Chapter 3
Developing Knowledge for Qualified Professionals

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Introduction

The approach we take is to start with the experience of workplace learning. This means putting the individual employees centre stage and working outwards to learn from work groups, and other colleagues. This approach leads naturally to seeking how organisations can better facilitate workplace learning. In reviewing the research presented in this chapter, it is important to recognise that workplace learning is multi-faceted. Eraut and Hirsch (2007) highlight that, for individuals, there are four key factors to consider in relation to workplace learning:

- The capabilities an individual has in the broadest terms, including personal attributes, skills, knowledge, experience, and understanding;
- Their performance at work and how this is perceived by others and themselves;
- The formal and informal learning which takes place for that individual, and the processes by which this happens. Such learning is not necessarily planned or conscious;
- The context in which the individual is working and learning. This includes both the job and its wider context, especially the workplace culture, social interactions and management processes.

These four factors which interact with each other are illustrated in Fig. 3.1.

Different Types of Knowledge

The complexity of learning, and the contextual variations that sustain individuals at work, draw us to understand learning from both personal and social perspectives, although separating these types of knowledge is not always easy.

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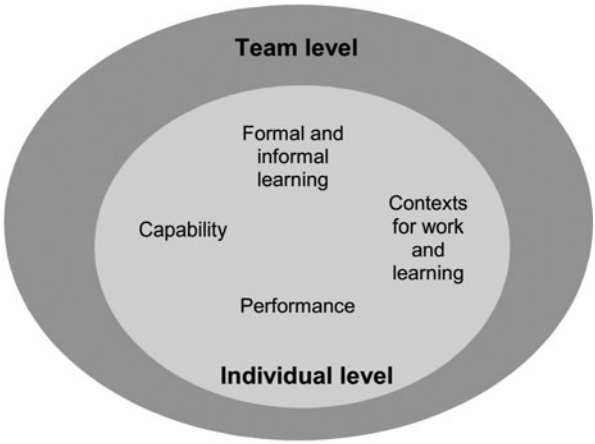

Fig. 3.1 Key aspects of workplace learning

A personal perspective on knowledge and learning enables us to explore: what people know, what people can do, how they learn, and how different people interpret and use what they learn. A social perspective on knowledge highlights the social nature of most contexts for learning, the social origins of knowledge that is shared or passed on, the cultural practices that provide knowledge, and resources for learning.

'Knowledge', of course, has various meanings and interpretations. In perhaps its narrowest interpretation we have 'codified knowledge'—the kind stored in books, and believed to be 'true' or 'fact'. Creating and using codified knowledge requires skills (reading, writing, reasoning, etc.), which form 'practical knowledge'. In all workplaces, to varying degrees, workers need to use codified and practical knowledge—some of which they will learn through formal education, and some of which will be 'implicit knowledge' (they will learn it from their family, community, on-the-job, etc.). 'Cultural knowledge' also plays a role in the workplace. This is usually uncodified and acquired, for instance, through participation in working practices.

Personal knowledge is defined as what a person brings into new situations that enables them to think and act in those situations. This definition is not based on its truth but on its use. Looking more closely at personal knowledge we can say that it comprises:

- Codified knowledge ready for use;
- Knowledge acquired through acculturation;
- Knowledge constructed from experience, social interaction and reflection;
- Skills developed through practice with feedback;
- Episodes, impressions and images that provide the foundations for informal knowledge;
- Self-knowledge, attitudes, values and emotions.

The evidence of personal knowledge comes mainly from observations of performance, and this implies a holistic rather than fragmented approach to knowledge

because, unless one stops to deliberate, the knowledge one uses is already available in an integrated form and ready for action. The challenge for professional learning is finding the balance between, on the one hand, developing separate aspects of performance, or on the other, focusing on simple holistic cases of performance, and then increasing their difficulty.

Memory

In understanding workplace learning it helps to be aware of memory, and of how we remember and use knowledge. Tulving's Theory of Memory (1972) distinguishes between *episodic memory* (for specific personally experienced events), and *semantic memory* (for generalised knowledge that transcends particular episodes and is associated with public codified knowledge). Linking these two types of memory depends on the use of reflection, to connect personally experienced episodes with codified semantic knowledge.

Our performance and behaviour may be influenced by either our episodic memory of practical experiences, or our semantic memory of codified knowledge—or both. The tacit knowledge we have via our episodic memory may be more quickly accessed and used than our semantic memory—so when a quick solution or action is needed in a situation, we are more likely to draw on our tacit knowledge from our episodic memory, because our knowledge from our semantic memory may not be quickly useable without more learning to make it 'fit' the situation.

Towards an Epistemology of Practice

Three significant research projects on workplace learning, conducted over a ten-year period, have informed our understanding of workplace learning and the concepts above. The first project was a three-year study for the English National Board for Nursing and Midwifery Education, within which the main project was *Learning to Use Scientific Knowledge in Education and Practice Settings*. The second was an Economic and Social Research Council (ESRC) project which interviewed managers and business, engineering and health professionals. The third project, from ESRC's *Teaching and Learning Research Programme,* allowed us to follow work in three different professions: nursing, engineering and chartered accountancy.

The English National Board for Nursing and Midwifery Education project ran from 1993 to 1995 and focused on the question of how best to learn how to use scientific knowledge in education and practice settings. It involved the evaluation of learning on biological, behavioural and social sciences for pre-registration nursing and midwifery programmes, and showed that most nurses failed to receive learning that connected their formal work with their practical work (Eraut et al. 1995). The research focused on three areas of professional practice—midwifery, general adult

surgical wards, and mental health nursing—and six areas of scientific knowledge—fluids and electrolytes, nutrition, acute pain, shock, stress and self-esteem.

The researchers observed many different approaches to linking scientific knowledge with practice. They found, however, that only some teachers accepted responsibility for linking scientific knowledge with professional practice; and even they had insufficient opportunity to pursue this goal, since curricula provided little time for teaching in hospital environments. Few managers appeared to recognise that there was a conflict between the amount of scientific knowledge that was taught, and the time and teaching resources needed to help teachers learn how to use such scientific knowledge.

The second project, funded by the ESRC, involved a group of 11 teams studying aspects of The Learning Society. The project focused on: (1) learning from other people at work; (2) the impact of managers on learning in the workplace (120 interviews focused on business, engineering and health care, and 90 interviewees participated in second interviews 6–12 months later); and (3) from 1999 onwards, Eraut's work focused on non-formal learning and tacit knowledge in professional work.

Performance

Emanating from the research, Eraut et al. (2000) developed a generic model on mid-career learning of managers and professionals comprising four distinct but interacting elements of 'performance':[1]

1. Assessing clients and/or situations, sometimes briefly, sometimes involving a long process of investigation and consultation;
2. Deciding what, if any, action to take, both immediately and over a longer period, either on one's own or as a leader or member of a team;
3. Pursuing an agreed course of action, modifying, consulting and reassessing as and when necessary;
4. Meta-cognitive monitoring by individuals and/or groups of the people involved, whether agents or clients of the general progress of the case, problem, project or situation and, sometimes, also learning through reflection on the experience.

