training and its immediate skills outcomes, logistic regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Training incidence	**Training incidence**	**Raised skills**	**Raised skills**	**Improved working practices**	**Improved working practices**
High group involvement	3.440	2.818	3.960	3.682	3.383	3.350
	(0.401)**	(0.343)**	(0.832)**	(0.810)**	(0.625)**	(0.617)**
Moderate group involvement	1.819	1.640	2.447	2.132	1.964	1.951
	(0.207)**	(0.190)**	(0.460)**	(0.397)**	(0.314)**	(0.307)**
High individual involvement	1.564	1.324	1.767	1.751	1.709	1.735
	(0.161)**	(0.145)*	(0.312)**	(0.325)**	(0.255)**	(0.265)**
Female		0.860		0.739		0.779
		(0.096)		(0.132)		(0.126)
Part-time		0.743		1.294		1.028
		(0.083)**		(0.262)		(0.169)
Managers		1.784		1.243		1.346
		(0.313)**		(0.415)		(0.374)
Professionals		2.958		1.971		1.064
		(0.657)**		(0.790)		(0.320)
Associate professionals		2.517		1.273		0.951
		(0.481)**		(0.421)		(0.257)
Administrative & secretarial		1.820		1.167		0.772
		(0.331)**		(0.417)		(0.220)
Personal service		1.444		0.843		0.969
		(0.323)		(0.328)		(0.334)
Sales		1.418		0.898		0.714

		(0.311)		(0.380)		(0.315)
Plant & machinery operatives		0.874		0.489		0.887
		(0.157)		(0.167)*		(0.263)
Elementary occupations		0.592		0.434		0.762
		(0.110)**		(0.151)*		(0.234)
None		0.619		1.072		1.466
		(0.095)**		(0.330)		(0.383)
NVQ level 1 or equivalent		0.951		0.630		1.293
		(0.144)		(0.170)		(0.325)
A level or equivalent		1.318		0.795		1.177
		(0.155)*		(0.173)		(0.209)
Degree or equivalent		1.610		0.707		1.592
		(0.223)**		(0.159)		(0.317)*
Training intensity[2]	No	No		1.002		1.001
				(0.001)**		(0.000)**
Other controls[3]	No	Yes	No	Yes	No	Yes
Observations	6181	6181	4016	4016	4131	4131

** indicates $p < 0.01$;
* indicates $p < 0.05$.

Notes:

1. These runs are weighted, resulting in slightly larger and more robust standard errors than unweighted runs. This provides a more stringent test that the odds ratios are significantly different from 1. Standard errors are shown in parentheses.
2. Other controls used were the following: age and age squared (in years); work experience and work experience squared (in years); a temporary working dummy; two dummies for female dominated and male dominated workplaces; 12 industry dummies; four workplace size dummies; a presence of union dummy; a public sector/not-for-profit dummy; three competitive pressure dummies; and 12 regional dummies.
3. Training intensity is measured by the total number of days spent training in the past year doing each of the activities reported in Table 3.

Immediate skills outcomes of training

An implicit assumption of most studies of training incidence and intensity is that the more training the better (for an exception, see Sels, 2002). However, this is by no means certain as training has a number of functions, not all of which are about raising the skills employees are able to exercise at work. The 2006 Skills Survey, therefore, asked trainees directly whether the training they had received in the twelve months before being interviewed had increased their skills 'a lot' or 'a little' and whether they were able to use these enhanced skills in their current job (see Table 3, column 2). Over ninety percent (91.2%) of respondents reported that the training they had received had done so. Gender and working time variation are negligible. However, the importance of training as a means to increase skill tends to decline as the spotlight moves down the occupational hierarchy. For example, almost all 'Managers' (93.1%) and 'Professionals' (94.0%) who received training in 2006 rated it as improving their skills 'a little' or 'a lot' compared to lower proportions of 'Operatives' (80.8%) and 'Elementary' workers (81.8%). The skills consequences of training also appear more prevalent in workplaces that give employees greater license in the way work is carried out. This provides further evidence that training has greatest payoff among the higher occupational groups and types of workplace where the incidence of training is also at its highest (cf. Table 3, column 1). This suggests that both the receipt of training and – albeit to a lesser extent – its consequences are skewed.

