Working and Learning Together: ICT Supported Learning in Small Businesses

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ABSTRACT

Information and communications technologies (ICT) sit at the centre of lifelong learning policy in the UK. Considerable public expenditure is being applied to the creation of on-line learning and on-line learner information services. These are seen as having a major role in stimulating learning in small businesses. The small business sector has traditionally proved reluctant to engage in structured programmes of employee development. While policy is finding application through significant spending on new infrastructure, insufficient attention is being paid to the ways in which those in the workplace learn and learn about learning.

Drawing on research carried out in Scotland, this paper suggests that the development of ICT supported work-based learning will result in significant changes in learning relationships and in the sources from which learners seek support. The effective development of learning in small businesses is dependent on the radical changes in technology associated with ICT being matched by equally radical changes in the way that work-based learning is conceptualised and organised. In particular, the potential of new learning relationships must be recognised and taken fully into account in planning and implementing work-based learning programmes. While positive for learners and the businesses in which they work, the changes in roles and relationships which the adoption of this perspective will involve will challenge and are likely to marginalize traditional players in the learning market.

Key words

Work-based learning; small businesses; information and communications technologies; elearning

INTRODUCTION

This paper considers a range of points that are of particular relevance in gaining a clearer understanding of information and communications technology (ICT) supported work-based learning and elearning in small businesses. The context within which the paper has been prepared is provided by current developments in the UK generally and in Scotland specifically. Following the election of a Labour Government for the UK in 1997, learning rapidly became a central policy theme. This has been re-emphasised by the Scottish Parliament. Since its re-establishment in 1999 (after a gap stretching back to 1707), the Scottish Parliament has taken a vigorous approach to policy and, in line with wider policy objectives in the UK, has placed a high priority on education and training and the use of new technologies. It has described its objectives in these areas as the creation of a 'learning nation' (Scottish Executive, 2000) and ensuring that Scotland enjoys '… the fullest possible participation in the digital technologies in timescales that bring competitive advantage' (Scottish Executive, 2001).

As a consequence of these developments, the last two years of the 1990s and the first two of the new Millennium have seen the rapid development of the infrastructure required to enable learning and the provision of information for learners using Web-based systems. The Scottish University for Industry (http://www.scottishufi.co.uk) (SUfI), which operates as '*learndirect scotland',* and the University for Industry initiative in England and Wales have made progress with the development of robust and effective managed learning environments (MLEs) and with organising and making available information on courses, learning materials and learning support. The SUfI / learndirect scotland offer is based around:

> … the national network of learning centres which is currently being established (and) a database of some 60,000 learning opportunities, from basic skills such as numeracy and IT to masters degrees and continuing professional development (Scottish Executive 2001, p16)

SUfI's core objectives include stimulating the development and growth of learning in small businesses. A central theme of this paper is that for this to be achieved it has to be recognised that recent radical developments in learning technology must now be matched by equally radical changes in the ways in which work-based learning in small businesses is understood, organised and supported.

In the following section the term *small business* is briefly defined and explored. The paper moves on to describe and reflect on direct research with small businesses. Two specific sets of issues are identified and explored as being particularly relevant to understanding and developing work-based learning in small businesses. These relate, firstly, to potential *sources* of learner support in the workplace and, secondly, to the *forms* of support required by learners. As part of this central section of the paper, the meaning of the term 'work-based learning' is considered. A further section then reflects on how

learners 'learn about learning' in the workplace. This is followed by a concluding section that reflects briefly on a number of the main points raised.

SMALL BUSINESSES

Businesses which are either small or are small/medium (SMEs) make up a very significant sector of the economy of the UK (Matlay 1997, p577). In all but one sector in 1996 (Hughes and Gray 1998, p7), over 99% of all businesses in the UK were SMEs (the exception was the electricity, gas and water supply sector). This translated into 42% of total national turnover and 46% of non-government employment. This is a pattern which repeats around the world. Internationally, "SMEs - defined broadly as fs with up to 500 employees - typically account for up to 99 per cent of all firms, 60 per cent of employment and 40 - 60 per cent of output in national economies" (UNCTAD 1998, p1). The broad definition of SMEs, that is, up to 500 employees, used within this quote is consistent with one of the definitions used by the EU (although EU definitions vary and can also be either 250 or 300). Other definitions of 'SME' include those based on criteria relating to growth rate, level of reserves and supply chain issues. (Hughes and Gray 1998, p10)