Each element of performance can take many different forms, according to the context, the time available and the types of technical and personal expertise being deployed. Although analytically distinct, they are often combined into an integrated performance that does not follow a simple sequence of assessment, decision and

[1] 'We use the term "performance" in a broad sense that includes thoughts and actions that take place within a chosen performance period, and those involved in preparing for, or reflecting on, that period.' (Eraut and Hirsch 2007).

Table 3.1 Types of process and modes of cognition (Eraut 2000)

Thought/action	Mode of Cognition		
	Instant/reflex	Rapid/intuitive	Deliberative/analytic
Reading of the situation	Pattern recognition	Rapid interpretation	Review involving discussions and/or analysis
Decision-making	Instant response	Intuitive	Deliberative with some analysis or discussion
Overt activity	Routinised actions	Routines punctuated by rapid decisions	Planned actions with periodic progress reviews
Metacognitive processes	Situational awareness	Implicit monitoring Short, reactive reflections	Conscious monitoring of thought and activity Self-management. Evaluation

action. Instead, the research findings provide a much more complex picture of the decision-making process and the nature of good performance in the workplace:

- Experts frequently generate and evaluate a single option rather than multiple options.
- Experts are distinguished from novices mainly by their situation assessment abilities, not their general reasoning skills.
- Because most naturalistic decision problems are ill-structured, decision-makers choose an option that is good enough, though not necessarily the best.
- Reasoning and acting are interleaved, rather than segregated (Weick 1983).
- Instead of analysing all facets of a situation, making a decision and then acting, it appears that in complex realistic situations people think a little, act a little, and then evaluate the outcomes and think and act some more (Connelly and Wagner 1988).

The implications for a manager's decision-making practice are that: (1) the relationship between knowledge and decision-making is rarely simple; (2) good decision-making is critically dependent on how the decision is framed by the decision-makers in the light of their situational understanding; and (3) the balance is tilted towards the personal knowledge of the decision-maker(s) and less towards any codified knowledge that might be available. When time is scarce, searching the literature or consulting a colleague is only tried when there is a high expectancy of getting a valuable pay-off very quickly.

Time and Cognition/Performance

Table 3.1 illustrates how the time variable affects the mode of cognition and/or mode of consultation of those involved. The model divides the time-continuum into three columns, whose headings seek to describe modes of cognition used by decision-makers, although the timescale may differ according to the way they work. For example, in one context rapid/intuitive might refer to a minute, while in another context it might include periods of up to ten minutes or even half-an-hour. The

critical feature is that the decision-makers have limited time to deliberate or think in any depth.

The instant/reflex mode of cognition describes routinised behaviour that, at most, is semi-conscious. The rapid/intuitive mode of cognition indicates greater awareness of what is going on, and is often characterised by rapid decision-making within a period of continuous, semi-routinised action. Typically, it involves recognition of situations by comparison with similar situations previously encountered, then responding to them with already learned procedures (Klein 1989; Eraut et al. 1995). The time available affects the degree of mismatch that is tolerated, because rejection of familiar actions based on prior experience leads to deliberative problem-solving, and hence to a more time-consuming approach. As workers become more experienced, they acquire a wider range of precedents and recognise them more quickly and more accurately. The deliberative/analytic mode is characterised by explicit thinking of individuals or groups, possibly accompanied by consultation with others. It often involves the conscious use of different types of prior knowledge, and their application to new situations. These areas of knowledge may be either used in accustomed ways, with familiar adaptations, or combined in novel ways that require a significant period of problem-solving.

The relationship between time and cognition is probably interactive: shortage of time forces people to adopt a more intuitive approach, while the intuitive routines developed by experience enable people to do things more quickly. Crowded contexts also force people to be more selective with their attention and to process their incoming information more rapidly. Even when a group has some time for discussion, individual members may feel that their contributions have to be short, to the point and rapid. Hence meta-processes are limited to implicit monitoring and short, reactive reflections. But as more time becomes available, the role of meta-processes becomes more complex, expanding beyond self-awareness and monitoring to include the framing of problems, thinking about the deliberative process itself and how it is being handled.

Experienced people typically prefer to do many things quickly and smoothly if they are confident in their own proficiency. However, there are also situations where even proficient workers, who routinely work with crowded contexts, feel forced by pressure for productivity. Then quality falls, the level of risk is higher, and job satisfaction plummets. Both the development of proficiency, and learning to cope with pressures for rapid action, involve routinisation and further work; but whereas the routines associated with proficiency lead to improvement in both quality and productivity, coping routines increase productivity at the expense of quality. In either case, routinisation leads to knowledge becoming less explicit and less easily shared with others, i.e. more tacit. Tacit knowledge of this kind is also likely to lose value over time because circumstances change, new practices develop and people start to shortcut routines without being aware that they are reducing their effectiveness.

The greatest benefit of routinisation is that it reduces workers' cognitive load, and thus enables them to give more attention to monitoring the situation or communicating with clients and colleagues, hence becoming both more productive and more effective. We would not survive for long if we could not take for granted many

aspects of what we see and do in everyday activities. Not everyone, however, takes the opportunity to take a more evaluative perspective on their practice. It is often difficult to disentangle routines from the practices in which they are embedded; and this makes it difficult, if not impossible, to describe them. Indeed, the main purpose of routines is to avoid having to think about them. The exception to this is when routines lead to coping mechanisms for dealing with work overloads with little regard for quality.

Routines are very difficult to change, not only because this would imply a negative evaluation of the previous practice, but also because such change involves a period of disorientation, while old routines are gradually unlearned and new routines are gradually developed. During this period, practitioners feel like novices without having the excuses, or discounts on performance normally accorded to novices. The pain of change lies in the loss of control over one's own practice, when one's tacit knowledge ceases to provide the necessary support and the resultant emotional turmoil is reducing one's motivation.

The Tacit Dimension of Performance

Getting to know other people typically involves the absorption of a great deal of incidental information, acquired by being a participant observer when others are present. While some of this knowledge may be explicit, much more will be gathered through impressions of their behaviour and character. Stories are normally regarded as an explicit form of communication, but they also carry implicit cultural and personal knowledge. We learn more about the people we meet than we are able to explain, and some of that knowledge may be so provisional that we are reluctant to make it explicit. Eraut (2004a) shows informal learning in the workplace. What influences our behaviour is our aggregated knowledge of that person, and that is usually a largely tacit process to which memories of incidents, encounters and episodes contribute in ways we cannot fully apprehend.