'Trainees' were also asked whether the training they had received had improved the way they carried out their work. Most respondents (86.3%) agreed that 'the training has helped me improve the way I work in my job' (see Table 3, column 3). Most of the variation in the patterns of response centre on the jobs respondents did and the way in which their work was organised. According to this measure, the benefits of training were strongest among 'Managers' and weakest among those working in 'Elementary' roles – the gap between the two was around ten percentage points. Similarly, improvements to working practices were more prevalent in workplaces where employees were expected to be more involved in decision-making as individuals or in groups than in circumstances were their involvement was more limited.

Moreover, the multivariate results suggest that the way work is organised has an effect on both the quantity of training and its quality as measured by its skills producing powers. However, many of the other variables, which have a strong association with the prevalence of training, do little to explain why its quality varies. The results show that higher involvement significantly increases the odds that employees report undertaking training which raises the skills used at work 'a little' or 'a lot' and improves working practices. The odds ratios for all of the 18 work organisation variables are greater than one and in all cases they are statistically significant (see Table 4). This suggests that in relatively high involvement workplaces training has more of an impact on immediate work performance than in workplaces where involvement is low. This may be the result of a systematic variation in: the content and aims of training provision; and/or the permissiveness of workplaces to encourage and allow changes to be made at work.

Other 'quality' outcomes of training

Human capital theory suggests that the quality of training may be revealed in ways over and above awareness by trainees that training raises the skills they are able to use at work and/or helps them improve their working practices. One of the strongest tests is whether training delivers economically valuable skills that results in a pay increase for trainees. This type of training is much rarer than any of the others on which we have data. Less than a fifth (17.8%) of trainees reported that their most recent spell of training had resulted in a pay increase (see column 1, Table 5). Bivariate patterns in the data by occupation and qualification level are difficult to discern, but women working part-time appear far less likely to benefit from training which results in a pay rise than their full-time counterparts. Nevertheless, those working in 'high group involvement' workplaces are much more likely to be in receipt of training that enhances pay than trainees who work in 'low involvement' workplaces.

The certification of training is another indicator of quality since it signals the portability of the skills learned. Unlike the other quality measures reported here, some surveys do collect data on this issue. The UK Labour Force Survey, for example, asks respondents whether the training they have undertaken in the last month will lead to a qualification or a credit towards one. However, this question is not asked in every

quarterly sweep but once a year only and the results are rarely published. Nevertheless, the results show that in the summer of 2006 37.8% of employees aged 20-65 years old who received training in the last month reported that it would eventually lead to a qualification. Our data suggest that certifiable training is lower when a wider definition of training is adopted and respondents are asked to think back over a longer period. In these circumstances, it accounts for around a third (32.2%) of training received. This proportion varies by the level of qualification already held by the respondent. For example, approaching two-fifths (37.0%) of those with no qualifications at all to their name report that they are undertaking training accredited by a qualification compared to under a third (29.8%) of those with a degree and above. The differences by work organisation are still in evidence but the differences are less pronounced than on other quality indicators – around four percentage points separate the four classes of work organisation on this measure (see Table 5, column 2).

One of the most notable contributions of human capital theory has been the conceptual distinction between types of training according to the applicability of the skills generated in a variety of settings. Adopting this approach, the data show that the pattern of firm-specific and general training varies markedly by occupation and the way in which work is organised. Training for skills that have little applicability beyond the current employer is most prevalent among trainees working as 'Operatives' where it accounts for a third (33.6%) of training reported. This proportion declines further up the occupational rankings with only a sixth (16.5%) of 'Professional' training classified as firm-specific. A similar pattern is repeated for work organisation. Employees who work in 'low involvement' workplaces are more likely to be in receipt of such training than those in workplaces where employees have more say in the way work is organised (see Table 5, column 3).

Training which produces more transferable skills, on the other hand, is more likely to be given to those in higher ranked occupations and those working in more involving workplaces (see Table 5, column 4). Nearly half (46.7%) of trainees working in 'high group involvement' environments, for example, are in receipt of general skills training compared to less than a third (30.4%) of trainees working in 'low involvement' settings.