For the purpose of this paper, *small business* is used as a term to describe businesses towards the smaller end of the spectrum. Such businesses would typically not, for example, employ specialist human resource managers, operate a training department or enjoy other similar specialist staffing characteristics of larger businesses. Key characteristics are:

- the total number or employees is below 100
- the majority of the operation is in one locality (though not necessarily on one site)
- ownership and control remain within the business.

At the other end of the scale, small is not taken to include 'micro', a term that refers to businesses with five or less employees.

While these characteristics relating to size can be used to define small businesses in general terms, attempts to move the definition onto a more specific level tend to be unproductive. Small businesses vary widely in their area of activity and in the ways in which they are organised and operated. The sector includes everything from 'dot com' businesses working internationally to local trades (plumbers, electricians, joiners, etc), professions (lawyers, accountants, doctors, etc) and retail businesses. The small business 'sector' encompasses sole traders, partnerships, limited companies, charities and cooperatives.

The scale of the challenge faced by SUfI and by other initiatives that are aimed at stimulating learning in small businesses is underlined by the extent to which colleges, universities and other bodies supporting learning have failed to engage successfully with this broad and diverse sector in the past. Working with small businesses can prove difficult, costly and disappointing for organisations involved in education and training (Hughes and Gray 1998, p10). The smaller the business, the less likely they are to embrace or, more critically, to resource, formal programmes of education and training. As Gibb has pointed out in considering small firms' training and competitiveness, "…. training does not appeal to the small firms population for a variety of obvious reasons relating to time and resource" (Gibb 1995, p14). Furthermore, low levels of participation in learning in small businesses result only in part from demand-side problems. They can also be attributed to supply side failure in that many of the education and training opportunities that are made available to small businesses are inappropriate in terms of time, cost and location. Matlay draws attention to the point that many of the solutions offered to this sector were developed for other situations and with larger enterprises in mind:

> Expedient attempts to down-scale and forcibly fit large-scale training strategies to resource-starved small businesses have resulted in a relative paucity of materials focusing specifically upon the human resource needs of smaller firms. (Matlay 1997, p578)

The shift required to ensure that learning materials and methodologies are appropriate to small businesses is a significant one and the assumption that learning relationships (between learners and between learning providers and learners) that have failed in the past can be dusted off and used effectively in elearning has to be recognised as fundamentally flawed. Indeed, despite the fact that the strong proposition behind this paper is that ICT presents exciting and challenging new opportunities, its adoption in work-based situations may eventually prove to owe as much to the limitations of traditional learning as to the benefits that new technologies present (Helm 1997, p41).

LISTENING TO LEARNERS AND DEVELOPING MODELS

The paper now turns to focus on learners in these complex, diverse and challenging situations drawing on research with small businesses carried out in Fife, Scotland between 1997 and 1999 (Thomson, 1999). A central component of the methodology used in this research was the creation, use and review of a number of models that were established and developed by exploring theory and researching practice. Review of literature and exploration of development work being carried out in other parts of Scotland and in the UK more generally can be described as having provided the clay from which the models were initially formed. The more detailed shape that then emerged was based on direct research with a number of small businesses involved in a project in which they were connected by way of a managed extranet to a college

of further and higher education. The models helped me to describe, to reflect and to theorise in these areas drawing mainly on a series of detailed, extended semi-structured interviews carried out in small businesses and with staff in the college. These were backed up by wider analysis of the businesses involved.

The models served two purposes. On the one hand, they were used as conceptual methodological devices to 'organise' and to reflect and, on the other, as practical 'tools' to describe, compare and consider the learning situations on which the research focussed. This was based on the position that models offer "… a form of explanation and are therefore closely related to understanding" (Lacey 1993, p127). The interviews with learners were divided into three stages. In the first stage, exploratory interviews were carried out with three learners in two separate businesses. The second stage involved interviews with twelve learners in four small businesses. One of the businesses visited in stage 2 had also been visited in stage 1. The third stage involved a return to this business and the development of a more detailed case study. Three interviews were carried out in stage 3 with learners who performed management roles and who, in addition to reflecting on their own learning, could provide an overview of the organisational context within which learning in the business took place.