Another factor is the way we tend to organise our knowledge of people: this affects how we perceive their behaviour, as well as how we structure our memories of them, and neither is a fully conscious process. Managers have an additional problem, because their memories of occasions when they interacted with their subordinates are based on atypical samples of their subordinates' behaviour, caused by their own managerial presence. Many situations, for example, are largely characterised, not only by the differing perspectives of the participants present, but also by the assumed behaviour of 'significant others' off-stage. Knowledge of these perspectives depends not only on what people do and say, but also on how their actions are interpreted by others in the context of what they already 'know' about the people concerned. Thus tacit understandings or misunderstandings contribute not only to relationships and assumptions within an organisation, but also to transactions with external clients, customers, suppliers and stakeholders.

In the previous section, we discussed the tacit nature of rapid intuitive decision-making in terms of situational recognition and prior experience. When deciding what

to say and how, or when asked for advice or giving feedback, decision-makers may discuss the options, then eventually decide on what seems to them to be 'the best fit'. This final decision will often be intuitive, drawing on the tacit aggregation of knowledge when there is less time or motivation to collect evidence or construct and clarify arguments. When there is even less time, decisions will be described as 'backing a hunch'.

A great deal of monitoring also involves tacit knowledge. A key issue concerns finding space for monitoring: how does one give any attention to self-monitoring when there are many apparently more urgent things demanding your attention; and how does one set up, or take advantage of, informal meetings to pursue one's monitoring agenda with others. A second issue relates to what one notices during conversations and observations. Whether one relies on spotting problems or more systematically scanning the environment, one still has to notice any relevant evidence; and this is particularly difficult if it is not very salient or rarely appears. Thirdly, one may also have to decide, often very quickly, whether or not to ignore, make a note for later consideration or make a rapid intervention. More explicit monitoring is only likely when seeking to avoid previous mistakes, and even then it may be only temporary.

Early Career Learning at Work

The ESRC Teaching and Learning Research Programme—the third project to have significant influence on our understanding of workplace learning—allowed us to follow three years of professional work in very different professions: nursing, engineering and chartered accountancy. Our three main questions were: what did the participating professionals learn; how was it being learned; and what were the factors that affected learning in a wide range of workplace settings?

We found that our participants learned much more through their work than through formally organised learning events, even in accountancy which included a substantial programme of formal training and examinations. We distinguished between (1) *work processes*, such as working with clients, working with colleagues or tackling challenging tasks, from which they learned as they went along; (2) *specific formal learning*, such as being coached, taking a course, or using other formal ways of working; and (3) *shorter learning activities* such as asking questions, giving and receiving feedback, negotiation, or using mediating artefacts. The full repertoire is shown in Table 3.2.

Our conclusion was that, given favourable conditions, learning in the workplace can be enhanced by improving opportunities for productive engagement in a wide range of work processes. Moreover, working alongside a colleague for a while enables someone to learn by asking questions and receiving feedback about shared activities and events as and when they happen. It also allows the learner to see how a colleague reads situations, monitors them and takes decisions. These activities are largely tacit and difficult to explain, even by experienced professionals. Working in

Table 3.2 Implications for learning at work

Work processes with learning as a by-product	Formal learning processes located at or near the workplace	Learning activities located within work or learning processes
Participation in group processes	Being supervised	Asking questions
Working alongside others	Being coached	Getting information
Consultation	Being mentored	Locating resource people
Tackling challenging tasks and roles	Shadowing	Listening and observing
	Visiting other sites	Negotiation
Problem-solving	Conferences	Reflecting
Trying things out	Short courses	Learning from mistakes
Consolidating, extending and refining skills	Working for a qualification	Giving and receiving feedback
	Independent study	Use of mediating artefacts (see explanation below)
Working with clients		

groups, whose members have different kinds of expertise, helps people to understand the nature of that expertise and make better use of it; but then the expertise becomes so normal that work processes cover 80 % or more of the learning at work (Eraut and Hirsh 2007), and they cease to talk about their 'well known' day-to-day work.

Work processes with learning as a by-product might involve:

- Participation in group processes covers team-working towards a common outcome, and groups set up for a special purpose, such as discussing a client, problem-solving, reviewing some practices, planning ahead, or responding to external changes.
- Working alongside others allows people to observe and listen to others at work and to participate in activities; and hence to learn some new practices and new perspectives, to become aware of different kinds of knowledge and expertise, and to gain some sense of other people's tacit knowledge. This mode of learning, which includes a lot of observation as well as discussion, is extremely important for learning tacit knowledge or the knowledge that underpins routines and intuitive decisions. When people see what is being said and done, explanations can be much shorter and the fine detail of incidents is still in people's minds; and multi-sensory engagement over some time enables the gradual development of tacit as well as explicit situational understanding.
- Consultations within or outside the working group, or even outside the organisation, are used for co-ordinating activities or getting advice. The act of initiating a consultation, however, depends on the relationships between the parties, the extent of a worker's network and the culture of the workplace. For newcomers the distinction between a consultation and being mentored or supervised is not always clear, as part of a mentor's or supervisor's role is making oneself available for consultation.
- Tackling challenging tasks and roles requires on-the-job learning and, if successful, leads to increased motivation and confidence. However, people are less inclined to take on challenges unless they feel confident, both in their ability

to succeed as a result of previous experience and in the support of their manager and/or colleagues. Without such previous experience and support, challenges pose too high a risk.

- Problem-solving, individually or in groups, necessarily entails learning; otherwise there would be no problem. Such problems are not just technical, they may involve acquiring new knowledge before one can start, searching for relevant information and informants, imagination, persistence and interpersonal negotiation.
- Trying things out is distinguished from less purposeful behaviour by the intention to learn from the experience. It requires some prior assessment of risk, especially where other people might be affected, and may require special arrangements for getting feedback, as well as time for subsequent reflection and evaluation.
- Consolidating, extending and refining skills are particularly important when entering new jobs or taking on new roles, when these processes are sometimes supported by episodes of supervision, coaching or feedback. They are greatly helped by informal personal support and some sense of an onward learning trajectory.
- Working with clients also entails learning about the client, from any novel aspects of the client's problem or request, and from any new ideas that arise from the encounter. Some workers have daily experiences of working with clients, which may or may not be recognised as learning opportunities. Some progress from less to more important clients, or from those with simple needs to those with more complex needs. There can also be a strong emotional dimension, when a client arrives in a distressed state or is about to receive bad news. This is a context where sharing experiences can be helpful. Another factor is the extent to which client contact gives the work meaning and value, and thus enhances workers' sense of collective purpose.

'*Mediating artefacts*' feature in Table 3.2, and are worth explaining in a little more detail. They play a very important role in structuring work and sharing information, by mediating group learning about clients or projects in progress. Some artefacts in daily use carry information in a standard way that novices soon learn to understand. In both nursing and engineering, these include measurements, diagrams and photographs. For example, patient records cover temperature, fluid intake and output, drugs administration, biochemical data and various types of image. These refer both to the immediate past and to plans for the immediate future, and salient features considered important are prioritised for the incoming shift at every handover. Understanding the thinking behind the handover rituals is essential learning for newly qualified nurses.

