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

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

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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 article shows how these theoretical insights have been translated into questions used in a UK survey of 6829 employees carried out in 2006. We find that the qualities of both the training experience and on-the-job learning are strongly associated with the extent and nature of employee involvement. This suggests that employee involvement is likely to play an important role in the process of upskilling the workforce, which has been accorded a central role in the economic strategies of many nation states as well as supra-national organizations such as the European Union.

Keywords: employee involvement; high involvement; learning; skills; training; work organization

Introduction

The incidence of training is regularly used as the key barometer with which to measure investment in skills. It features, for example, as one of the five benchmarks against which the European Union (EU) is measuring progress towards meeting the Lisbon aim of making the EU the most competitive economy in the world (CEC 2008). However, other measures – such as the intensity of training activity and its cost in terms of lost or reduced output, fees paid and employee time – can modify, and even give a very different picture from 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, p. 105). On the other hand, countries with average rates of training participation – such as the Netherlands and Malta – report higher than average intensity rates (OECD 2008; Dent and Wiseman 2008). Similarly, statements about trends in training activity as a whole based on participation rates can be misleading since they may be rising while intensity is falling (Felstead, Green and Mayhew 1999).

International evidence highlights that far less is known about the quality of the training provided. Yet quality appears to matter a great deal. For example, a comparative analysis of the returns to vocational training – measured in terms of wages and occupational position – vary considerably between the UK, Denmark and Germany (Dieckhoff 2008). This finding suggests that the quality of the vocational training experience may differ

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across countries. More broadly, there is an empirical and theoretical case for a better understanding of the quality of all forms of training. Quality indicators include measures of the usefulness of training in: raising skill levels; helping to improve work practices; raising pay once training is complete; and increasing well-being at work. However, survey evidence in these areas is scarce. Moreover, evidence on the quality of on-the-job learning is limited further by the fact that 'training' tends to focus respondents on critical incidents or salient episodes which are divorced from normal everyday practice where people learn most about their jobs (Campanelli, Channell, McAulay, Renouf and Thomas 1994).

The aim of this article is to provide theory-driven evidence which advances our understanding of these issues. This is achieved in two ways. First, we show how some of the theories and concepts relating training and learning can be reflected in the design of large scale surveys. Second, 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 organization of work as an important factor. The article proceeds as follows. In the next section, we briefly review some of the relevant theoretical and conceptual background issues. The article then outlines how the survey was carried out and what measures were taken to ensure that representative data were collected. The article goes on to explain how these theories and concepts were translated into a series of survey questions. The substantive results section of the article 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 training. The results suggest that the organization of work is of particular importance in explaining how the quality of training and learning varies. The article concludes with lessons for researchers and policy-makers and calls for more outcomes-focused training questions to complement input measures in future surveys.

Theories and concepts

Training has become a 'must have' feature of labour market surveys conducted throughout the world (e.g., Arulampalam, Booth and Bryan 2004). Typically, respondents are asked whether they have participated in job-related training in a specified period before interview – such as the previous four weeks, 13 weeks or the preceding calendar year. Follow-up questions about this training are then posed. These include the time spent being trained, where the training was undertaken and who bore the costs.

Based on these data, numerous studies have examined the incidence of training activity and, to a lesser extent, its intensity – often with comparisons made between different socio-economic groups and sometimes across countries. These results have prompted 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 (TUC 2007). These calls, and the evidence on which they are 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 and performance outcomes is not straightforward (cf. Birdi, Patterson and Wood 2007). Previous research, for example, suggests that not all training episodes are intended to raise skills by a significant 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 standardized and prescribed ways of working which restrict the

skills used at work (Felstead, Green and Mayhew 1997; Felstead, Fuller, Jewson and Unwin 2009). The quality of training can differ in other respects too. 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, in a range of workplace settings; that is, whether the skills generated are firm-specific or transferable. The answer affects the degree to which workers can use the resulting skills to extract increased pay from their current employer (Stevens 1994; Hashimoto 1982; Becker 1964). Training may also affect intrinsic rewards. Hence, the quality of training may differ according whether or not it raises levels of intrinsic job satisfaction and well-being.

In addition to scrutinizing the quality of training, there is also a need also to examine learning more generally in the light of recent developments in workplace learning theory. In-depth studies of a wide variety of jobs suggest that learning activities are not always well captured by standard survey questions. This shortcoming arises because surveys tend to focus on gathering data on formal training courses with rather less attention paid to on-the-job and informal learning in particular This contrast is encapsulated by the 'learning as acquisition' and 'learning as participation' metaphors (Sfard 1998). The former refers to a conceptualization 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.

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 organized. Although the extent and nature of employee involvement has featured for many decades in human resource management research, the debate in recent years has shifted from a 'rights based' issue to a means to the end of enhanced business performance (Marchington and Wilkinson 2005). As a result, the importance of 'employee involvement has been de-emphasized or even neglected in much recent empirical work' (Wood and Wall 2007, p. 1335). Whether intended or not, the use of a multitude of labels and different ways of measuring how work is organized has served to downplay the role of employee involvement in recent discussions.

