Learning During the First Three Years of Postgraduate Employment – The LiNEA Project

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Introduction

This paper is based on findings from the first phase of a four-year research project funded by the UK Economic and Social Research Council as part of its Teaching and Learning Research Programme. The major component of this project is a longitudinal study of trainee accountants, graduate trainee engineers, and newly qualified nurses in England. This critical period of introduction to professional work has not been previously studied by a longitudinal series of observations and interviews, though a number of one-off surveys have been conducted. The three professions have been chosen because they play key roles in the UK economy and public services and they use contrasting approaches to professional formation. Trainee accountants and engineers are formally contracted trainees and as such, have systems of organised training support. Newly qualified nurses start full-time work with greater practical experience than accountants or engineers; but their still substantial learning needs may be neglected.

The research questions are identical to those of Eraut et al's (2000) study of mid-career professionals' learning in the workplace, namely:

1. What is being learned in the workplace?
2. How is it being learned?
3. What factors affect the level and direction of that learning?

In this project, we are interested in the extent to which novices, whose learning is more explicitly on the agenda and who have far less experience, learn differently from the mid-career professionals, whose learning was found to be largely implicit, taken for granted and difficult to elicit or elucidate.

Methodology

The project's methodology addresses the problems of accessing information on what people need to know at work (Eraut 1999). Chief among these problems are:

- Only knowledge acquired in formal educational settings is easily brought to mind, articulated and discussed;
- Tacit, personal knowledge and the skills essential for work performance tend to be taken for granted and omitted from accounts;
- Often the most important workplace tasks and problems require an integrated use of several different kinds of knowledge, and the integration of those components is itself a tacit process (Eraut 2003).

These constraints affect people's awareness of learning and their ability to recognise and articulate their personal knowledge and understanding which enables them to think and perform at work. Therefore the more researchers are able to ground conversations with informants in the actuality of daily working life (tasks, relationships, situational understandings, implicit theories etc), the greater the chance of eliciting information about the full range of what is being learned, how it is learnt, and the factors which affect learning, especially the informal learning of key skills such as team working (Miller *et al*. 2001).

In this current study the recognised novice status of our subjects, as well as better funding, made it possible to base our data collection on short (1-2 day) visits to each subject's workplace, rather than interviews alone. The additional features are prolonged periods of observation, interviews with trainees' managers / mentors and brief discussions with significant others in the workplace. This enabled us to use workplace documents and activities as starting points for questions during subsequent interviews that sought to elicit information about embedded knowledge and its acquisition. Further details of our methodology and data analysis are given in Eraut et al (2003).

The majority of our subjects were recruited through 12 partner employers and a minority through their Higher Education institutions, using a sampling strategy designed to maximise our ability to differentiate between individual, local workplace and organisational factors affecting learning within a basically qualitative research approach. The total sample comprises:

> 40 nurses from 6 district general hospitals or teaching hospitals.
> 34 engineers, of whom 27 work for our 4 partner companies in avionics, building services, civil engineering and telecommunications.
> 14 accountants from large 'Grade A' firms, i.e. neither from the big four international firms nor from small local practices.

The relatively small number of accountants is due to severe recruitment difficulties in this sector.

Interim reports for each sector will become available this autumn, after clearance with respondents and our partner employers. This paper includes short summaries of findings from each sector, but focuses mainly on the evidence of six participants and the further development of a theoretical framework for analysing factors influencing workplace learning and their mutual interaction.

Summary of sector findings from the first visits

The first few months of full time employment present very different challenges and experiences across the sectors. The **accountants** have 3 year contracts that include both training for professional examinations and a work-based induction into the profession through a tightly structured apprenticeship system whose special features are:
> * immediate allocation of real tasks, which gradually increase in size and complexity; this steep learning curve develops their confidence
> * working for at least half their time on clients' premises on relatively short assignments (generally 2 days to 2 weeks) with tight timetables
> * the need to admit ignorance and continue to ask questions; the shy would not survive
> * receiving most support from trainees 1 or 2 years ahead of them, who remember their own early period and are receptive to "ignorant" questions
> * engagement in work which is scaffolded by the structure of the working files, access to the previous year's audit, pre-prepared protocols and tests that frame their work and specify their sampling procedure, and working alongside more experienced colleagues

* developing greater understanding of audit processes and products while working on individual tasks that contribute to them.