Designated mentors were provided by all employers involved in our research, but most mentoring and coaching was provided by 'helpful others', who were already on the spot. This was strongest in the audit teams on client premises, where novice accountants learned from those just ahead of them. In engineering, new graduates, usually working in open-plan offices, were strongly encouraged to seek advice, and soon learned who could help them most with each area of expertise. Only in nursing did designated mentors play a significant role; but while some official mentors provided a lifeline for their novices, others were either allocated to a different shift or

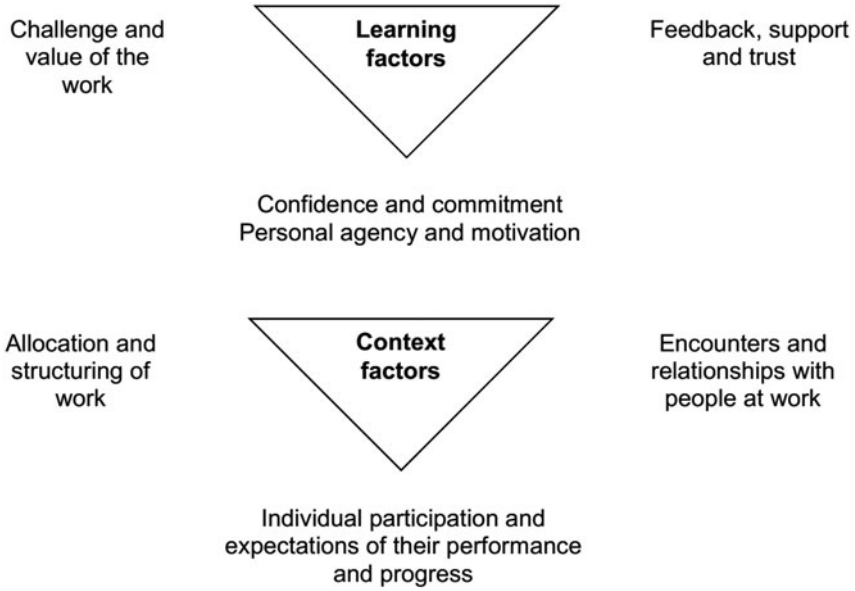

Fig. 3.2 Factors affecting learning at work: the two triangle model

unwilling to take the role seriously. Formal learning was strongest for accountants, who still needed to get a relevant qualification. Engineers had considerable access to continuing professional learning opportunities, but only rarely received any mentoring or coaching. Nurses found it difficult to get release for continuing professional learning and received less coaching from the wards than they needed, because it was difficult to release them.

We found that *feedback and support* were critically important for confidence and commitment, especially during the new employees' first few months, when the feedback and support were best provided by the person on the spot. This happened within the distributed apprenticeship approach used by our accountancy partners, and in other professions where the local workplace had developed a positive learning culture of mutual support. In the longer term, more normative feedback on progress and meeting organisational expectations also became important.

Equally important for developing confidence after the first few months were the right level of challenge and the perceived value of the work. This led us to a Two Triangle Model (Eraut 2007)—one for *learning factors* and one for *context factors* that affect learning at work (see Fig. 3.2). This diagram helped us to organise factors affecting workplace learning in each profession.

The research findings, as organised in the diagram, indicated for instance that confidence plays a big part in learning at work, and that this confidence is affected by the challenges a person is able to meet, and the support available to them. There is a triangular relationship between challenge, support and confidence. Similar triangular relationships were identified between allocation/structuring of work, relationships at work, and an individuals' participation and expectations for performance.

To illustrate this with specific examples, we found that newly qualified nurses were *over*-challenged physically, mentally and emotionally by their sudden increase in responsibility and the unceasing pressure of work in most ward environments. While some engineers progressed through a series of challenging assignments with remarkable rapidity, most were *under*-challenged and many were seriously under-challenged. Nearly all the accountants, however, were *appropriately* challenged for the majority of their traineeship.

Factors affecting participants' commitment to work, to colleagues, and to their employers included the quality of the support and feedback received, appreciation of the value of their work, and their personal sense of agency, which was not necessarily aligned with their employer's priorities.

For novice professionals to make good progress, a significant proportion of their work needed to be sufficiently new to challenge them, without being so daunting as to reduce their confidence. Their workload needed to be at a level that allowed them to respond to new challenges reflectively, rather than develop coping mechanisms that might later prove ineffective.

Thus, managers and/or senior colleagues had to balance the immediate demands of the job against the needs of the trainees to broaden their experience. This usually worked well in our two accountancy organisations; but in engineering the appropriateness of the allocated work differed hugely according to the company and the specialty. Very few graduate engineers in electronics or computer science had sufficiently challenging work, and nobody appeared to take any responsibility for addressing this problem. In nursing the quality of learning was mainly influenced by the ward manager and her senior nurses; some of the best and worst learning environments we observed co-existed in the same departments of the same hospitals.

The allocation and structuring of work was central to our participants' progress, because it affected:

- The difficulty or challenge of the work;
- The extent to which it was individual or collaborative;
- The opportunities for meeting, observing and working alongside people who had more or different expertise, and for forming relationships that might provide feedback and support.

Both the significance and the importance of the categories shown in the triangle diagrams changed markedly over the three years of the study, as the nature of the work changed. These changes included:

1. *Dealing with more difficult and complex problems,* e.g. sicker patients, larger sections of an audit, more flexible use of protocols, designing discrete components, and use of formal knowledge;
2. *Widening their range of competence,* e.g. budgets, value for money, liaising with clients, other professions or agencies, secondments, and giving presentations;
3. *Acquiring greater responsibility,* e.g. being 'in charge', becoming a team leader or manager, dealing with personnel, supporting other people's learning.