To avoid doing the same here, we place employee involvement centre stage of the analysis – this is signalled through our use of the 'high involvement' label in preference to the many others on offer and our attempt to measure four of the principal ways in which employee involvement varies. 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 organization. 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 (de Menezes and Wood 2006; Ashton and Sung 2002). There are numerous studies which make the link between high involvement working and the incidence and intensity of training (*inter alia*, Frazis, Gittleman and Joyce 2000; Whitfield 2000; Lynch and Black 1998; Osterman 1995; MacDuffie and Kochan 1995).

The explanation given 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' willingness to invest more in training. For example, take the successful operation of a quality circle; that is, a mechanism which allows employees to examine and develop solutions to problems traditionally dealt with by

management. This requires that employees have problem-solving abilities and that they know about the broader aspects of the production process in order to make meaningful suggestions. Here, we would 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 applied at work, improves performance 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 the efficacy of in situ learning (e.g., Appelbaum, Bailey, Berg and Kalleberg 2000, pp. 230–231; Ashton and Sung 2002, pp. 92–93; MacDuffie and Kochan 1995, pp. 165–167). The theoretical connection is based on the idea that learning is enhanced when employees are involved in organizing, 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 organized or through individuals given the autonomy to organize 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 organizational performance when knowledge about the production process and the organization'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. Yet, despite the emphasis the high involvement paradigm puts on learning at the point of production, there is surprisingly little empirical evidence to connect the two. Instead the connection largely remains a theoretical possibility rather than an empirical finding.

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 7787 respondents participated in the survey, 6829 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 with three-quarters of the interviews completed in the first six months. 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, the over-sampling of the boost areas and the slight under-representation of certain groups. All of the analyses that follow have been weighted accordingly (for further details see Felstead, Gallie, Green and Zhou 2007).

Theory-driven indicators

Respondents were asked a number of questions about the training they had received. First, they 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?' 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

have voiced concerns that informal modes of training such as on-the-job instruction are under-reported.

It is often assumed that training unproblematically raises skills and abilities that are then exercised at work. However, the difficulties of transferring knowledge between settings have 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 of assessing the quality of training. 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'. The theoretical expectation would be that those in agreement with the statement will have been in receipt of skills enhancing training that is either transferable or, if firm-specific, partly employee-financed. Through the same mechanism intrinsic aspects of the job may change as a result of training. 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 (Felstead et al. 2005; Fuller and Unwin 2003). 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'.

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 triggered considerable debate among scholars in the field (see, e.g., Wood and de Menezes 2008; de Menezes and Wood 2006). A common approach is to select, based on *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 standardized 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 (see, e.g., Harley, Allen and Sargent 2007; Kalleberg, Marsden, Reynolds and Knoke 2006; Bryson, Forth and Kirby 2005; Felstead and Gallie 2004; Forth and Millward 2004; Ramsay, Scholarios and Harley 2000).

An alternative approach is to identify groups or types of case that share an underlying orientation to the way work is organized using latent class analysis (LCA) (McCutcheon

1987). 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). When analysed against the manifest variables, cases within the same latent class are similar, while cases in different latent classes are dissimilar. Latent classes, such as factors or scales, are unobserved/latent constructs inferred from observed/manifest data. Determining the number of latent classes is analogous to determining the number of factors to extract in an exploratory factor analysis, since the more classes/factors there are, the better the model fit from a statistical point of view. Judgement and interpretability based on *a priori* reasoning has to be taken into account as well as the quality of a model's statistical fit.

Given our interest in the impact of different ways of organizing work on the training and learning environment, LCA offered us the most appropriate way of dividing cases into a number of similar groups on the basis of statistical and *a priori* grounds. This is in keeping with the argument that researchers first need to step back in order to differentiate the ways in which work organization differs in practice and then move on to analyse how outcomes vary (Wood and de Menezes 2008; Wood and Wall 2007). A latent class variable for work organization was therefore extracted as follows. To capture the degree of personal decision-making respondents have in their daily work, the survey asked respondents how much personal influence they exercised over specific aspects of their work. This follows Marchington and Wilkinson's (2005) 'escalator of participation' metaphor by collecting data on the degree of employee decision-making over a number of subject matters at the level of the job. These subjects 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, Geary and Sisson 2002, p. 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. 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, Felstead and Green 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, p. 93). The 2006 Skills Survey collected data on some of the prominent in the human resource management practices associated with this kind of involvement. A total of seven questions were asked about such practices. These covered 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 organizes meetings to inform the workforce of organizational 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]

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 maximize 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 ($p < .01$). 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 .86. Put another way, on average cases have a greater than .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.