Several of these features can be seen in the two case studies of accountancy trainees. These also show the importance of teamwork, relationships with clients and time management in a context where information is continuously being sought and checked, with procedural decisions being made at frequent intervals within a relatively clearly defined framework of tasks.

Trainee accountants also receive formal training from private specialist training companies to prepare them for professional examinations, where failure to pass could lead to loss of employment. Relevant content from this formal component of their training is expected to begin to influence their workplace learning at a later stage. At this early stage the main influence of this formal training is to create further demands on trainees' time.

The **nurses** have already qualified but still have a difficult transition, caused by their sudden assumption of a great deal of responsibility and immersion into a highly demanding, pressurised environment with a very high workload. Critical features of this transition are:

* learning to manage their time, to prioritise the numerous demands upon them, and to recognise when patients need urgent attention
* being given immediate responsibility before the above has been achieved
* learning how to handle a whole range of challenging communication tasks and relationships with doctors, colleagues, other professionals, patients and relatives
* taking responsibility for the administration of drugs according to a wide range of schedules and using several different methods, while still attending to the needs of a considerable number of patients
* coping with shifts when they may have very little support
* learning a range of new procedures with varying levels of help
* peripheral learning is limited by the urgent demands on their attention
* often limited contact with other members of their peer group
* varying levels of support from more experienced nurses
* access to relevant short courses is often constrained by staffing shortages.

They are all quite critical of their training, especially the disjunction between theory and practice, the lack of attention to scientific knowledge, and the pattern of work placements. Most of them are thinking about their next move, often to a more specialist ward in the same hospital.

The two case studies deal with potentially similar environments for the first visits, in which the learning climate is very different. One nurse stays in the more positive environment and thrives; the second moves to another part of the same specialist centre where the work has a very different pattern and the learning climate is much more positive.

Our partner **engineering** companies all have graduate training schemes, accredited by the relevant Institutions as appropriate for graduate engineers seeking Chartered

Status. The other Institution requirements are a portfolio of work cross referenced to their Chartered Engineer criteria and an oral examination based on their portfolio. Most engineer graduates are keen to pursue this opportunity, but graduates from other disciplines, for example Maths or Computer Science, are less convinced of the need to do so. Critical features for engineering trainees are:

* working in an "open plan" office with desks adjacent to team members, line managers and senior engineers, making it easier to ask questions and to participate in discussions. Getting to know who does what, and the range of available expertise/skills around them is an important early requirement.
* a strong base of support from a wide range of mentors, managers, and team members in addition to accessible "happy-to-help" people within their own branch of the company and also in other branches. Contacts take the form of face-to-face interaction, telephone, e-mail, or fax.
* all companies have a variety of on-line training courses/exercises for the graduates' own-paced self-learning, but it appears that there is no monitoring system to check on the progress of those using such facilities, and trainees believe it is up to them to use this provision only if they feel so inclined.
* some companies have a national "skills link" whereby a graduate can log their enquiry into the system from their desktop, and this will be accessible to all people on that site and elsewhere within the firm; anyone who can help may suggest either an answer or the name of a helpful person to contact.
* strong agreement on the benefits of having previous practical experience such as an industrial placement or a sandwich year
* views of HE are influenced by their immediate job needs and by the level of contact with industrial engineers
* access to short courses is good
* interest in the job is important, and carrying out challenging, real-world tasks is thought by graduates to be the most effective factor in learning
* graduates believe that they learn most from doing things under supervision, followed by learning from senior engineers (observation, discussion, etc.), and attending courses, reading and finally informal open learning
* graduates and their employers judge them as being strong in IT and its many applications, but weak in report writing and presentation skills
* they often work on large projects with long time-scales but would like to understand more about how their tasks contribute to the overall project
* a number of graduates find that they are engaged on too many simple, routine, even repetitive, tasks. However, they recognise the general benefits of some such activity, particularly early in their employment.

Trainees in small companies and local authorities get less support for gaining Chartered Engineer status; but there are more opportunities for on-site work and personal decision making/judgement, etc., thus providing a fast-track route towards a more rounded experience.