In one session with small business employees, two learners were interviewed together. In all others the format was one-to-one and was largely unstructured. Analysis was carried out by marking up each interview and producing an individual summary. Second stage analysis was then carried out and an integrated summary was produced for each small business highlighting individual and common points and themes. The result was a set of source documents on three levels (backed up by audio tapes) - full transcript, individual summaries and SME summaries. The interviews with learners were part of a broader set of field research that included primary work with the 'learning provider', the college. One-to-one interviews were carried out with four college staff and focus group work with two cross-college groups of staff also contributed to the development of an understanding of the college's work with the businesses and with individual learners.

Two outline models were initially developed. The first of these was intended to illustrate *sources* of support for learners and the second the *forms* of support that appeared to be of most relevance to them. The initial understanding that had been developed and invested in these models was used as a basis on which to consider direct information provided by the interviews and other forms of investigation carried out. These highlighted the wide range of factors that shape the experience of individual learners in small businesses. Interviewees explored their social, learning and employment backgrounds; their roles as employees; their learning strategies and skills; and, the extent to which they found that ICT itself acted as a gateway or a barrier to learning. (Mainly a function of their familiarity with or fear of computers.) In addition to these individual characteristics, the research suggested that the experience of learners in small businesses is shaped by the forms of learning support available, by their ability to interact or engage with this support and, as part of this, by the social and organisational contexts within which learning takes place and support for learning is provided. The quality and coherence of learner opportunity can also be influenced by the lack of specialist human resource management and development skills and capacity in the business.

The developed versions of the two models initially produced are described briefly below. In addition to defining the shape of these models, the research provided an opportunity to identify and explore a wider range of factors relevant to successful ICT supported learning in small businesses. The importance of two further factors became increasingly apparent and resulted in the parallel production of two additional models (C and D) encompassing *learning skills* and the *learning context*.

It can be argued that the development of ICT supported learning in a small business has the potential to be a liberating experience. However, interviews with learners suggested that they require assistance if they are to acquire sophisticated learning skills and that interactions between the learner and the workplace and among learners are complex and, in some ways, contradictory. Learner comments suggested strongly that while they wish to have the freedom to develop as learners, they are likely to do this most effectively when the work-based context provides a structure, systems and other elements of control that are positive and supportive. If this is achieved, it can be argued that learners will benefit from an environment in which their learning is characterised by clarity and informed choice on their part as opposed to '…institutional control over the construction of the learner' (Gillard 1992, p182). Indeed, the paradox can be proposed that establishing broad, appropriate and collaborative structured contexts for work-based learners provides them with much more opportunity (and responsibility) to construct themselves as they learn and collaborate with other learners. Models C and D are described in a parallel paper which is currently in preparation.

LEARNING IN THE WORKPLACE

The points above relating to collaboration in learning and support for learners in the workplace focus attention on a specific question. What exactly is meant by work-based learning? In addressing this, it is important to bear in mind the primary function of the locations in which it takes place. Pillay, Brownlee et al. (1998, p240) point out that while workplaces can offer excellent learning opportunities, they are complex learning situations that have other priorities that, "…may hinder the learning process". Work-based learning takes place in locations that those involved recognise primarily as workplaces, not learning places. Problems resulting from lack of time, space or priority being applied to learning are common.