The four class solution places 27.5% of the 6558 employees on which we have full data into class 1, 24.0% are 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 items. 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 .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 .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. 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

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	.80	.33	.67	.29
What is done	.61	.10	.46	.02
How it is done	.82	.21	.61	.12
Quality standards	.81	.32	.69	.26
'A lot' of say in decisions affecting job	.22	.04	.20	.04
'A great deal' or 'fair amount' of group influence over:				
Work intensity	.04	.52	.78	.06
What is done	.01	.31	.63	.01
How it is done	.00	.22	.55	.01
Quality standards	.01	.31	.66	.01
Selecting members	.01	.10	.44	.01
Selecting leaders	.00	.04	.33	.00
Setting targets	.02	.15	.60	.01
Presence of:				
Suggestion scheme	.83	.71	.87	.62
Appraisal system	.51	.51	.63	.45
Quality circle	.45	.35	.63	.27
Information meetings	.77	.70	.89	.61
Expressive meetings	.75	.65	.86	.56
Individual bonuses	.15	.15	.22	.09
Group bonuses	.28	.26	.33	.19

Note: 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. For example, a member of class 1 has an 80% chance of responding that he/she has a great deal of influence over work intensity, while for a member of class 2 the chance is 33%. 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 optimizations were raised to 100 and 10 respectively.

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 of 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 .82 compared to .61 of those in class 3, .21 of those in class 2 and .12 of 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 of 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 the 'low involvement' regime.

The occupational and industrial distribution of these different types of work organization 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, p. 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 1 in 10 (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.

Results

Many studies have revealed who gets training and who does not. Internationally consistent patterns emerge. 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 the pay, the greater the likelihood of 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 recognize trade unions for collective bargaining (Hoque and Bacon 2006; Böheim and Booth 2004; Green, Machin and Wilkinson 1999). 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 1997). In addition, an individual's characteristics – such as gender, ethnicity and age – have a bearing on whether or not training is received.

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 respondent's level of qualification and 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 organization of work and the incidence of training. This shows that, depending on the definition used, around two-thirds to four-fifths of respondents working in situations in which they are involved in decision-making have undergone training in the last year. This compares with just over a half (55.4%) of those in 'low involvement' environments. 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 one of the means through which these abilities are developed.

Table 2. Distribution of types of work organization, UK, 2006.

	Organization of work[1]			
	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[2]				
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

[1] The figures are row percentages for each group.
[2] Industries are classified by SIC92: only those with sample size above 100 are shown.

An implicit assumption of most studies of training incidence and intensity is that the more training the better the greater the enhancement of skills (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 12 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 90% (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 declines to some degree as the spotlight moves down the occupational hierarchy. This provides some 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).

'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). Much of the variation in response patterns revolve around the type of jobs respondents did and the way

Table 3. Training and its quality, UK, 2006.

Characteristic	Training incidence[1] (%) (1)	Quality (%)			
		Has raised skills used at work a little or a lot[2] (2)	Has improved working practices[3] (3)	Pay increased following training[4] (4)	Enjoy job more[5] (5)
All	67.1	91.2	86.3	17.8	59.8
(a) Sex					
Male	66.0	90.6	85.9	18.4	57.1
Female	68.2	91.7	86.7	17.3	62.5
(b) Working Time					
Female Full-time	73.2	91.8	86.8	19.5	62.3
Female Part-time	60.7	91.6	86.4	13.1	62.9
(c) Occupation					
Managers	74.5	93.1	89.9	39.7	62.7
Professionals	84.2	94.0	88.4	42.1	67.8
Associate Professionals	83.8	93.6	88.3	43.6	56.8
Administrative & Secretarial	70.7	91.9	83.8	32.8	59.6
Skilled Trades	54.8	90.9	85.1	37.2	64.3
Personal Service	70.1	89.9	87.2	36.8	56.2
Sales	59.9	91.3	83.8	32.5	53.7
Plant & Machinery Operatives	47.3	80.8	80.7	37.0	48.0
Elementary Occupations	39.8	81.8	79.5	39.7	62.7
(d) Highest Qualification Held					
Degree or equivalent	79.7	92.1	88.5	42.3	59.6
A level or equivalent	69.0	90.9	85.9	40.9	60.7
GCSE grade C or equivalent	61.5	92.6	82.9	38.8	56.4
NVQ level 1 or equivalent	56.5	86.0	84.8	39.4	64.6
None	39.9	88.6	84.6	40.4	60.9
(e) Organization of Work					
High Group Involvement	81.3	95.6	92.4	46.7	68.2
Moderate Group Involvement	69.8	93.2	87.8	40.4	62.4
High Individual Involvement	66.4	90.7	85.6	42.5	60.2
Low Involvement	55.4	83.7	78.1	30.4	45.3

[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] Those in receipt of training were asked whether they agreed with the statement: 'I received a pay increase as a result of my 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'.

their work was organized. On this measure, the benefits of training are strongest among 'Managers' and weakest among those working in 'Elementary' roles – the gap between the two is around 10 percentage points. Similarly, improvements to working practices are more prevalent in workplaces where employees are more involved in decision-making as individuals or in groups than in circumstances where their involvement is more limited.