Our two case studies relate to two mechanical engineers who moved into very different specialties, power generation and building services. Both had supportive environments but suffered from insufficient challenging work. The first seemed to have had a very challenging period, but could see that it might diminish once more. The second is still patiently awaiting some more on-site experience.

Two case studies of newly qualified nurses

N61 works in a busy 50-bed Gastro-Intestinal unit, which incorporates both surgical and medical sections. She was visited after she had been there for 9 months and 20 months. She received good feedback and supervision from a very supportive manager and senior nurses. Nevertheless, lack of feedback from a rather passive mentor worried her. She had already (in 9 months) had two appraisals from her manager who was very keen on professional development and had a policy of growing her own senior nurses 'in house' rather than suffer from a failure to recruit at senior level. Her manager was also well aware of the pressures faced by novices confronted with the overwhelming experience of multi-patient, multi-task, continually interrupted ward nursing, and was frequently urging new nurses to ask for help. She inducted new nurses through all the ward areas to give them experience of working for a variety of patients with different dependences.

N61 has a particular concern with getting all her written records done on time. This is a concrete symbol of being organised and in control, and prevents things being left to the last minute. Late additions to these records could always be made. After a 'low period' at six months, she was now confident that she could do her job and aware of her growing professional development. She noted she had time to reflect more when based in less busy areas.

She described her progress in terms of:
- moving on from concentrating on tasks to seeing patients in context and more of a whole
- being able to ask when she doesn't know something or has too high a workload
- learning more about management
- being able to brief patients on surgical procedures

After 20 months, she continued to emphasis her need to be in control and finish her writing. Her time management was better and she needed less support. She had stopped receiving supervision, after 8 months and had started self-directed reading on relevant issues. She had become IV trained and had been on several short courses - basic life support, advanced life support, pain management, central lines. She wanted to start taking a degree by stages over a long period. She had begun to mentor students, and had taken on management responsibilities when people hadn't turned up. She had quite enjoyed it, and had 'picked up aspects of what is expected of a co-ordinator or team leader', but wasn't seeking that role yet. She gets significant support, both socially and at work, from a group who joined the unit at the same time as her and have 'gelled.' This was also recognised by her manager.

There are many tasks in which she is now more confident. She is more aware of her learning through practice without noticing it at the time. Dealing with very ill people is becoming more routine. She is prepared to do fewer observations than requested if she realises it is not necessary to do them so frequently. She is about to go on a High Dependence Unit course and expects to get a better "scientific" understanding of "what is actually happening" with things like blood gasses. She believes that novices need clear protocols but more experienced nurses develop a more holistic awareness.

N70 works in a regional centre for renal medicine. At the time of her first visit (nearly 5 months after she started), she was working on a renal ward. After 8 months, she had 6 weeks full time training in dialysis with the "acute team" on the ward, prior to joining the dialysis unit, where her second visit (13 months after qualification) took place. Both settings have a programme of courses and 'study days' (these are training days not library days) and a planned programme of skill development. However, the work environments are very different with consequent implications for learning.

The ward context (after 5 months)

One week supernumerary, working alongside her mentor
Usual rotation of shift times and days
Do not pay overtime.
Very short of staff, low quality of care, no time to talk to patients.
Impossible to do job properly, or feel you have done a good day's work.
Low morale.
8 patients at a time, huge range of tasks
One co-ordinator tries to achieve continuity of care (nurse sees same patients again), others do not
Gets little support or feedback. Hence reluctant to take on sicker patients
Disillusioned with nursing
Missed induction day and first 3 study days, through lack of staff
Shown how to run ECG machine but without relevant clinical knowledge
Training day on peritoneal dialysis machine, but no follow-up, now forgotten
Mentor does not go through competency booklet with her
Not assessed before undertaking new activities e.g. drugs round.