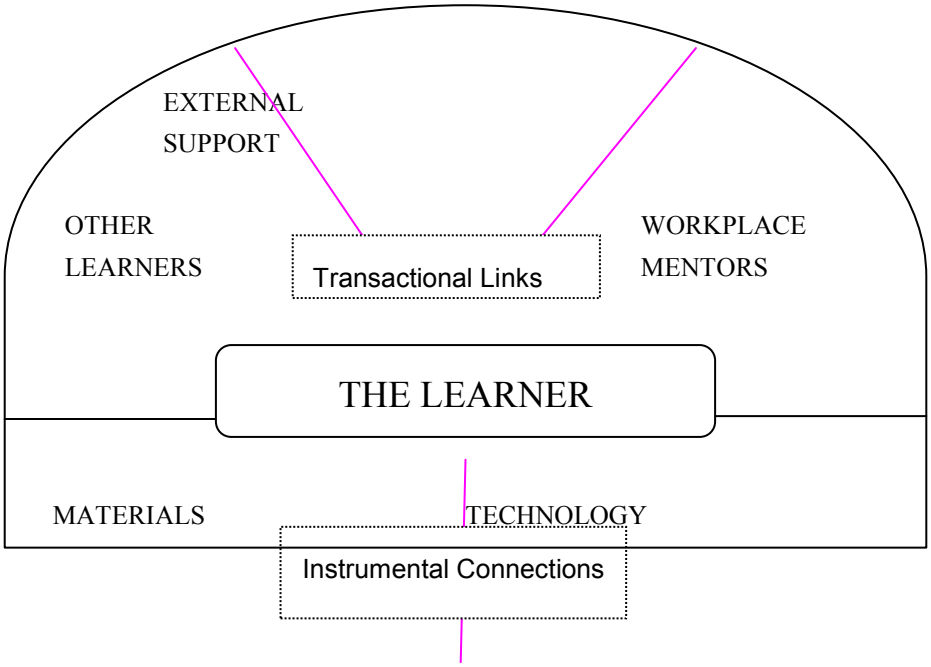
Within these complex contexts, the relationship between learning and work can take a number of forms as individuals observe, explore or self-instruct, receive on the job instruction, withdraw from the job to learn or are involved in various combinations of these and other options. In attempting to explore and understand this diverse set of potential forms of work-based learning, a useful distinction can be drawn between learning *at* work and learning *for* or *through* work (Reeve, Gallacher et al. 1998, p19).

The work of Jean Lave also presents terms and concepts that are helpful. Lave explores how people work and learn in dynamic, changing and developing contexts in which learning results from direct participation (Lave, 1993). In Lave's view the individual learner does not gain a discrete body of abstract knowledge to transport and reapply in later contexts. Instead, it is acquired by engaging in a range of processes under the attenuated conditions of *legitimate peripheral participation.* (Hanks 1991, p14) Lave emphasises the circularity of the relationship between learning and the workplace in a direct experiential sense: learning takes place in context, results from participation and develops through experience.

The direct research in small businesses described above provided an insight into situations in which a range of learning was taking place, some of which was contextualised and some, in an immediate, concrete or experiential sense, partly decontextualised. Learners were engaged in a range of activity including 'fully situated' learning (both supported by and not supported by ICT) in which they were learning through participation as part, for example, of their day-to-day work. It also included learning by way of transfer (or intentional instruction as Lave would have it) involving the computer as a medium of self-instruction or supported instruction. A further set of activity was also apparent (a point to which I return towards the end of this paper) that involved learning about learning. This was also fully situated as learners undertook a form of apprenticeship in learning and developed learning skills and strategies influenced by the culture and behaviour around them in the workplace.

SOURCES AND FORMS OF LEARNER SUPPORT

Review and reflection on the direct research carried out in small businesses combined with the interviews and focus group work with college staff provided an insight into how the development of ICT supported learning can be dominated by the technology and the materials involved. The specific needs of learners can be overshadowed by more abstract consideration of the availability and appropriateness of technology and materials. However, while it is important to see beyond the technology and to emphasise the centrality of learning and the learner, it is an oversimplification to suggest that technical issues should simply be set aside to allow pedagogy to be given its rightful place. The critical importance of the technology and, related to this, of the nature and format of materials in ICT supported learning has to be acknowledged and a balance achieved reflecting the fact that '... pedagogy and technology are ... fundamental and inseparable'. (Evans and Nation 1993, p197) The need to achieve this balance helped to define the shape of the first of the models, Model A, which highlights two broad sets of learner interfaces. The first of these, described as *transactional links*, relates to the range of potential supportive inter-personal transactions in which learners in small businesses might engage locally and at a distance. The second interface relates to the technology and the materials delivered or supported by this. These are described as *instrumental connections*.