Human capital theory suggests that the quality of training may be revealed in other ways than awareness by trainees of its benefits in terms of their skills and working practices. Another test of whether training delivers economically valuable skills is whether it results in a pay rise. 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 rise (see column 4, Table 3). 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 get pay increases as a result of training than trainees working in 'low involvement' workplaces.

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. Our results show that a majority of trainees – around three-fifths (59.8%) – enjoy their jobs more as a result of training (see Table 3, column 5). 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%).

It is frequently claimed that some workplaces are better at engendering more on-the-job learning than others: '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 2002, pp. 154–155, emphasis added). 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 from around a third (31.2%) of employees that their jobs involve a teaching role in helping others learn (see Table 4, row 1).

Response patterns are more varied than for the quality of training measures (cf. Table 3). It is notable, for example, that there is a strong association between the types of jobs and qualifications employees hold and their experience of 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 claim 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 organization and the importance

Table 4. Learning at work, UK, 2006.

Characteristic	Experiences of Learning at Work (% strongly agreeing)		
	'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)
All	33.5	31.2	16.2
(a) Sex			
Male	31.0	30.5	16.3
Female	36.2	31.9	16.1
(b) Working Time			
Female Full-time	39.8	37.2	17.4
Female Part-time	30.7	23.6	14.1
(c) Occupation			
Managers	34.3	48.4	15.6
Professionals	56.7	38.2	21.1
Associate Professionals	49.8	47.8	25.2
Administrative & Secretarial	26.6	24.4	13.0
Skilled Trades	27.8	24.2	16.1
Personal Service	39.4	28.1	20.0
Sales	21.0	22.0	11.9
Plant & Machinery Operatives	20.7	17.9	8.2
Elementary Occupations	11.3	10.8	9.0
(d) Highest Qualification Held			
Degree or equivalent	44.6	41.2	20.3
A level or equivalent	33.6	31.7	15.8
GCSE grade C or equivalent	26.7	23.6	12.6
NVQ level 1 or equivalent	25.9	23.0	14.6
None	15.7	17.4	11.2
(e) Organization of Work			
High Group Involvement	43.5	48.2	35.7
Moderate Group Involvement	31.1	24.5	22.0
High Individual Involvement	35.9	37.2	4.5
Low Involvement	24.3	17.1	4.7

[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.

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 4, column 2).

To test whether these associations hold when other factors are taken into account we carried out a series of multivariate analyses. In each of these the four-class work organization variable, discussed earlier, was entered as three dummy variables with 'high group involvement' as the reference category. In Table 5 we present logistic regressions of the training incidence and training quality variables. The results confirm the bivariate findings reported in Table 3. In particular, they confirm that a strong and statistically significant association exists between regimes of involvement and the incidence of training (see Table 5, column 1). This finding holds even when other variables – also commonly found to have an association with the receipt of training – as well as a number of control variables are added to the analysis (see Table 5, column 2). Conditional on these other variables, being in a 'low involvement' workplace cuts the odds ratio of receiving training by .64 compared to environments where there is 'high group involvement'. The odds ratios are cut by .53 in workplaces where individual involvement is high and by .42 where groups have a moderate level of involvement. These results 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.

Furthermore, the results confirm the association between employee involvement and training quality. For every quality indicator, being in the 'high group involvement' class significantly increases the odds that training quality is high, compared with being in one of the other classes. This finding holds even after conditioning for the intensity of training which is itself positively related to training quality as expected, and the many other control variables. Moreover, the odds of receiving higher quality training – defined by the four measures presented here – rises according to both the degree of involvement and its nature. Compared with 'high group involvement' workplaces, those working where group involvement is 'moderate' have a lower chance of receiving high quality training. These odds fall further in circumstances where individuals rather than groups have more of a say in the way work is organized. They are lower still where employee involvement is minimal (see the declining work organization coefficients in Table 5). Let us illustrate the magnitude of these differences: conditional on the many control variables, compared with 'low involvement' workplaces the odds ratios for high quality training in 'high group involvement' workplaces are .73 greater in respect of raising skills, .70 higher in terms of improving working practices, .61 greater in respect of enhancing job enjoyment, and .43 higher in leading to a pay rise.

By contrast, many of the variables which are important determinants of training incidence do little to explain why its quality varies. For example, while occupation is strongly related to the incidence of training, it is not associated with training which results in increased skills, improvements in working practices, a pay rise or enhanced enjoyment at work. Thus, the bivariate association between occupation and training quality observed earlier appears to be attributable in most cases to our explanatory variables.