[after interview got 1 day IV training and got 7 x 1 day renal course]

The Unit context (after 13 months)

Six week dialysis course before starting

4 days a week, longer day shifts (only open during the day). Pay overtime
Much better staffed

No staff want to rotate back to ward
Greater job satisfaction
Single focus on dialysis process
1 or 2 patients at a time
System tries to organise continuity of case (assists fine tuning of dialysis process)

Good support from all around (de-centred)
Patient folders provide useful framework for questioning
High dependency training day
Much adjustment of process according to needs/risk factors of individual patients
Sense of developing expertise
Attention to both machine dials and patient becomes routine.
More rationale and reasoning now, more time to think.   (pp 6-8)
Not allowed to take patient until, assessed on relevant procedures

[long 9 month renal course next year with rotation around the unit]
[anticipates new technology soon]

Two case studies of trainee accountants

A29 and A41 work for firms of accountants, where they have embarked on a 3 year traineeship to becomes a Chartered Accountant. This requires that they pass the requisite examinations of the Institute of Chartered Accountants of England and Wales (ICAEW) and complete 3 years of appropriate work experience. Formal preparation for the examinations is contracted out to a private training company; and learning involves periods of full-time attendance at "college" and reading/revision in personal time. Both visits involved observation of audit teams on client premises, and they occurred after 8/9 and 18 months.

Most workplace learning occurs through membership of audit teams, starting with very simple tasks that require no previous experience or knowledge of accountancy. Like other trainees A29 and A41 are graduates with good basic skills, communication skills, confidence and experience of independent learning. The process closely resembles an 'ideal type' apprenticeship; most learning comes from senior trainees while working on client premises and some from the audit managers. The work is structured by the framework of the current audit, being constructed, the audit of the previous year and tests (or protocols) pre-designed in their home office for each particular client by managers and senior trainees, but not as yet by our respondents. Audit teams work to strict deadlines and mutual co-operation is essential, as are good relationships with their clients. The process involves collecting information, sampling records, comparing and analysing figures and constructing an independent, credible, defensible account. The allocation of time to the most important evidence is critical; and although there is foreknowledge of likely areas of work, many unforeseen problems arise that have to be dealt with quickly and may involve some re-allocation of time. There is a strong tradition of supporting trainees, especially in their first year, which combines positive teamwork with a recognition that the sooner trainees make a net positive contribution to the teams, the better for all concerned. Audits can last from 2 days to 5 weeks and teams are reconstituted for each audit; their size varies from 2 to 12 members. Most trainees are involved in only one team at a time, and sometimes there are no 'home office' days between their audit visits.

In the early months, learning occurs through being coached in detail on how to do the tests, asking lots and lots of questions, and peripheral participation in the whole audit process. The constant message is: If you are stuck, don't waste time, ask someone right away. If you think there may be a problem, alert your senior right away. They know that their immediate seniors still remember what it was like to be a novice and this is reassuring. Team working to tight deadlines is a very inclusive process and most novices feel very well supported most of the time. Tidiness and clarity are important because everything is cross-checked and referred to, people need to quickly understand what you have done, what you are talking about.

Trainees recognise, with hindsight, may different forms of progression:

size of task:	doing a test to doing a whole section
speed of work:	getting things done more quickly
significance of task:	low risk to high risk for validity of audit
complexity of audit:	very simple to very complex

confidence:	pursuing questions more rigorously, interviewing more senior client officers.
increasing range of clients:	the more experience, the easier to understand the business of a new client.
increasing responsibility:	being coached, close supervisions, only outcomes checked unless a problem is signalled, only person on client site.

Phrases used by the trainees included:
- doing bigger bits
- every client's got something different
- moving from routine tasks (novice) to thinking a lot more, having to decide whether a client's explanation is reasonable
- not just spotting a problem but also suggesting a possible solution

Evaluation forms are filled in by trainees after longer audits, then comments are added by the senior "in charge" on client premises, who sends a copy to the trainee's appraiser

Distinctive features of A29
Interested in being an accountant in a small company.   Less ambitious.
Had some difficulty learning double entry book-keeping, and got help from a family friend.
Stressed performing with "due skills, care and diligence" (professional requirement).
Appraisal unhelpful: s/he was asked lots of questions, but got no feedback, no idea what was expected.
Frustrated by being placed in lowest group for pay rises after 6 months (performance related pay) but admitted being rather negative in her attitude to work. S/he changed her attitude and was rated more highly next time round, reflecting her/his greater commitment.
Mentor was changed to someone s/he knew and had worked with. S/he got much better feedback at her/his appraisal
Started writing Audit Business Summaries
More familiar with tests, now knows when to ignore small mistakes
Most difficult thing is getting to know how a client's accounting procedures and computer systems work.