Figures 3.3, 3.4 and 3.5 illustrate the Two Triangle Model using the specific examples of the early career learning for chartered accountants, engineers and nurses. In each

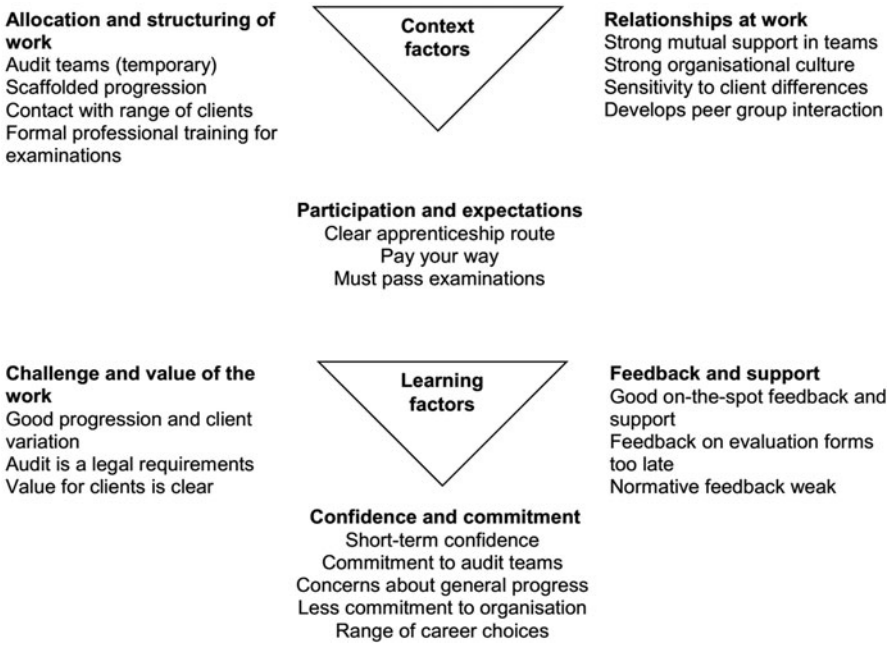

Fig. 3.3 Accountants: context factors and learning factors

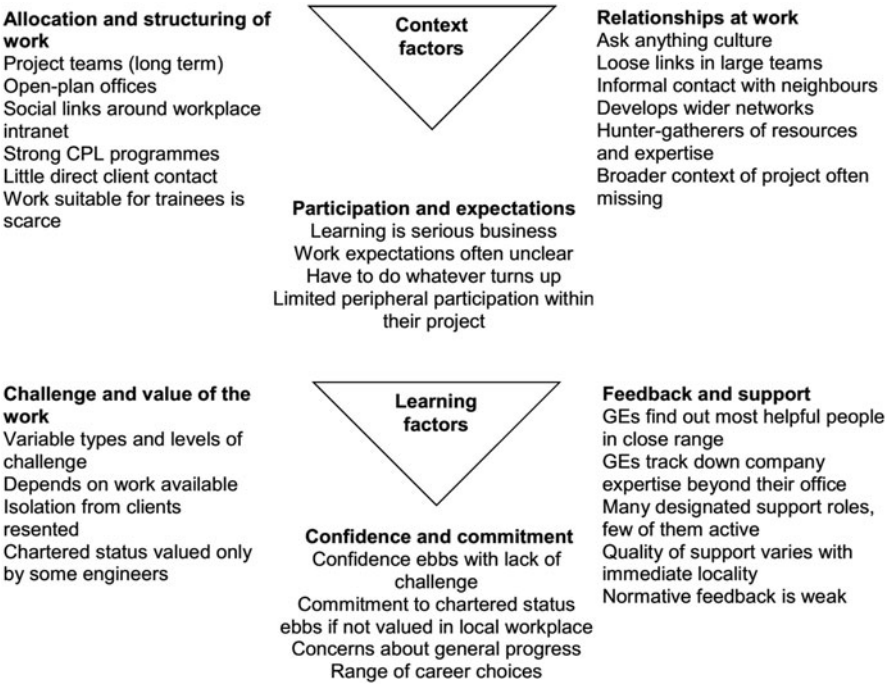

Fig. 3.4 Graduate Engineers (GEs): context factors and learning factors

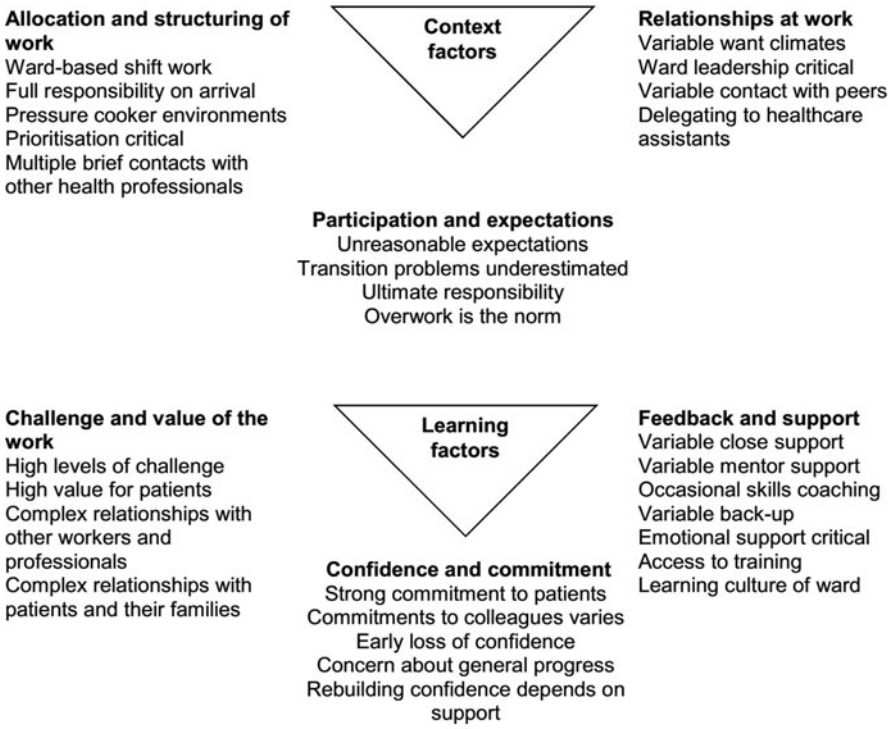

Fig. 3.5 Newly qualified nurses: context factors and learning factors

profession, we started from the perspective of looking at context factors before learning factors.

Points of Interest (Fig. 3.3)

- Accounts act as mediating artefacts, around which knowledge is shared;
- Audit work involves translation between accounts (professional discourse) and business processes (client discourse), and much of it is done on client premises;
- Trainees learn about several different kinds of business;
- Only a small minority of trainees are graduates in accountancy;
- A lot of the support comes from other trainees only a year or less ahead.

Points of Interest (Fig. 3.4)

- Sketches and designs often function as mediating artefacts;
- Lack of site experience reduces the understanding, morale and value of graduate engineers;
- Big differences between engineering disciplines, with electronic and computing work offering the least challenge.

Points of Interest (Fig. 3.5)

- Learning culture mainly determined at ward level;
- Considerable cross-professional work;
- Strong interest in gaining higher qualifications.

The Role of Learning Trajectories

We conceptualised our participants' learning as progressing along 'learning trajectories'; in order to accommodate both continuity and discontinuity of lifelong learning where:

- *Explicit progress* was being made on several trajectories simultaneously;
- *Implicit progress* could be inferred and later acknowledged on some trajectories;
- *Lack of use* on some trajectories usually meant that further learning would be required.