Since all the learning at work indicators have four-point ordinal scales, we present in Table 6 ordinal probit estimates using the same set of covariates. The estimates show that, even after conditioning on many other variables, all three learning indicators are at their highest in workplaces where there is 'high group involvement' (note the negative signs on the work organization coefficients in Table 6). The chances of learning while on the job or helping others to learn are also significantly higher in environments with 'high individual involvement' than in those with 'low involvement'. Finally, group learning is not surprisingly more prevalent in circumstances where groups are given even moderate

Table 5. Profiling training and its quality, logistic regressions.

	(1) Training incidence	*(2) Training incidence*	*(3) Raised skills*	*(4) Raised skills*	*(5) Improved working practices*	*(6) Improved working practices*	*(7) Leading to a pay rise*	*(8) Leading to a pay rise*	*(9) Enhancing job enjoyment*	*(10) Enhancing job enjoyment*
A. Employee Involvement										
Moderate Group Involvement[1]	.529 (.063)**	.582 (.074)**	.618 (.140)**	.579 (.136)**	.581 (.112)**	.582 (.113)**	.877 (.144)*	.844 (.134)*	.775 (.093)**	.751 (.092)**
High Individual Involvement	.455 (.049)**	.470 (.056)**	.446 (.097)**	.475 (.106)**	.505 (.093)**	.518 (.095)**	.700 (.100)*	.796 (.119)	.714 (.083)**	.715 (.086)**
Low Involvement	.291 (.034)**	.355 (.043)**	.253 (.053)**	.272 (.060)**	.296 (.055)**	.298 (.055)**	.567 (.091)**	.571 (.096)**	.400 (.052)**	.387 (.050)**
B. Employee Characteristics										
Female		.860 (.096)		.739 (.132)		.779 (.126)		.887 (.135)		1.107 (.124)
Part-time		.743 (.083)**		1.294 (.262)		1.028 (.169)		.794 (.139)		1.143 (.139)
C. Occupation										
Managers		1.784 (.313)**		1.243 (.415)		1.346 (.374)		.724 (.188)		.915 (.187)
Professionals		2.958 (.657)**		1.971 (.790)		1.064 (.320)		.585 (.168)		1.202 (.273)
Associate Professionals		2.517 (.481)**		1.273 (.421)		.951 (.257)		.674 (.173)		1.358 (.290)
Administrative & Secretarial		1.820 (.331)**		1.167 (.417)		.772 (.220)		.435 (.124)**		.908 (.199)
Personal Service		1.444 (.323)		.843 (.328)		.969 (.334)		.359 (.113)**		.981 (.250)
Sales		1.418 (.311)		.898 (.380)		.714 (.315)		.470 (.169)*		.684 (.194)
Machinery Operatives		.874 (.157)		.489 (.167)*		.887 (.263)		.780 (.227)		.988 (.235)

Table 5 – *continued*

	(1) Training incidence	*(2) Training incidence*	*(3) Raised skills*	*(4) Raised skills*	*(5) Improved working practices*	*(6) Improved working practices*	*(7) Leading to a pay rise*	*(8) Leading to a pay rise*	*(9) Enhancing job enjoyment*	*(10) Enhancing job enjoyment*
Elementary Occupations		.592		.434		.762		.637		.626
		(.110)**		(.151)*		(.234)		(.202)		(.171)
D. Highest Qualification										
None		.619		1.072		1.466		1.028		1.523
		(.095)**		(.330)		(.383)		(.357)		(.406)
NVQ level 1 or		.951		.630		1.293		.950		1.623
equivalent		(.144)		(.170)		(.325)		(.220)		(.295)**
A level or equivalent		1.318		.795		1.177		.898		1.154
		(.155)*		(.173)		(.209)		(.155)		(.155)
Degree or equivalent		1.610		.707		1.592		.807		.999
		(.223)**		(.159)		(.317)*		(.154)		(.142)
E. Other Features of the Models										
Training intensity[2]	No	No		1.002		1.001		1.001		1.001
				(.001)**		(.000)**				
Other controls[3]	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	6181	6181	4016	4016	4131	4131	4141	4141	4120	4120

**indicates $p < .01$; *indicates $p < .05$.

[1] Standard errors are shown in parentheses. The reference (omitted) categories are: 'high involvement workplaces'; male employees; full-time employees; 'Skilled Trades'; and those whose higher qualification is a GCSE grade C or equivalent.

[2] 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.

[3] 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.

Table 6. Profiling learning at work, ordered probit regressions.