Table 5: Training and other 'quality' outcomes, UK, 2006

Characteristic	Pay increased once training complete[1] (1)	Training certified by a qualification[2] (2)	Firm-specific skills[3] (3)	General skills[4] (4)	Enjoy job more[5] (5)
All	17.8	32.2	22.2	41.0	59.8
(a) Sex					
Male	18.4	31.8	23.7	40.3	57.1
Female	17.3	32.9	20.8	41.7	62.5
(b) Working time					
Female full-time	19.5	33.0	20.2	43.4	62.3
Female part-time	13.1	32.6	21.8	38.6	62.9
(c) Occupation					
Managers	19.5	29.0	19.7	50.8	56.1
Professionals	13.5	30.1	16.5	39.7	62.7
Associate professionals	18.3	34.6	16.9	42.1	67.8
Administrative & secretarial	14.7	24.0	29.6	43.6	56.8
Skilled trades	26.4	39.1	22.1	32.8	59.6
Personal service	15.3	47.5	20.7	37.2	64.3
Sales	21.6	18.9	26.6	36.8	56.2
Plant & machinery operatives	18.9	38.1	33.6	32.5	53.7
Elementary occupations	17.7	36.2	30.0	37.0	48.0
(d) Highest qualification held					
Degree or equivalent	15.7	29.8	21.3	42.3	59.6
A level or equivalent	19.7	34.5	21.3	40.9	60.7
GCSE grade C or equivalent	19.4	32.3	23.4	38.8	56.4
NVQ level 1 or equivalent	20.2	33.7	26.6	39.4	64.6
None	18.0	37.0	22.8	40.4	60.9
(e) Organisation of work[6]					
High group involvement	21.8	34.7	16.7	46.7	68.2
Moderate group involvement	20.6	31.1	23.1	40.4	62.4
High individual involvement	16.7	33.2	19.5	42.5	60.2
Low involvement	13.3	30.2	32.7	30.4	45.3

Notes:

1. The above list of statements also included: 'I received a pay increase as a result of my training'.
2. Respondents were asked to think about their most recent spell of training in the last year and whether 'does this training or education lead to a qualification' or 'a credit towards a qualification'.
3. If respondents reported that their most recent spell of training or education had improved their skills 'a little' or 'a lot', they were then asked: 'How useful would these skill improvements be if you were to work for another employer in the same industry or service?'. The options were: 'very useful'; 'fairly useful'; 'of some use'; 'only a little useful'; and 'not at all useful'. Those reporting training to be only of some, little or no use were deemed to be in receipt of firm-specific training.
4. If respondents reported that their most recent spell of training or education had improved their skills 'a little' or 'a lot', they were then asked: 'Would these skill improvements be useful if you were to work for another employer in a quite different industry or service?'. The options were: 'very useful'; 'fairly useful'; 'of some use'; 'only a little useful'; and 'not at all useful'. Those reporting training to be very or fairly useful to other employers were deemed to be in receipt of general training.
5. Respondents were asked: 'Still thinking about the training you received over the last year in your current job, which of the following statements apply?'. Among the list was the following statement: 'The training has made me enjoy my job more'.
6. See text for derivation.