Distinctive features of A41
Wants to be in the finance department of a large company. More ambitious.
Looks ahead to getting one step up the ladder when new trainees come, then to being 'in charge' of an audit team on client's premises.
Went to a larger company on a 5 week job.
Has done short audits on her/his own (2 day jobs)
More confident in validity of her/his reports, and in pursuing inquiries relentlessly
Has interviewed one client's senior finance officer (preparation, effort and boost to confidence)
Working on riskier areas in audits, judging whether client explanations are reasonable, taking into account the economic conditions at the time.
Most difficult task is understanding the client's business.
Thinks first year trainees, especially, should be better briefed before starting an audit.
Positive comment on appraisal.

Two case studies of graduate trainee engineers

E39 has an M.Eng degree in Mechanical Engineering, but has joined the Building Services Division of a large consulting firm, and is seeking to get chartered status with the Institute of Chartered Building Services. S/he was visited after 8 and 19 months. The start was a frustrating 3 months doing little else than reading technical material and project reports, because there was little work available. S/he had had small bits of involvement in a small number of projects but had not seen any project through from start to finish. Within a few months s/he had worked out who to ask to get what. S/he assessed her/his own strengths as being interaction with people, team working, organisation, meeting deadlines; and being easily distracted as a weakness. Throughout the 18 months, s/he had attended a range of courses (all 1/2 day or 1 day). S/he enjoyed working with other professions. Though working on his/her own, s/he interacted with others as if they were team workers and they responded well to that approach.

E39's manager tended to overestimate what s/he could do, but that was good. S/he learned to say quickly if s/he couldn't do it without more help. The manager gave positive feedback, but E 39's first Professional Development Review was very late though useful when it came. Another manager gave no feedback at all, just signed her/his reports. S/he did meet other graduates sometimes, but these were usually purely social occasions. S/he identified the key factors affecting her/his learning as challenge, support and feedback; challenge was her/his greatest concern in this job. S/he felt it was improving just before her/his first visit, then had quite a challenging period. This included one very challenging project, but s/he was now wondering whether another equally challenging project would turn up: At the time of the second visit, the flow of work was easing off again.

The challenging project arose almost by chance, because s/he was in the right location overseas when the need arose and was able to pick it up at once. It involved close work with structural engineers and much negotiation. S/he was the only mechanical engineer involved and the project was well outside her/his previous experience. S/he had to produce a lot of reports, and keep in constant contact with the UK home base. S/he also got very good feedback from the clients. Other projects had been interesting but less challenging.

The work team was the same at the time of the second visit, but s/he was taking on more responsibility; and was organising the local seminar programme. S/he recognised that most of the expertise she was able to benefit from came from other people's wide experience rather than their formal training or university programmes. The biggest difference from university projects was that cost was the first constraint and architects were the second constraint. S/he had learned some interesting practical principles. A colleague advised her that when you have too much work you should take it back to all those who want it done and ask them to decide on the priorities. S/he also had learned that, when being asked to do certain tasks, s/he should teach those asking her/him so that they could do it for themselves. Both interviews ended with uncertainty about staying in the job if more challenging work did not arrive!
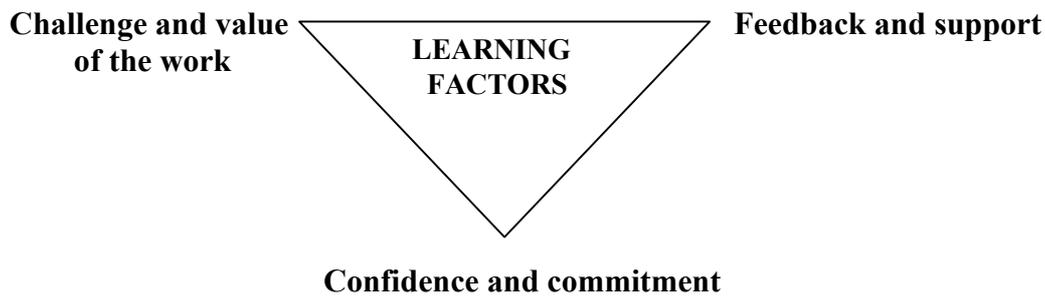
E 37 is a Mechanical Engineer working in the power generation department of an engineering consultancy company. Visits took place after 2 1/2 and 11 months. S/he has both M.Eng. and M.Sc. degrees; and several modules of these were reported to be relevant to her/his current work. S/he works in an open plan office, which is sometimes found to be too noisy and distracting. E 37 has been allocated a series of relatively small jobs, which s/he describes as "very very small tasks in a big project"; and feels under-worked and under-challenged. S/he is keen to become a Chartered Engineer, but is not very clear about the detailed arrangements. Nor apparently is her/his mentor who is supposed to provide this advice. S/he meets other trainees and more experienced engineers socially quite often, and feels included in the company. S/he participates in leisure activities with company colleagues and is now managing one of them. S/he has used the company intranet to seek advice on a problem.