MODEL A: LEARNER INTERFACES

Model A is based on a third generation view of distance learning (Garrison, 1985; Nipper, 1989; Evans and Nation, 1993;Thorpe, 1998). The key elements of third generation distance learning are interactivity (Thorpe 1998, p270) and the integration of new technologies and materials with support for learning. As such, its development has been tied closely to the emergence of the information society. Garrison (1997, p3) describes a "... post-industrial model of teaching and learning at a distance" which "... incorporates highly interactive communications technology along with the ideal of both personalised and collaborative learning".

The framework within which learners in small businesses collaborate is reflected by the three principal transactional links identified in Model A. These are learners' potential points of contact with external support (such as college or university tutors), in-company support (workplace mentors) and other learners. The transactional links combine with the two principal instrumental connections or 'non-human' points of contact for learners (with learning materials and technology). These various components shaped Model A as illustrated.

In considering sources and forms of support together, two points drawn from the interviews with learners can be emphasised. Firstly, with only one exception, these in-depth discussions indicated a strong demand or desire for some form of supportive interaction. Secondly, the patterns and levels of support in place at the time of the interviews differed between learners and between businesses and tended largely to be unstructured and unplanned. In the small business that sat at the centre of the research, interviews carried out in three separate sets stretching over 15 months revealed that learner support tended to take place informally (albeit also on an ad hoc basis) through inter-colleague collaboration. Interviewees referred frequently to asking others in the workplace for help and to working with others in their learning. In part, this could be attributed to the lack of proactive support coming from the college providing their learning programmes. However, it also appeared to be defined by the internal dynamics of the business and, more specifically, by inter-employee relationships in the business.

Over the 15 months a learning community developed and within this, learners turned first to internal help from colleagues prior to considering external, expert support. Based on the accounts of the learners involved, it is possible to argue that the overall patterns of support that will prove most effective in small businesses using ICT in learning are likely to prove quite different from those in traditional work-based, and fundamentally different from traditional college or university-based settings.

This is not to suggest that one simple model (that is, that teachers support learners) can be replaced by another (learners support each other). The apparent position that emerged from the interviews suggested that the range of links used and the emphasis placed on them will vary from learner to learner with the permutations broadly defined by Model A. A factor relevant to the successful development of ICT supported work-based learning that can be drawn from this is that a range of potential forms of support should be available and learners should be clear about how to engage with each potential link in a pattern that meets their specific individual needs. Learning opportunities should be made available in a way that allows "... individualised and cooperative and collaborative kinds of learning to be combined" (Friedrich 1997, p34).

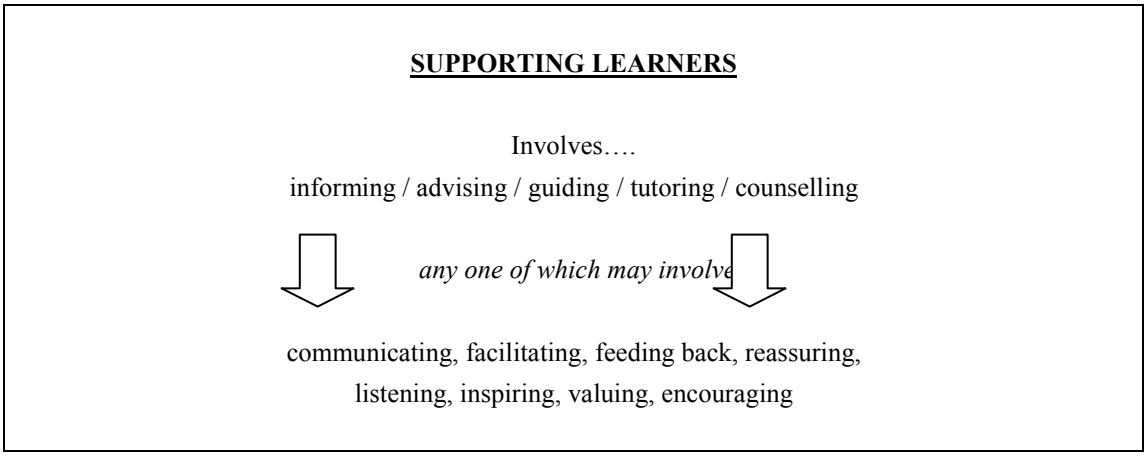
ICT opens the door to work-based learning in a small business moving on from the handing down or the handing on of information or skills from individual to individual. It has the potential to develop as a socially located exercise that rejects views of ICT supported learning as an individual exercise supported by a single umbilical link to a distant tutor. Much and potentially most of the social interaction can be local (that is, within the business) rather than distant. The lack of specialist or dedicated staff organising, delivering or supporting learning in small businesses makes the potential role of ICT doubly important in this respect.