Table 6: Profiling other 'quality' training outcomes, logistic regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Leading to a pay rise	**Leading to a pay rise**	**Leading to certif-ication**	**Leading to certif-ication**	**Producing firm-specific skills**	**Producing firm-specific skills**	**Producing general skills**	**Producing general skills**	**Enhancing job enjoyment**	**Enhancing job enjoyment**
High group involvement	1.765	1.750	1.269	1.263	0.425	0.456	2.047	1.937	2.497	2.586
	(0.283)**	(0.293)**	(0.184)	(0.172)	(0.062)**	(0.070)**	(0.258)**	(0.249)**	(0.321)**	(0.335)**
Moderate group involvement	1.546	1.477	1.059	1.115	0.660	0.681	1.492	1.461	1.934	1.944
	(0.285)*	(0.261)*	(0.157)	(0.157)	(0.092)**	(0.096)**	(0.200)**	(0.194)**	(0.248)**	(0.251)**
High individual involvement	1.228	1.393	1.131	1.302	0.520	0.523	1.626	1.573	1.782	1.850
	(0.204)	(0.235)*	(0.165)	(0.176)	(0.072)**	(0.075)**	(0.211)**	(0.208)**	(0.223)**	(0.230)**
Female		0.887		0.964		1.082		1.030		1.107
		(0.135)		(0.117)		(0.147)		(0.116)		(0.124)
Part-time		0.794		1.133		0.970		0.924		1.143
		(0.139)		(0.147)		(0.138)		(0.114)		(0.139)
Managers		0.724		0.745		0.878		2.434		0.915
		(0.188)		(0.158)		(0.210)		(0.500)**		(0.187)
Professionals		0.585		0.695		0.656		1.476		1.202
		(0.168)		(0.164)		(0.184)		(0.333)		(0.273)
Associate professionals		0.674		0.731		0.778		1.514		1.358
		(0.173)		(0.158)		(0.197)		(0.332)		(0.290)
Administrative & secretarial		0.435		0.444		1.490		2.043		0.908
		(0.124)**		(0.105)**		(0.365)		(0.446)**		(0.199)
Personal service		0.359		0.766		1.142		1.360		0.981

		(0.113)**		(0.196)		(0.337)		(0.335)		(0.250)
Sales		0.470		0.428		1.568		1.393		0.684
		(0.169)*		(0.137)**		(0.457)		(0.393)		(0.194)
Plant & machinery operatives		0.780		1.302		1.504		1.200		0.988
		(0.227)		(0.321)		(0.396)		(0.289)		(0.235)
Elementary occupations		0.637		0.788		1.512		1.630		0.626
		(0.202)		(0.216)		(0.397)		(0.423)		(0.171)
None		1.028		1.027		0.690		1.134		1.523
		(0.357)		(0.267)		(0.157)		(0.282)		(0.406)
NVQ level 1 or equivalent		0.950		0.943		1.007		1.096		1.623
		(0.220)		(0.190)		(0.201)		(0.203)		(0.295)**
A level or equivalent		0.898		1.054		0.927		1.083		1.154
		(0.155)		(0.148)		(0.141)		(0.143)		(0.155)
Degree or equivalent		0.807		0.837		1.096		1.125		0.999
		(0.154)		(0.128)		(0.184)		(0.160)		(0.142)
Training intensity[2]		1.001		1.001		0.998		1.001		1.001
		(0.000)**		(0.000)**		(0.000)**		(0.000)**		(0.000)**
Other controls[3]	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	4141	4141	4143	4143	4132	4132	4121	4121	4120	4120

** indicates $p < 0.01$;
* indicates $p < 0.05$.

Notes:
1. Same as Table 4.
2. Same as Table 4.
3. Same as Table 4.

In much of the economic literature, training is seen as directly increasing the productivity of employees through the development and application of some well defined competence. However, training can also be designed to produce a 'feel good' effect which results in increased worker motivation and better performance. This aspect of training quality was additionally captured in the 2006 Skills Survey. These results show that a large majority of trainees – around three-fifths (59.8%) – enjoy their jobs more as a result of training. This proportion rises to almost two-thirds of those in professional related roles and drops to less than a half (48.0%) of those working in 'Elementary' positions. Similarly, over two-thirds (68.2%) of trainees who work in 'high group involvement' workplaces enjoy their job more as a result of their most recent training experience. This proportion drops slightly in workplaces where there is 'moderate group involvement' or 'high individual involvement', although it remains above average. However, it falls dramatically among those who work in 'low involvement' workplaces where it enhances enjoyment in the job for fewer than half of trainees (45.3%).

A much stronger test of these bivariate results is a series of multivariate analyses which identify which of the correlates of these five aspects training quality are significant *ceteris paribus*. These take the form of a series of logistic regressions with or without controls (see Table 6). The most notable finding of these analyses is the relative power of the organisation of work variable. Employee involvement – whether through the group, individual or both – significantly raises the odds that high quality training is received. This is evidenced by training that leads to a pay increase, produces general skills and enhances enjoyment in the job. Only for certificated training is this association not confirmed. On the other hand, employee involvement significantly reduces the chances of individuals receiving training which produces skills that are so specific to the current employer that they are of little use elsewhere.