	(1) Job requires learning	*(2) Job requires learning*	*(3) Job requires helping others to learn*	*(4) Job requires helping others to learn*	*(5) Job requires group learning*	*(6) Job requires group learning*
A. Employee Involvement						
Moderate Group Involvement[1]	−.376	−.299	−.628	−.520	−.468	−.458
	(.057)**	(.044)**	(.055)**	(.045)**	(.060)**	(.043)**
High Individual Involvement	−.254	−.187	−.408	−.416	−1.446	−1.393
	(.049)**	(.043)**	(.054)**	(.044)**	(.061)**	(.045)**
Low Involvement	−.664	−.464	−1.052	−.837	−1.460	−1.382
	(.060)**	(.044)**	(.059)**	(.045)**	(.076)**	(.045)**
B. Employee Characteristics						
Female		.018		−.005		.022
		(.040)		(.040)		(.039)
Part-time		−.253		−.362		−.060
		(.040)**		(.041)**		(.039)
C. Occupation						
Managers		.030		.351		.033
		(.065)		(.067)**		(.064)
Professionals		.458		.257		.128
		(.078)**		(.078)**		(.074)
Associate Professionals		.283		.195		.142
		(.069)**		(.070)**		(.067)*
Administrative & Secretarial		−.171		−.171		.065
		(.070)*		(.070)*		(.068)
Personal Service		.051		−.048		.220
		(.081)		(.082)		(.078)**
Sales		−.144		.031		.010
		(.084)		(.085)		(.082)
Plant & Machinery Operatives		−.299		−.293		−.208
		(.068)**		(.069)**		(.067)**
Elementary Occupations		−.641		−.384		−.255

Table 6 – *continued*

	(1) Job requires learning	*(2) Job requires learning*	*(3) Job requires helping others to learn*	*(4) Job requires helping others to learn*	*(5) Job requires group learning*	*(6) Job requires group learning*
		(.069)**		(.070)**		(.067)**
D. Highest Qualification						
None		−.109		−.131		−.002
		(.055)*		(.056)*		(.054)
NVQ level 1 or equivalent		−.032		−.105		.049
		(.057)		(.058)		(.056)
A level or equivalent		.026		.031		−.027
		(.045)		(.046)		(.044)
Degree or equivalent		.191		.172		.057
		(.051)**		(.051)**		(.049)
E. Other Features of the Models						
Other controls[2]	No	Yes	No	Yes	No	Yes
Observations	6190	6190	6062	6062	6191	6191

**indicates $p < .01$;*indicates $p < .05$.

[1] Same as Table 5, 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). The test is that the coefficients differ significantly from 0.

[2] Same as Table 5.

involvement, compared with where the involvement is individual or low. Our results suggest that working in an environment where employee involvement is high rather than low doubles the probability that respondents 'strongly agree' that their jobs require them to learn on a continual basis (up from an estimated probability of .23 to .46). The nature of employee involvement has a similar impact on sentiments about encouraging the teaching of others and the promotion of group learning. Here, the estimated probabilties triple and multiply almost ten-fold (rising from .17 to .51 and from .04 to .37 respectively). Looking at the other covariates, the occupational patterns of individual learning, teaching and group learning revealed in the bivariate analysis presented above are confirmed by these 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, help others to learn, and learn as a group. So, those with no qualifications are a third as likely as graduates to strongly agree that their job requires them to keep learning and two-fifths as likely to strongly agree that they are encouraged to teach others. However, group learning is enjoyed by all employees regardless of their highest qualification.

A note of caution is required in relation to all these findings. The estimates are consistent with the theoretical framework surrounding the use high involvement work practices, but they do not establish a process of causation for two reasons. First, the organization of work could be affected by other unobserved variables which also impact on training and learning quality. Second, there could be unobserved variables affecting both whether employees get trained and the quality of that training. The heterogeneous selection of employees could also in principle affect any causal estimates of the impact of work organization on training quality. There are no suitable variables in the data with which one could predict the class of work organization, and separately identify the selection process, and hence obtain unbiased estimates of the treatment effects of forms of employee involvement. Nevertheless, the fact that we have been able to control for a considerable number of covariates, including those conventionally found to affect training incidence, means that it would not be so easy to find a plausible alternative account for our findings.

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 of human capital theorists and of workplace learning analysts (Becker 1964; Sfard 1998; Eraut 2004).

In parallel, researchers who study the organization 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 (Marchington and Wilkinson 2005). 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. It has become commonplace to find an empirical link between the way work is organized and the incidence and intensity of training on offer (e.g., Whitfield 2000). However, hitherto it has not been confirmed 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 organization 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 article has shown that the way work is organized has a powerful association not only with the incidence of training but also with 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 more geared to raising skills levels, improving working practices, offering greater financial rewards and enhancing enjoyment at work. Similarly, in workplaces which acknowledge workers' knowledge of the labour process and encourage them to get involved, a greater emphasis is placed on on-the-job learning and teaching others. These propositions are often stated, or hinted at, but rarely tested against survey data. The results also show that variations in the quality of training and learning are explained more by the nature of work organization than by many of the conventional explanations for the variation in training incidence, such as occupational status and educational level.