The research confirmed that newly qualified professionals have remarkably varied profiles across most relevant learning trajectories, as a result of both their individual agency and the different opportunities offered by the learning contexts through which they passed. Table 3.3 shows a typology of learning trajectories (Eraut and Hirsh 2007) which both encourages continuity of learning and counteracts the widespread delusion that a professional qualification properly represents a person's capability. Since it is unusual for an episode of work to use knowledge from only one trajectory, the seamless integration of personal knowledge from several trajectories is an important additional learning challenge. Thus the complexity of expertise is best represented by combining accounts of holistic performance episodes with trajectories of different types of knowledge.

The 'points' on these learning trajectories are best considered as windows on episodes of practice, and should include information about:

- The *setting* in which it took place, and features of that setting that might have affected the availability of resources;
- The *conditions* under which the performance took place, e.g., degree of supervision, pressure of time, crowdedness and conflicting priorities;
- The *situations* shown in Table 3.3 help to find the most important aspects of the assignment, and the other *categories of expertise* involved;
- Any differences from previously recorded episodes;
- Indicators of *expertise in the domain of the trajectory* having been maintained, widened or enhanced.

Sharu (2012) added several further points needed for Advanced Nurse Practitioners' professional learning:

- Fighting one's corner;
- Self-promotion;

Table 3.3 A typology of learning trajectories

Task Performance	*Role Performance*
Speed and fluency	Prioritisation
Complexity of tasks and problems	Range of responsibility
Range of skills required	Supporting other people's learning
Communication with a wide range of people	Leadership
Collaborative work	Accountability
Awareness and Understanding	Supervisory role
Other people: colleagues, customers, managers, etc.	Delegation
Contexts and situations	Handling ethical issues
One's own organisation	Coping with unexpected problems
Problems and risks	Crisis management
Priorities and strategic issues	Keeping up-to-date
Value issues	
Personal Development	*Knowledge of the Field*
Self evaluation	Knowing the repertoire of practices
Self management	Evidence of their effectiveness in particular contexts
Handling emotions	Using knowledge resources and networks
Building and sustaining relationships	Knowing what you need to know
Disposition to attend to other perspectives	Making practices more explicit
Disposition to consult and work with others	Conceptual and theoretical thinking
Disposition to learn and improve one's practice	Use of evidence and argument
Accessing relevant knowledge and expertise	Writing appropriate documents
Ability to learn from experience	
Teamwork	*Decision-making and Problem-solving*
Collaborative work	When to seek expert help
Facilitating social relations	Dealing with complexity
Joint planning and problem-solving	Group decision-making
Ability to engage in and promote mutual learning	Problem analysis
	Formulating and evaluating options
	Managing the process within an appropriate timescale
	Decision-making under pressure
	Judgement
	Quality of performance, output and outcomes
	Priorities
	Value issues
	Levels of risk

- Becoming a change agent;
- Developing a new professional persona

and role performance:

- Pioneership;
- Negotiating one's own role;
- Self-auditing;
- Autonomy.

Our own research recognises the need to develop a learning culture, based on confidence and trust in managers and colleagues, giving and receiving feedback without blame, and mutual learning and support. This requires:

- Learning from experiences, positive and negative, at both group and individual level;
- Learning from colleagues, clients and visitors;
- Locating and using relevant knowledge from outside sources;
- Giving attention to the emotional dimension of work;
- Discussing and reviewing learning opportunities, and their appropriateness;
- Reviewing work processes and opportunities for quality improvement.

This use of learning trajectories need not be a rival to the use of competences; because competences can be used in current situations, while learning trajectories focus on how they arrived and what is coming next. Thus, competence is the ability to perform the tasks and roles required to the expected standard, while learning trajectories are preparing for future developments. Both are needed for ongoing work.

The problem with most competency-based learning is not primarily with the competencies themselves, but with how they are used and understood. Many of the items in our Typology of Learning Trajectories, especially working in groups and personal feelings and qualities (McKee and Eraut 2012), are given little attention in either education or workplace settings. The need for good holistic performances, which combine several skills, is critical for developing good work; and examining learner pathways over time gives much better evidence than single assessment events. Hence, discussions about learning trajectories and learning goals should become generally available across the population, regardless of age and formal qualifications.

Broad representations of competence are often too vague for any practical use, and specific representations tend to become too numerous to handle, as lists of competencies approach the size of telephone directories. Formal assessments need detailed learning objectives, but assessors rarely agree with this, unless there is a past history of developing a consensus by discussing individual cases. Moreover, the half-life of such a consensus is usually very short, because people change who influence the implicit social agreement on what counts as competence. Both listing important attributes of competence and describing their integration into performance is a part-whole problem, for which nearly all previous representations have focused only on the parts. The changing and conditional nature of what counts as competence over time and between contexts may be understood and work well with one group, but not so well with another.

The Role of Managers in Supporting Learning Most of the examples of the use of mediating artefacts involve groups rather than individuals, and this is crucial for their effective use. When artefacts are seen as mediating tools rather than reified knowledge, we come to recognise that much of our knowledge lies in the discussions we have around the mediating artefacts rather than in the artefacts themselves. It is these crucial discussions that are missing from competency-based assessment and training. Examples of good practice identified through our research included:

- Protocols for deciding when a patient needs urgent attention;
- The contents of the nursing matrix on causes of acute pain;
- Engineers discussing virtual design 'drawings' on the screen over the telephone;
- Learning to translate business processes into audited accounts;
- Using still pictures rather than videos for discussing operations, so they can be more easily explained by patients and medical students.

This did not mean that managers had to do most of the work themselves, because much of what is needed can be done by people other than managers. However, it did mean that professional workers should be involved in change, whether it came from their own ideas or those of their colleagues. We found that many workers learned from others without being aware of their own growing knowledge, because they did not count informal discussions as new knowledge. Often the manager's role is to set the climate and encourage their staff to develop new ideas. To fulfil this role managers need to know that:

- Being over-challenged or under-challenged is bad for learning and morale. So providing an appropriate level of challenge is important for developing confidence and making good progress.
- The quantity and quality of informal learning can be enhanced by consulting with and working alongside others in teams or temporary groups. Hence good opportunities are needed for meeting and working with others to develop mutual trust and co-operative relationships.
- They may need skills in conflict resolution and addressing bad relationships that threaten the group climate and/or achievement.
- Support and feedback are critical, so it is important for managers to develop a positive learning culture of mutual support, both among individuals and across whole work groups.
- More traditional feedback on progress, strengths and weaknesses, and meeting organisational expectations, is also needed and this is discussed at some length below.
- Upsetting feedback, anxiety about one's status or performance, client behaviour, and relationships or events outside the workplace can all influence the emotional dimension of a person's working life. This may require ongoing attention for a period.