The other notable finding from these regressions is the weakening role played by occupation as a significant correlate of training quality. For example, none of the occupational categories is significantly associated with training which enhances job enjoyment or produces firm-specific skills.

Learning at work and future training prospects

It is frequently claimed that some workplaces are better at engendering more on-the-job learning than others. The high involvement work literature often makes this claim: 'by presenting employees with new challenges in the workplace on a day-to-day basis, they [high involvement workplaces] *encourage* continuous problem solving and learning … compared to the old traditional organization where *opportunities* to learn were minuscule' (e.g. Ashton and Sung, 2000: 154-155, our emphasis).

At the broad aggregate level, around a third (33.5%) of UK employees strongly agree that the job itself requires learning and a sixth (16.2%) strongly agree that they are able to learn from work colleagues. There is also strong agreement that job-holders have a teaching role in helping others learn – around a third (31.2%) of employees hold such a position (see Table 7, row 1).

Response patterns are more varied than for the immediate skills outcomes of training (cf. Table 3). It is notable, for example, that there is a strong association between the types of jobs employees occupy and the qualifications they hold and on-the-job learning and teaching. A third (34.3%) of 'Managers' strongly agree that their job requires ongoing learning and a half (48.4%) of them strongly agree that they are required to pass on their experience to others. However, the importance of learning and teaching shrinks dramatically the further down the occupational hierarchy one goes. Similarly, the better qualified claimed that their jobs are more likely to require them to learn on-the-job and to pass on their knowledge to others than those with lesser qualifications. The results also demonstrate a clear association between the type of work organisation and the importance of these sources of skill acquisition.

Employees working in environments which involve workers either as individuals or as team members report a stronger emphasis on on-the-job learning and knowledge transfer than those working in 'low involvement' settings. For example, approaching half (48.2%) of those in 'high group involvement' workplaces strongly agree that their job requires them to help colleagues to learn compared to around a sixth (17.1%) of those working in 'low involvement' environments (see Table 7, column 2).

Table 7: Experiences of learning at work and future training prospects, UK, 2006

Characteristic	Experiences of learning at work (% strongly agreeing)			On-going training
	'My job requires that I keep learning new things'[1] (1)	'My job requires that I help my colleagues to learn new things'[2] (2)	'I am able to learn new skills through working with other members of my work group'[3] (3)	Written training plan[4] (4)
All	33.5	31.2	16.2	24.8
(a) Sex				
Male	31.0	30.5	16.3	23.6
Female	36.2	31.9	16.1	26.0
(b) Working time				
Female full-time	39.8	37.2	17.4	30.2
Female part-time	30.7	23.6	14.1	19.5
(c) Occupation				
Managers	34.3	48.4	15.6	30.3
Professionals	56.7	38.2	21.1	39.3
Associate professionals	49.8	47.8	25.2	36.5
Administrative & secretarial	26.6	24.4	13.0	24.8
Skilled trades	27.8	24.2	16.1	12.7
Personal service	39.4	28.1	20.0	21.1
Sales	21.0	22.0	11.9	15.9
Plant & machinery operatives	20.7	17.9	8.2	14.8
Elementary occupations	11.3	10.8	9.0	11.5
(d) Highest qualification held				
Degree or equivalent	44.6	41.2	20.3	33.9
A level or equivalent	33.6	31.7	15.8	24.5
GCSE grade C or equivalent	26.7	23.6	12.6	18.3
NVQ level 1 or equivalent	25.9	23.0	14.6	17.9
None	15.7	17.4	11.2	12.6
(e) Organisation of work[5]				
High group involvement	43.5	48.2	35.7	34.8
Moderate group involvement	31.1	24.5	22.0	23.4
High individual involvement	35.9	37.2	4.5	25.0
Low involvement	24.3	17.1	4.7	17.9

Notes:

1. Respondents were asked: 'How much do you agree or disagree with the following statement – My job requires that I keep leaning new things?' They were given the following options from which to choose: 'strongly agree'; 'agree'; 'disagree'; and 'strongly disagree'. The column here reports the percentage who 'strongly agreed' with the statement.
2. Respondents were asked: 'How much do you agree or disagree with the following statement – My job requires that I help my colleagues to learn new things?' They were given the following options from which to choose: 'strongly agree'; 'agree'; 'disagree'; and 'strongly disagree'. The column here reports the percentage who 'strongly agreed' with the statement.
3. Respondents were asked: 'How much do you agree or disagree with the following statement – I am able to learn new skills through working with other members of my work group?' They were given the following options from which to choose: 'strongly agree'; 'agree'; 'disagree'; and 'strongly disagree'. The column here reports the percentage who 'strongly agreed' with the statement. Those who did not work in a group are denoted as neither agreeing nor disagreeing in calculating the percentages reported here and the regressions shown in Table 8.
4. Respondents were asked: 'Do you have a written career or training plan at work, that is, a written document which sets out your future job-related learning, training or education?'.
5. See text for derivation.

Similarly, the data also suggest that the training and learning benefits of working in high involvement workplaces may extend into the future since these employees are more likely to have a training plan than those in workplaces where employee involvement is much lower. These data also suggest training planning is more widespread among the top three occupational groups and the higher qualified (see Table 7, column 4).

Most of these bivariate findings are robust to multivariate tests (see Table 8). Most strikingly and without exception, workplaces which have some degree of employee involvement are statistically more likely to encourage on-the-job learning and have future training mapped out than those in which employee involvement is low. Similarly, the occupational skewing of on-the-job learning is confirmed by multivariate analyses. There is, however, only partial support for the finding that those with lower qualifications as a whole have a weaker requirement to learn, pass on tips to others and learn as a group. Nevertheless, graduates are statistically more likely to be required to learn and teach others on-the-job.

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Table 8: Profiling learning at work and future training prospects, ordered probit and logistic regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Job requires learning	**Job requires learning**	**Job requires helping others to learn**	**Job requires helping others to learn**	**Job requires group learning**	**Job requires group learning**	**Written training plan**	**Written training plan**
High group involvement	0.664	0.464	1.052	0.837	1.460	1.382	2.429	2.082
	(0.060)**	(0.044)**	(0.059)**	(0.045)**	(0.076)**	(0.045)**	(0.320)**	(0.263)**
Moderate group involvement	0.288	0.166	0.425	0.316	0.992	0.924	1.366	1.118
	(0.065)**	(0.041)**	(0.062)**	(0.041)**	(0.073)**	(0.041)**	(0.184)*	(0.143)
High individual involvement	0.410	0.277	0.644	0.421	0.014	-0.011	1.509	1.431
	(0.057)**	(0.040)**	(0.060)**	(0.040)**	(0.051)	(0.039)	(0.207)**	(0.180)**
Female		0.018		-0.005		0.022		1.080
		(0.040)		(0.040)		(0.039)		(0.124)
Part-time		-0.253		-0.362		-0.060		0.672
		(0.040)**		(0.041)**		(0.039)		(0.084)**
Managers		0.030		0.351		0.033		1.719
		(0.065)		(0.067)**		(0.064)		(0.362)*
Professionals		0.458		0.257		0.128		2.455
		(0.078)**		(0.078)**		(0.074)		(0.569)**
Associate professionals		0.283		0.195		0.142		1.587
		(0.069)**		(0.070)**		(0.067)*		(0.348)*
Administrative & secretarial		-0.171		-0.171		0.065		1.342
		(0.070)*		(0.070)*		(0.068)		(0.307)
Personal service		0.051		-0.048		0.220		1.350
		(0.081)		(0.082)		(0.078)**		(0.349)