E37's favoured modes of learning, in order of importance, are: trying things out, observing others, attending courses and reading. S/he is acutely aware of his/her lack of field experience, though probably has more than many graduate entrants S/he wants to spend some time on sites, but so far only two one-day visits have been arranged. S/he has attended several courses on power generation and one on presentation skills; and is reading a book on report writing. S/he recognises that company reports, unlike academic reports, do not report everything.

S/he has noted some good role models, people with both technical expertise and social skills, and also gets good feedback on her/his performance; but has not been involved in many projects and has had limited roles in those in which s/he did participate. S/he functions more independently now, and knows who to see about what. The lack of challenge so far has been a major disappointment.

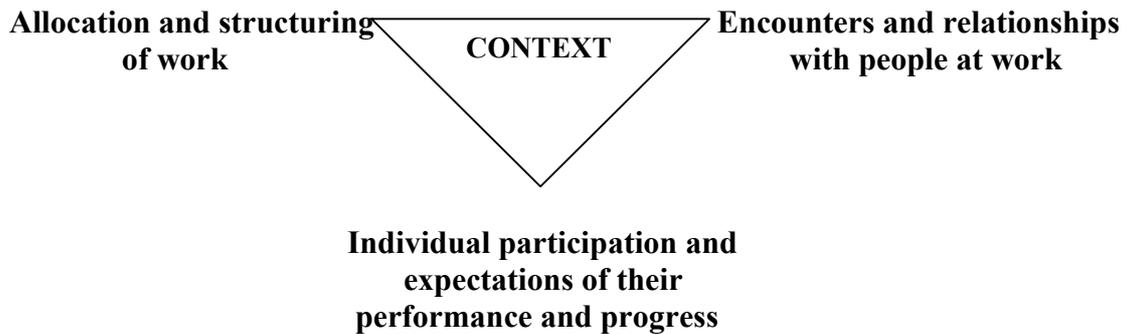**Discussion and theory development**

One prominent finding of our earlier research on mid-career learning was the overwhelming importance of confidence. Much learning at work occurs through doing things and being proactive in seeking learning opportunities; and this requires confidence. Moreover, we noted that confidence arose from successfully meeting challenges in one's work, while the confidence to take on such challenges depended on the extent to which learners felt supported in that endeavour. Thus there is a triangular relationship between challenge, support and confidence (Eraut et al 2000). We have now added a further element to each apex of this triangle to reflect factors found to be significant for the learning of early career professionals. These are: feedback because of its huge importance at this career stage, the value of the work (both for clients and for career progress) as an additional motivating factor and commitment to learning, which together with confidence affects the extent to which early career professionals are proactive in taking advantage of the learning opportunities available to them.

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Challenge and value  ╲_____╱  Feedback and support
   of the work        ╲   LEARNING    ╱
                       ╲  FACTORS     ╱
                        ╲_____╱
                         ╲          ╱
                          ╲        ╱
                           ╲      ╱
                            ╲    ╱
                             ╲  ╱
                              ╲╱

              Confidence and commitment
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Our evidence from this project confirms that both confidence in one's ability to do the work and commitment to the importance of that work are primary factors that affect individual learning. **Confidence** depends on the successful completion of **challenging work**, and that in turn may depend on **informal support** from colleagues, either while doing the job or as back up when working independently. Indeed the willingness to attempt challenging tasks on one's own depends on such confidence. If there is no challenge or insufficient support to encourage a trainee to seek out or respond to challenge, then confidence declines and with it the motivation to learn. **Commitment** is generated through social inclusion in teams and by appreciating the **value of the work** for clients and for themselves as novice professionals. Concerns about career progress that arise from inadequate feedback of a normative kind can weaken motivation and reduce commitment to the organisation. Both commitment to learning and confidence affect the extent to which early career professionals are proactive in taking advantage of the learning opportunities available to them.