While Model A identifies a set of points of interaction for learners, it does not include any indication of the forms of support required or provided at each interface. Rather than attempting to integrate these in (and complicating) the same model, these points were incorporated in a separate, linked model (Model B). The development of this followed a similar pattern to Model A. However, the initial outline drew significantly on a single source. In the mid-1980s during a period in which increasing priority was being placed in the UK on open learning as the way forward in further education, the Manpower Services Commission (MSC) funded the National Extension College to produce an 'Open Learning Toolkit'. Extracts from this in Lewis and Spencer (1986, p94). include the identification of the key roles of managers/teachers in open learning schemes when supporting learners. Their work has largely managed to stand the test of time in that it provided a basis on which to model the principal forms of learner support relevant to work-based learners in the 21st century.

As with Model A, the review of Model B drew on the interviews carried out with learners and took place in formal and informal discussions. This aspect of the research also benefited from work with staff in the college and drew significantly on the focus group sessions held there. Model B (along with Model A) was also critically reviewed in a workshop/focus

group session made up of individuals from six separate colleges (one from each), one member of staff from an industry 'lead body' and one from an ICT content publishing company. The workshop had been organised as part of an ICT focused project and each of those present had an interest and involvement in the field.

A major distinction between Model B and Model A is that while ICT supported learning creates new sources of support, different points of contact and new collaborative relationships for learners in small businesses, the *scope* of support required by these learners does not appear to differ significantly from that required by them in traditional (same time/same place) settings.



MODEL B: LEARNER SUPPORT

Although the shape of Model B was influenced by the MSC Toolkit and its subsequent use by Lewis and Spencer, the assumptions behind it differ significantly. The assumption that the principal (or, indeed, the sole) relationship relevant to the learner is that with her tutor or teacher is rejected. Models A and B reflect the view that college, university or other tutors are simply one of a range of possible sources of help and support available to the learner. Internal support in the workplace is viewed as a central factor in this form of work-based learning.

The individual points relating to learner behaviour and expectations that shaped Models A and B were set within a complex context. Various internal priorities of the small businesses combined with systems, structure and other factors to complicate or simplify, reward or discourage and displace or accommodate learning. The picture that emerged was one in which small businesses each have their own cultures, relationships, rules and objectives. These shape how people work together and set the context within which they can learn together. Each of the small businesses in which research was carried out showed similarities to and also differed from each of the others. Similarly, the learners interviewed presented distinct pictures of themselves as learners, workers and individuals. They described learning contexts that combined individual variety resulting from the interdependence between and mutual influence of learning and context (Lave 1993, p5) and collective stability resulting from parameters specific to each business. The research highlighted the extent to which the organisational and cultural context of businesses are critical in shaping work-based learning and in setting internal limits to variation in the learning context. These limits are both implicit in terms of norms of behaviour (including learning behaviour and expectations) and explicit where tasks and standards of performance are specified in the form of job descriptions and learning plans (Scribner 1984, p15).

LEARNING ABOUT LEARNING

Interviews with learners provided an insight into the sources and forms of support that they require. The accounts of learners also indicated how they interact and collaborate as they learn about learning. While interviews with learners indicated their individuality as learners, there was also a strong indication that this aspect of their individuality was 'clustered' to a significant extent. Individuals interviewed in each small business revealed similar characteristics and expectation to learners in the same business. Similarities within single businesses did not always appear in the other businesses involved. Furthermore, clustered differences also appeared to exist between different locations in one of the small businesses involved (which operated from three separate sites with distinct groups of employees on each). Employees at one location revealed expectations and assumptions about learning which differed significantly from those which appeared to prevail at the other two sites.