There have been frequent calls in national and international policy-making circles for more training (HM Treasury 2006; CEC 2008). However, there may not always be an economic case for carrying it out, and the delivery of more training should rather be understood in the wider context of production and work organization. Furthermore, even when training is provided, its quality, purpose and usefulness may differ, sometimes considerably. Yet 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 workplace as a locus of learning are rarely collected. Our findings here would suggest that upskilling the workforce may depend on developments in the evolution of work organization, because not only the quantity but also the quality of learning will be affected. Empirical research also now needs to turn the spotlight on the quality of training and work-based learning, both of 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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Note

1. LCA runs which drop the two financial participation variables – as suggested by some authors (e.g., Wood 1999) – 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. Ramsay et al. 2000; Appelbaum et al. 2000), they remain in the analysis presented here.

References

Appelbaum, E., Bailey, T., Berg, P., and Kalleberg, A. (2000), *Manufacturing Advantage: Why High-Performance Work Systems Pay Off*, Itacha, NY: Cornell University Press.

Arulampalam, W., and Booth, A.L. (1997), 'Training and Labour Market Flexibility: Is There a Trade-off?' *British Journal of Industrial Relations*, 36, 4, 521–536.

Arulampalam, W., Booth, A.L., and Bryan, M. (2004), 'Training in Europe,' *Journal of the European Economic Association*, 2, 2–3, 346–360.

Ashton, D., and Sung, J. (2002), *Supporting Learning for High Performance Working*, Geneva: International Labour Organization.

Becker, G.S. (1964), *Human Capital*, New York: National Bureau of Economic Research.

Birdi, K.S., Patterson, M.G., and Wood, S.J. (2007), 'Learning to Perform? A Comparison of Learning Practices and Organizational Performance in Profit- and Non-profit-making Sectors in the UK,' *International Journal of Training and Development*, 11, 4, 265–281.

Böheim, R., and Booth, A.L. (2004), 'Trade Union Presence and Employer-provided Training in Great Britain,' *Industrial Relations*, 43, 3, 520–545.

Bryson, A., Forth, J., and Kirby, S. (2005), 'High-involvement Management Practices, Trade Union Representation and Workplace Performance in Britain,' *Scottish Journal of Political Economy*, 52, 3, 451–491.

Campanelli, P., Channell, L., McAulay, L., Renouf, A., and Thomas, R. (1994), 'Training: An Exploration of the Word and the Concept with an Analysis of the Implications for Survey Design,' in *Department for Education and Employment Research Series No. 30*, London: Department for Education and Employment.

Commission of the European Communities (CEC) (2008), *Progress Towards the Lisbon Objectives in Education and Training: Indicators and Benchmarks, 2008*, Brussels: CEC.

de Menezes, L.M., and Wood, S. (2006), 'The Reality of Flexible Work Systems in Britain,' *International Journal of Human Resource Management*, 17, 1, 106–138.

Dent, R., and Wiseman, J. (2008), 'Continuing Vocational Training Survey 2005 (CVTS3)', Department for Innovation, Universities and Skills Research Report 08–17, London, Department for Innovation, Universities and Skills (DIUS).

Dieckhoff, M. (2008), 'Skills and Occupational Attainment in Germany, Denmark and the UK,' *Work, Employment and Society*, 22, 1, 89–108.

Edwards, P., Geary, J., and Sisson, K. (2002), 'New Forms of Work Organization in the Workplace: Transformative, Exploitative, or Limited and Controlled?,' in *Work and Employment Relations in the High-Performance Workplace*, eds. G. Murray, J. Bélenger, A. Giles and P.-A. Lapointe, London: Continuum, pp. 72–119.

Eraut, M. (2004), 'Transfer of Knowledge Between Education and Work Settings,' in *Workplace Learning in Context*, eds. H. Rainbird, A. Fuller and A. Munro, London: Routledge, pp. 201–221.

Felstead, A., and Gallie, D. (2004), 'For Better or Worse? Non-standard Jobs and High Involvement Work Systems,' *International Journal of Human Resource Management*, 15, 7, 1293–1316.

Felstead, A., Fuller, A., Jewson, N., and Unwin, L. (2009), *Improving Working as Learning*, London: Routledge.

Felstead, A., Fuller, A., Unwin, L., Ashton, D., Butler, P., and Lee, T. (2005), 'Surveying the Scene: Learning Metaphors, Survey Design and the Workplace Context,' *Journal of Education and Work*, 18, 4, 359–383.

Felstead, A., Gallie, D., Green, F., and Zhou, Y. (2007), *Skills at Work, 1986–2006*, Oxford: ESRC Research Centre on Skills, Knowledge and Organisational Performance.

Felstead, A., Green, F., and Mayhew, K. (1997), *Getting the Measure of Training: A Report on Training Statistics in Britain*, Leeds: Centre for Industrial Policy and Performance.

Felstead, A., Green, F., and Mayhew, K. (1999), 'Britain's Training Statistics: A Cautionary Tale,' *Work, Employment and Society*, 13, 1, 107–115.