The nursing case studies illustrate the high level of challenge faced by all newly qualified nurses and the varying levels of support they receive. The consequences for their confidence and commitment are all too obvious, and it is not difficult to see why nurse retention is a problem. It is also important to note that N20 does not value her work on the ward, because conditions make it almost impossible to do a good day's work in accordance with her professional standards. Her strong commitment to her profession was being eroded, and we were surprised that she stayed in that ward for 8 months and negotiated a successful transfer. In contrast N1 showed what a difference could be made by a manager who prioritised supporting and facilitating the learning of her staff. Both engineers were also losing motivation, in this case because of lack of challenge rather then lack of support. They also found it difficult to regard many of the tasks allocated to them as having much value. E37 in particular had ceased to recognise the value of her/his practical experience (greater than for most trainees), because s/he was not getting any time on site and felt that the experience gap between her/him and those s/he worked with was widening rather than narrowing. The accountants had a much clearer view of their learning trajectory and got excellent support and feedback on their performance, but very little normative feedback on their progress and whether they were meeting their employers' expectations. This meant that their strong commitment to their teams was not always translated into commitment to their employers; and this was backed by the tradition in accountancy for a large proportion of trainees to move to other employers after qualification.

The inclusion of observation in this study has enabled us to give greater attention to the nature of participants' work and their relationships at work; and this has led to the extension of our model to include a second triangle. This matches the first triangle but focuses on contextual variables that influence the learning factors depicted in the first triangle.

Allocation and structuring of work   **CONTEXT**   **Encounters and relationships with people at work**

Individual participation and expectations of their performance and progress

The allocation and structuring of work was central to our participants' progress, because it affected both (1) the difficulty or challenge of the work and the extent to which it was individual or collaborative, and (2) 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. For novice professionals to make good progress a significant proportion of their work needs to be sufficiently new to challenge them without being so daunting as to reduce their confidence; and their workload needs to be at a level that allows them to reflectively respond to new challenges, rather than develop coping mechanisms that might later prove to be ineffective. There are also likely to be competing agendas when tasks are allocated. Novices are more efficient on tasks where they already have enough experience, but also need to be involved in a wider range of tasks in order to extend their experience. Thus managers and/or senior colleagues have to balance the immediate demands of the job against the needs of the trainees as best they can, as well as satisfying the requirements of professional bodies and/or health and safety. This analysis suggests three important operational questions:

- Which of these critical work factors are fixed and which are variable?
- To what extent is the allocation of work to novice professionals or the issue of invitations to participate in other work activities decided by a manager or by a relatively junior but more experienced colleague?
- Who is aware of whether a particular novice feels overloaded or under-challenged?

Our conclusion is that these important workplace variables may be determined by (a) the way the organisation works (and are, therefore, unlikely to be changed to suit the needs of learners), (b) decisions made by managers with relatively little personal knowledge of the novice or (c) decisions made by more experienced colleagues who have a regular working relationship with the novice.

Our case studies confirm that the considerable differences in the organisation of work in the three professions have a huge effect on learning. Both nurses and accountants become members of normal busy working groups in constant contact with their clients. The work is real, immediate and of obvious value; and their contribution to it is vital for nurses and soon becomes important for trainee accountants. In contrast, the two case study engineers had to be slotted into existing work that was not structured with them in mind; so that often they were doing chores or engaged in pieces of work that were found for them but did not offer significant learning opportunities. Most of the other engineers in our sample had higher and more challenging workloads than those in the two case studies. Many learning opportunities arose from the work, but the ward nurses in particular often found it difficult to take advantage of them because they were overloaded and had little time to think. Both accountants and nurses described themselves as being on a steep learning curve, but the accountants had more control over their learning, and more time to think. Nurses have huge problems with prioritisation in their first few months and often little support with handling the pressures they face.
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Opportunities to meet and develop **relationships in the workplace** are created not only by the allocation and structuring of the work but also by the physical locations of workers, the need for mutual consultation, the likelihood of informal encounters and the pattern of social relations between workers on and off duty. These affect the social inclusion of novice professionals and the extent to which they (a) feel encouraged to take a proactive role in asking people questions (b) receive unsolicited support and advice and (c) get feedback on their performance and progress. The ideal type associated with de-centred apprenticeship or learning communities (Eraut 2002, Nielsen & Kvale 1997) is posited on high levels of inclusion and unsolicited support nurtured by a workplace culture in which mutual learning is taken for granted at all levels of seniority. We have found a wide variation in levels of support with rather more towards the positive end of an imaginary support continuum, the negative end being defined in terms of total lack of support and concern for novices' problems, rather than actual antipathy!