Workplaces are complex inter-personal environments, where managers need to be well informed about relationships and personal or collective concerns without being unduly intrusive. They also need to delegate and to work through other people as well as by direct action. Otherwise, they will never have enough time to realise their good intentions, and those they manage will have less opportunity for self development. It is increasingly recognised that frequent informal conversations with individuals and small groups create good settings for preparing people for coming issues, listening to their problems and concerns, seeking their advice, and asking them to consult others about a problem and come back with suggestions. In this context their personal interests need as much attention as the collective interest, if they are not to feel

exploited. This means being supportive both when they have personal problems and in developing their future careers.

The Institute of Employment Studies report, *Managers as Developers of Others* (Hirsh et al. 2004), was based on managers' roles in developing their workers in four organisations, two in the private sector and two in the public sector. The authors interviewed givers and receivers of good and bad development support. They found that good development was delivered through a supportive relationship, sometimes short-lived but often over a period of months or years. It was typically characterised by the following features:

- Managers set a climate in which they are easy to approach, and where development is an important part of working life.
- They build developmental relationships with individuals in their teams and more widely. These relationships are often fostered by frequent, informal conversations about work, listening to concerns and the offer of positive support.
- Good development support is quite focused through a clear, shared analysis of development needs, frequent review and honest but constructive feedback.
- They often engage in informal coaching, make good use of formal training offered by the organisation, and focus heavily on finding the right kinds of experience, both within the job (often through delegating developmental tasks) and outside the job (through projects etc.).
- They offer active career development and work to help individuals have a realistic sense of their own potential and readiness for possible job moves. They see the individual in the context of their previous work experiences and their interests and obligations outside work.

Individuals in receipt of good development support reported increases in motivation and behaviour at work resulting from the increased sense of interest in work. So it seems that attention to development can both improve the capability of individuals and improve their motivation and engagement.

A survey by the Career Innovation Group (Winter and Jackson 2004) asked over 700 high performers in a small sample of large, mostly global, organisations to comment on the conversations they had at work that had high impact on them. Not surprisingly, these high performing employees are the kinds of people who get a lot of attention, and they had quite a lot of conversations about their work, especially with their managers. However they were not always getting the types of conversations they most needed:

- They had far more high impact conversations about their performance than about their development.
- The lack of development conversations also correlated with intention to leave. The big conversation gap was about career development, rather than skills and training for the current job.
- Forty per cent of respondents had an issue about work without any opportunity to discuss it, and were three times more likely than other respondents to be planning

to leave the organisation in the next 12 months. The study concluded that the best leaders were those who addressed both performance and development.

We conclude that managers have a major influence on workplace learning and culture that extends far beyond most job descriptions. Doing nothing about learning and development will have a strong negative effect (Winter and Jackson 2004, quoted in Eraut and Hirsh 2007, pp. 36–37). Thus managers need to: (1) have greater awareness of the modes through which people learn in the workplace; (2) recognise and attend to the factors which enhance or hinder individual or group learning; and (3) take the initiative in the longer-term development of their staff. The justification for giving this high priority is that what is good for learning is also good for retention, quality improvement and developing the skills and people that will be needed in the future.

Most of the research on learning by groups relates to intact social systems with clear boundaries and one or more common tasks to perform. In order to improve the effectiveness of such groups there is a need to understand group behaviour and to identify the factors that most powerfully enhance or depress its task effectiveness. These issues were clearly presented by Hackman's (1987) Normative Model of Group Effectiveness, which is briefly summarised below. Hackman starts with a broad definition of team effectiveness based on three criteria, all of which are socially defined:

- 'The productive output of the work group should meet or exceed the performance standards of the people who receive and/or review the output.'
- 'The social processes used in carrying out the work should maintain or enhance the capability of members to work together on subsequent team tasks.'
- 'The group experience should, on balance, satisfy rather than frustrate the personal needs of group members.'

He observed that 'The challenge for researchers and practitioners is to develop ways of understanding, designing and managing groups that help them to meet or exceed these modest standards' (ibid.: 323).

Two important distinctions were:

1. Expecting teams to 'in some way shape the future of the organisational strategy and development of the business', i.e. to generate new knowledge or synergistic learning;
2. Differences between teams integrated into the organisation as a semi-permanent structure and those organised as a largely separate project.

Continuing Professional Learning Most continuing professional learning activities are initiated by higher education or professional associations. Some more generic activities are developed by education or adult education departments, and many specialist concerns are covered by relevant charities, particularly in education, health and social care. Most organisations, managers, professional workers and safety workers get some support; but continuing professional learning is still dominated by short events with an emphasis on updating university-based courses linked to potential career advancement. This section therefore starts by considering what helps and what hinders workplace learning, and summarise the points in Table 3.4 (Eraut and Hirsh 2007).

Table 3.4 What helps and what hinders workplace learning?

What helps workplace learning?	What hinders workplace learning?
Individual factors	*Individual factors*
Learning with challenging work	Limited opportunity for challenging work
Frequent and constructive feedback	Excessive pressure and stress
Time for learning with others	
Team level factors	*Team level factors*
Supportive relationships and mutual respect	Work issues not discussed with others
Frequent discussions with colleagues	Unsupportive or threatening behaviour
Formal team meetings and reviews	Social isolation at work
Learning opportunities through allocating and designing work processes	
Support for and from line management	*Defensive approach from managers*
Role for managers and experienced workers in supporting the time and learning of others	Line managers who are unwilling to resolve work issues constructively
Attention to emotional aspects of work	Lack in giving employees meta-skills and confidence in learning
Tolerance, diversity and alternative ideas	
Support managers to give feedback, develop coaching, and delegate more to others	Leaving managers to develop their staff, when they lack the skills or motivation to do so
Select managers with an interest in, and aptitude for, developing others	
Approach to learning and development	*Approach to learning and development*
Employees motivated and supported to take responsibility for their own learning	On-the-job learning may not be used if there is little time allocated for it
Accessible learning advisers for both managers and employees, and a flexible capacity to design bespoke learning interventions and work with teams	Courses may be seen as the main, or only, means of learning
	The learning and development function may miss key aspects for line managers or business needs
Learning interventions linked closely to the work context, with careful consideration of learning transfer to the job	Bureaucratic approaches to competence and assessment may miss important aspects of learning
Organisational context, processes and leadership behaviour	*Organisational context, processes and leadership behaviour*
Performance and reward systems which pay attention to knowledge sharing	Promotion and reward mechanisms which emphasise the short-term and individual performance, instead of investing in medium-term or collective performance
Clear organisational values underpinning work and personal behaviour	
Behaviour at the top which discusses problems and issues	Senior management contexts in which people avoid change to protect their job security or power
Encouragement of networking and wider development of the social workplace	

Learning Focus

Learning is viewed as occurring across organisation levels (individual, group, organisation), and also as impacting performance and possibly values. This emphasis on learning is shared within continuing professional learning, but it is often given less priority than knowledge. Moreover, continuing professional learning gives far less attention to learning at group and organisational levels. One reason for this may be

the ambiguous position of those who have the dual role of professional practitioner and manager. The prevailing tendency is for practitioner learning to be the main focus of continuing professional learning, with some management learning being provided by employers, in large organisations under the auspices of their human resource development function. However, there are a number of processes which can be used to encourage both managers and employees. For example, managers can, and should, be partly assessed on how they develop their subordinates. Individuals can have personal development objectives built into their job objectives, and teams can also be given performance targets that include a learning dimension. Perhaps the most critical issues at any level are those which determine and prioritise learning needs; for example using what kind of consultation and at what level of detail.