These points make it possible to suggest that individuals develop assumptions about and commitment to learning and learning skills and strategies within a form of apprenticeship model. This is consistent with views of apprenticeship and communities of practice set out by Fuller and Unwin (1998, p158) who point out that such communities in the workplace are:

> … not only defined geographically, but also by the connections and relationships that are developed between its members and between them and the activity that brings them together.

New learners in such situations begin to learn and, closely influenced by their colleagues, to learn about learning. Their understanding and expectations about learning in the workplace (that is, in the specific workplace in which they are located) are critically influenced by the behaviour and expectations of their co-participants. Small businesses conform to the characteristics of communities of practice set out by Wenger (1998). Where behaviour is positive and expectations are high, this can be expected to influence new employees and new learners in the workplace positively as they work out the meaning of learning in that location. Within the workplace (as in other situations) "… people in activity are skilful at, and are more often than not engaged in, helping each other to participate in changing ways in a changing world" (Lave, 1993, p5).

CONCLUDING POINTS

ICT has the potential to stimulate the construction of new models and relationships in which access to and take up of learning in small businesses can be increased within structured programmes of relevant, appropriate education and training. Recent progress with the development of technology, environments and materials has been impressive. However, it cannot simply be assumed that better learning results from more technology, more challenging instructional media and more interactivity by way of communications media (Thorpe 1998, p271). Furthermore, little will be achieved if ICT is simply used as a medium to rework inflexible forms of interaction with small businesses and work-based learners that have failed in the past or to repackage learning solutions developed for larger work-based situations. New solutions are required. Experience to date, including the research described in part in this paper, suggests several points that are relevant to the form that these should take. Four sets of points are highlighted in this conclusion.

Firstly, work-based learning has to be recognised as multi-dimensional. It takes place in a variety of formal and informal situations, is based on a wide range of activities and encompasses a broad spectrum from hands-on activity to abstract learning. The format in which opportunities are presented and organised for learners has to be sufficiently flexible to reflect this diversity and to do so in a way that recognises that learning tends to be viewed as a secondary, optional activity in the workplace.

Secondly, and building on this point, learning environments and materials and the provision of support for learners have to be developed in a way that encourages and accommodates both the intricate patterns of collaboration and coparticipation that exist between learners and the complex interaction between learners and the workplace as a learning site. ICT creates the opportunity to develop new relationships based on new technologies, new materials and ever-faster telecommunications and should be harnessed to support the development of mutually supportive communities of learners composed of interdependent individuals. This will require the further development of learning support methodologies that recognise and foster both personalised and collaborative approaches to learning.

Thirdly, the lack of specialist human resource management capacity in small businesses has to be recognised as an important factor. Small businesses are most likely to engage with learning when its organisation and management are uncomplicated and when learning tasks and content can be related directly to business need and business development. It is important that technology, environments, materials and methodology all combine to support the management of learning and the development of explicit links between learning and the needs of the business.

Finally, the successful stimulation of learning in small businesses is critically dependent on the development of a new understanding of the sources of support that learners require and a clear appreciation of the forms of support most appropriate to them. As collaborative learning between and among learners develops, contact with colleagues and other learners and the availability of more comprehensive, self contained and inspiring learning materials are likely to mean that learners can increasingly be expected to view traditional forms of tutor support as optional, distant features. Changes associated with the information society, with the emergence of third generation distance learning and with the history and inherent characteristics of work-based learning in small businesses are fundamentally changing the 'geography' of learning. These changes are resulting in a move from distance *learning* to distance *tutoring.* ICT shifts the organisation, support and assessment of learning more firmly into a freestanding format in the workplace and, as a result, represents a challenge to the distance and traditional learning establishments to reconceptualise radically their relationships with the small business sector.

In the absence of an understanding of and a willingness to address points such as these, current broad policies in the UK aimed at the development of a learning society and specific lifelong learning initiatives such as SUfI will fail to attract and to benefit individual learners and workers and the small businesses in which they are employed.

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