Forth, J., and Millward, N. (2004), 'High-involvement Management and Pay in Britain,' *Industrial Relations*, 43, 1, 98–119.

Frazis, H., Gittleman, M., and Joyce, M. (2000), 'Correlates of Training: An Analysis Using Both Employer and Employee Characteristics,' *Industrial and Labor Relations Review*, 53, 3, 443–462.

Fuller, A., and Unwin, L. (2003), 'Learning as Apprentices in the Contemporary UK Workplace: Creating and Managing Expansive and Restrictive Participation,' *Journal of Education and Work*, 16, 4, 407–426.

Gallie, D., Felstead, A., and Green, F. (2004), 'Changing Patterns of Task Discretion in Britain, Work,' *Employment and Society*, 18, 2, 243–266.
Green, F., Machin, S., and Wilkinson, D. (1999), 'Trade Unions and Training Practices in British Workplaces,' *Industrial and Labor Relations Review*, 52, 2, 179–195.
Harley, B., Allen, B.C., and Sargent, L.D. (2007), 'High Performance Work Systems and Employee Experience of Work in the Service Sector: The Case of Aged Care,' *British Journal of Industrial Relations*, 45, 3, 607–633.
Hashimoto, M. (1982), 'Firm-specific Human-capital as a Shared Investment,' *American Economic Review*, 71, 3, 475–482.
HM Treasury (2005), *Skills in the UK: The Long Term Challenge – Interim Report*, London: HM Treasury.
HM Treasury (2006), *Prosperity for All in the Global Economy – World Class Skills*, London: HMSO.
Hoque, K., and Bacon, N. (2006), 'The Antecedents of Training Activity in British Small and Medium-sized Enterprises,' *Work, Employment and Society*, 20, 3, 531–552.
Kalleberg, A.L., Marsden, P.V., Reynolds, J., and Knoke, D. (2006), 'Beyond Profit? Sectoral Differences in High-performance Work Practices,' *Work and Occupations*, 33, 3, 271–302.
Kersley, B., Alpin, C., Forth, J., Bryson, A., Bewley, H., Dix, G., and Oxenbridge, S. (2006), *Inside the Workplace: Findings from the 2004 Workplace Employment Relations Survey*, London: Routledge.
Lave, J. (1996), 'Teaching, as Learning, in Practice,' *Mind, Culture and Society*, 3, 3, 149–164.
Lynch, L.M., and Black, S.E. (1998), 'Beyond the Incidence of Employer-provided Training,' *Industrial and Labor Relations Review*, 52, 1, 64–81.
MacDuffie, J.P., and Kochan, T.A. (1995), 'Do US Firms Invest Less in Human Resources? Training in the World Auto Industry,' *Industrial Relations*, 34, 2, 147–168.
Marchington, M., and Wilkinson, A. (2005), 'Direct Participation and Involvement,' in *Managing Human Resources: Personnel Management in Transition* (4th ed.), ed. S. Bach, Oxford: Blackwell, pp. 398–423.
McCutcheon, A. (1987), *Latent Class Analysis*, Beverly Hills, CA: Sage Publications.
Organisation for Economic Co-operation and Development (OECD) (2008), *Education at a Glance 2008: OECD Indicators*, Paris: Organisation for Economic Co-operation and Development.
Osterman, P. (1995), 'Skill, Training, and Work Organization in American Establishments,' *Industrial Relations*, 34, 2, 125–146.
Ramsay, H., Scholarios, D., and Harley, B. (2000), 'Employees and High-performance Work Systems: Testing Inside the Black Box,' *British Journal of Industrial Relations*, 38, 4, 501–531.
Sels, L. (2002), '"More is Not Necessarily Better": The Relationship between the Quantity and Quality of Training Efforts,' *International Journal of Human Resource Management*, 13, 8, 1279–1298.
Sfard, A. (1998), 'On Two Metaphors for Learning and the Dangers of Choosing just One,' *Educational Researcher*, 27, 2, 4–13.
Stevens, M. (1994), 'A Theoretical Model of On-the-job Training with Imperfect Competition,' *Oxford Economic Papers*, 46, 4, 537–562.
Trade Union Congress (TUC) (2007), *Time to Tackle the Training Divide*, London: Trade Union Congress.
Whitfield, K. (2000), 'High-performance Workplaces, Training, and the Distribution of Skills,' *Industrial Relations*, 39, 1, 1–25.
Wood, S. (1999), 'Getting the Measure of the Transformed High-performance Organization,' *British Journal of Industrial Relations*, 37, 3, 391–417.
Wood, S., and de Menezes, L.M. (2008), 'Comparing Perspectives on High Involvement Management and Organizational Performance across the British Economy,' *International Journal of Human Resource Management*, 19, 4, 639–682.
Wood, S.J., and Wall, T.D. (2007), 'Work Enrichment and Employee Voice in Human Resource Management-performance Studies,' *International Journal of Human Resource Management*, 18, 7, 1335–1372.