Human resource development has tended to use a training needs model focused on performance, in which the contribution of employees to the learning needs analysis varies widely according to the organisational culture and the area of concern. Continuing professional learning provides opportunities for sharing practitioners' experiences across organisations. The most neglected aspect of continuing professional learning is the problem of transfer. This covers four distinct processes with some important common aspects:

- Transfer of formal knowledge into performance in a specific context;
- Transfer of performance from one context to another;
- Transfer of practices from one person to another person;
- Transfer of practices from one group to another group.

Eraut (2004b) has argued elsewhere that this fundamental difficulty can be attributed to two problems: the narrow conception of practical knowledge used in most formal education, and the lack of any significance or ownership of the transfer process itself. This transfer process can be deconstructed into five inter-related stages:

- The extraction of potentially relevant knowledge from the context(s) of its acquisition and previous use;
- Understanding the new situation, a process that often depends on informal social learning;
- Recognising what knowledge and skills are relevant;
- Transforming the relevant skills to fit the new situation;
- Integrating the relevant skills with other knowledge and skills in order to think, act or communicate in the new situation (Eraut 2004b).

The problem that remains is that of how best to help those who have learned knowledge appropriate for their field of work and how to use it in a range of potentially relevant situations. This process can be greatly accelerated if another person with relevant expertise can share the development and offer appropriate advice. The difficulty here is that proficient workers cannot easily communicate their taken-for-granted local practices, and may not even be aware of their more tacit aspects. Those with recent experience of using relevant knowledge in two or more contexts will be better prepared to help newcomers. For others, approaches to sharing tacit knowledge that we have used or encountered in the literature (Eraut et al. 2004) include:

- Demonstrating skills with a voice-over commentary—this may not be an authentic account of normal thinking in action, but can still communicate much useful tacit knowledge;
- Discussing common episodes at which the participants were co-present;
- Recordings of episodes, with the possible addition of a voice-over commentary (Holmstrom and Rosenqvist 2004);
- Describing incidents or telling stories, followed by discussion (Fairbairn 2002);
- Discussing cases and/or problems, real or fictional;
- Use of mediating artefacts.

Over time, it also becomes possible to develop new vocabulary and practices for discussing expertise, and gradually to introduce concepts and theories that may help people to make more sense of their experience.

Performance Focus

The importance of a smooth boundary between management and professional expertise is exemplified by Hoag's (2001) account of skills development in his engineering company. His group constructed a set of five proficiency levels, a paragraph for each of 15 areas of engineering; they could rely on self-assessment of these because any discrepancies soon become apparent. These levels could then be used for assigning people to projects and reviewing the match between the company's anticipated skill mix and its anticipated future demands. This covered:

- Providing a clear snapshot of department deficiencies;
- Succession planning for retirements, transfers or resignations;
- Rapid and intelligent staffing of new projects;
- Ensuring that the best choices are made in internal staffing selections (employer transfers);
- Ensuring that staff selections fully consider employee diversity.

Another human resource development intervention is personal support through coaching, mentoring and enriched feedback. Carter's (2001) report on executive coaching sees this as responding to three problems: the isolation of many managers; the increasing demand for 'soft skills' which are not amenable to formal teaching; and the failure of organisations to give managers enough feedback. Both coaching and mentoring have proved exceptionally popular with employees, as well as being perceived as effective by human resource professionals.

Eighty-eight per cent of respondents to the Chartered Institute of Personnel and Development (CIPD) 2005 survey of training and development reported using internal coaching, 72 % mentoring, and 64 % external coaching: a pattern extending well into the smaller firms in the sample. However, coaching was rarely offered to anyone other than managers.

Historically, continuing professional learning has given less attention to performance issues, partly because providers have little knowledge of the factors within the organisational system that might affect an individual's performance in any particular

workplace. Nevertheless, continuing professional learning is now beginning to be asked to measure its ultimate impact on service users. This is an absurd idea because, although a well-conceived course can be an excellent learning event, it cannot be a complete learning package that delivers the desired outcomes. That normally requires a considerable further amount of on-the-job learning, and this will only happen if the learning is treated as a high priority by the participants' work group. That is why research has consistently reported that courses are only effective when delivered 'just in time' (Eraut et al. 2000).

Strategic focus

This focus involves strategic human resource development being integrated into an organisation's mission or purpose and incorporated into all major planning initiatives. Case study-based research by the Institute of Employment Studies (Hirsh and Tamkin 2005) found that many large organisations do not have a single formal training plan, but a range of plans and budgets at varied locations. The study identified five main mechanisms which influence training plans and priorities:

1. *Formal business planning both at top level and more locally*, leading to training priorities. Either a training plan or set of priorities can be produced on the basis of business plans or targets, or the two processes of business planning and workforce development planning are wrapped together.
2. *Links from human resource strategy to training implications*. The Institute of Employment Studies study did not find many cases in which human resource strategies gave clear indications of training needs. Competence frameworks were often used in training and development, but there was little evidence that they mapped onto *real* skill gaps.
3. *Plans for key workforce groups*. Organisations often have a specific plan and budget for management and leadership development, partly because this aspect of learning tends to be co-ordinated by a centralised, corporate team. Some have specific early career entry and training schemes at graduate level.
4. *Major business issues or changes* often lead directly to major training interventions, usually with extra funds from the corporate centre. Typical of these would be re-organisations, mergers or acquisitions, or major changes in technology or products. In a similar way, specific changes in work at local level can lead to the identification of learning needs which may not have been foreseen on the normal annual planning cycle. But responding to such needs may depend upon the local unit being able to set aside specific funding.
5. *Take-up of training provision* is a strong influence on future plans. Training courses or other interventions which are well used and receive positive feedback through evaluation are often repeated. Learning provision which is not well used tends to be dropped. This effect is particularly strong where local managers have to pay for the training, whether provided in-house or by external suppliers.

Continuing professional learning has given much less attention to strategic issues, and this causes many problems for professional workers. In particular it needs to address the issues of specifying and providing a quality service and giving greater priority to user perspectives. This will require both close alignment with strategic development and a greater focus on learning at group and organisational levels. This is especially important in health care organisations because of their multi-professional character. Not only is there lack of alignment with human resource development but there are separate continuous professional learning policies and practices for each professional group.

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