Most of our participants have designated mentors provided by their employers, and engineers have additional mentors linking them with their professional associations. Many of these "official helpers" have had very little contact with their novices, even when those novices expressed a strong desire for that kind of support. We have also identified a large number of "helpful others" who have informally taken up support roles in accordance with the notion of de-centred apprenticeship. This raises some important questions:

- Is it possible to be an effective mentor in the absence of any other relationship with one's mentee? If so, what information might that mentor need? Do mentors and mentees need to have met in other contexts?
- What roles are taken up by helpful others in the workplace, and why?
- What kinds of support do novice professionals need in a particular context?
- Which of these needs are best met, or can only be met, by people on the spot?
- What factors promote/facilitate the provision of such support?
- Which needs require support or advice from a more senior person?

These are questions that we are now beginning to address through citation of examples and counter examples and by making comparisons across professions and across work contexts. Our accountants and engineers got very good on-the-spot support, but this was only true for a minority of nurses. The availability and value of support from a senior person varies greatly within each profession; and seems to depend not only on the disposition and skill of that senior person, but also on whether there was any significant ongoing working contact. Designating "official helpers" is no guarantee that appropriate support will be received by novice professionals.

One particular form of support, that of giving and receiving feedback, links relationships with **expectations of performance and progress**. Over time novice professionals are expected to extend their competence by performing similar tasks in a wider range of situations, to deepen their expertise by dealing with situations of increasing size and complexity, and to expand their capability by learning to do new tasks or to take on new roles. But few received any overt guidance about their progress in these or any other terms (except for the specification of requirements for becoming a chartered engineer, which did not cover many employers' expectations) The majority of participants expressed a need to know how they were progressing in terms of their employers' expectations of them and in comparison with other trainees past and present. But even those who received strong support for learning within the workplace itself complained of poor feedback on their general progress or on personal strengths and weaknesses; although some were more concerned about this than others. There is an important distinction to be made here between (a) feedback on performance, which is recent, specific and important for learning, and (b) feedback on progress which is important for a more strategic approach to learning and also for general morale, confidence and commitment to their employers as well as to their colleagues. In many organisations, general feedback is meant to occur at appraisals; but we sensed that some appraisers lacked any relationship with their appraisees and had limited knowledge of their work. We are now seeking more evidence on this issue.

The interactions between the factors in our second triangle are particularly visible in the audit teams that provide the principal learning contexts for accountancy trainees. Working in a team towards a completed audit to which all contribute, and involving close relations with client staff that are affected by the conduct of all team members, confers the following advantages for learning:

- Trainees are valued for their individual contributions;
- What they do is clearly significant both for the final product and for continuing good relations with their clients;
- There are many opportunities for learning through getting feedback on their work, being initiated into the complexities of the audit process by good on-the-spot supervision, and peripheral participation in activities for which they have not yet acquired the necessary competence.

Completing team projects to tight deadlines requires a high level of collaboration, and this increases employees' commitment to their colleagues and to their work. As a result trainees both see the value of their own work and become valued by senior colleagues, with a consequent increase in confidence and commitment to further learning.

However, although the nature of the tasks for which a trainee is given responsibility may provide a proxy indicator of their progress, the changing membership of audit teams means that few managers, if any, see their performance changing over time. This raises the question of who is in a position to appraise the trainees, and to give them the clear feedback they are seeking about the extent to which they are meeting their employer's expectations. Hence, while the structure of the work provides an excellent context for learning support in the trainees' first year, giving them periodic appraisals of their progress presents a considerable challenge to their employers.

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