Sales		-0.144		0.031		0.010		1.175
		(0.084)		(0.085)		(0.082)		(0.339)
Plant & machinery operatives		-0.299		-0.293		-0.208		1.169
		(0.068)**		(0.069)**		(0.067)**		(0.287)
Elementary occupations		-0.641		-0.384		-0.255		0.854
		(0.069)**		(0.070)**		(0.067)**		(0.237)
None		-0.109		-0.131		-0.002		0.990
		(0.055)*		(0.056)*		(0.054)		(0.228)
NVQ level 1 or equivalent		-0.032		-0.105		0.049		1.173
		(0.057)		(0.058)		(0.056)		(0.219)
A level or equivalent		0.026		0.031		-0.027		1.184
		(0.045)		(0.046)		(0.044)		(0.162)
Degree or equivalent		0.191		0.172		0.057		1.191
		(0.051)**		(0.051)**		(0.049)		(0.171)
Training intensity[2]	No	No	No	No	No	No	No	1.001
								(0.000)*
Other controls[3]	No	Yes	No	Yes	No	Yes	No	Yes
Observations	6190	6190	6062	6062	6191	6191	6161	6161

** indicates $p < 0.01$;
* indicates $p < 0.05$.

Notes:

1. Same as Table 4, apart from the fact that the dependent variables in columns 1-4 take one of four values which correspond to the degree of agreement or disagreement with the statements given (see text). In columns 5-6, the same applies except for the fact that those not working in group are awarded a score of 0 (ordered probits). In columns 1-6, the test is that the coefficients differ significantly from 0, whereas in columns 7-8 it is whether the odds are greater or less than 1 (logistic regressions).
2. Same as Table 4.
3. Same as Table 4.

6. Conclusion

The research community has had a long preoccupation with tracing the incidence of training. Over time, this has broadened to include measuring how long bouts of training last and analysing the pattern of training intensity these data reveal. However, rather less attention has been focused on assessing and explaining the quality of the training and learning which takes place. Nevertheless, the importance of this issue has persisted in theoretical and conceptual debates spearheaded by human capital theorists and more latterly by workplace learning scholars.

In parallel, researchers who study the organisation of work have rediscovered the discretionary effort that workers can exercise if they are so inclined. This has been encapsulated in the notion of 'high involvement' workplaces in which discretionary effort is encouraged. The means of eliciting this effort includes giving workers greater autonomy to carry out their work, involving them more in decisions that affect their day-to-day activities and giving them a greater stake in the outcomes of their labour. Increasingly, it has become commonplace to link empirically the way work is organised with the incidence and intensity of training on offer. However, we do not know whether the training received is also better. Similarly, the connection that on-the-job learning prompted by daily work activities, problem-solving and the exchange of knowledge between peers has with the organisation of work is based on theoretical reasoning rather than empirical evidence.

The results of the 2006 Skills Survey offer a corrective to this relative neglect. This paper has shown that the way work is organised has a powerful effect not only on the incidence of training but also on its quality. It has shown that workplaces that allow employees greater leeway in the way they carry out their work are more able to use the training they receive to change and improve what they do. This suggests that the training received by those in 'low involvement' workplaces may be of different quality to the training received by those in 'high involvement' workplaces where training is intended to improve working practices, raise skills levels, promote transferable skills, enhance enjoyment at work and offer greater financial rewards. Similarly, there are stronger levels of agreement in workplaces which acknowledge workers' knowledge of the labour process that the demands of the job require learning and that these lessons are passed onto

others. These propositions are often stated, or hinted at, but rarely tested against survey data. Furthermore, workplaces that give more of a role to employees are more likely to have mechanisms in place to ensure that training is an on-going activity rather than a one-off event.

There have been frequent calls in policy-making circles for more training (HM Treasury, 2006). However, there may not always be an economic case for carrying it out. For example, our evidence shows that most of those who had not received training in the previous year (one third of employees) considered themselves to be in jobs where training would have been of little use. This was not because their employers refused to provide training but because their jobs did not require it. The policy implication of this finding is that the delivery of training needs to be understood in the wider context of production and that for some jobs training may be inappropriate and even counterproductive. Furthermore, even when training is provided and received, its quality, purpose and usefulness may differ, sometimes considerably. However, we know comparatively little about these issues, apart from periodic surveys such as the one reported here. Similarly, despite their importance to the debates on lifelong learning, data on the sources of learning are rarely collected. This paper has argued that we now need to turn the spotlight on the quality of training and sources of learning which are prominent and long-running features of theoretical and conceptual debates, but have hitherto received rather less attention in data collection exercises than their importance merits.

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