

Further information

The most comprehensive source of project publications is the TLRP project website: www.tlrp.org/early_career_learning_at_work.

The best overview is the project's End of Award Report, available at www.esrc.societytoday.ac.uk. Eraut et al (2005b) End of Award Report to ESRC/TLRP, Early Career Learning at Work: Project LINEA.

The conference papers below focus on What is being learned and How (Figures 3 and 1 in this briefing), the Factors affecting workplace learning, (Figure 2), the project's Methodology and its Action Research in Nursing.

Eraut et al (2005a) What is learned in the workplace and how? Typologies and results from a cross-professional longitudinal study, EARLI biannual conference, Nicosia.

Eraut et al (2005b) An Analytical Tool for Characterizing and Comparing Professional Workplace Learning Environments. BERA Annual Conference, Pontypridd.

Steadman et al (2005) Methodological challenges in studying workplace learning: strengths and limitations of the adopted approach, EARLI biannual conference, Nicosia.

Cabellero, C., Miller, C & Blackman, C (2005) Nurses taking Action, AERA Annual Conference, Montreal.

The findings of the previous ESRC Project on mid-career learning are in Eraut et al (2000) Development of Knowledge and Skills at Work, in: F. Coffield (Ed) Differing Visions of a Learning Society Vol 1 (Bristol, The Policy Press).

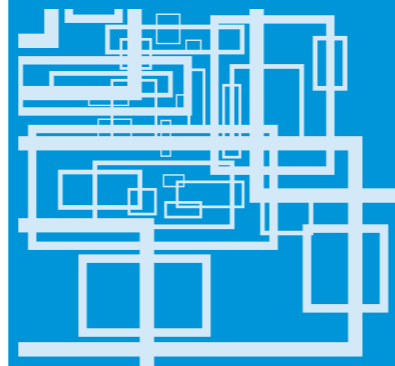
The warrant

The conclusions of this project are based on a longitudinal study of the workplace learning of 40 newly qualified nurses, 38 graduate engineers and 14 trainee chartered accountants. Data were collected during four 1-2 day visits to each participant over a three year period, designed to observe the participants at work and then conduct a recorded interview, and to conduct short opportunistic interviews with significant others in that workplace. All Nursing visits were to hospital wards, most Accountancy visits were to client premises and a few Engineering visits were to work sites. 72 per cent of our sample continued for the whole period. We also interviewed 147 managers, team leaders and mentors.

Interim transcripts or reports were validated by the interviewees, and sector interim reports were agreed by both participants and their employers. Data analysis used a draft coding system initially based on previous research projects on mid-career learning at work, team working and the transition from education to work. We then modified this inductively during the first 18 months of the project. Inter-coder reliability was improved by discussions of independent coding by several team members.

Two research fellows were qualified professionals in nursing and engineering. The third spent a month working in an accountancy office to familiarise herself with that context. All three received several months training focused on researching workplace learning, in which the principal investigators shared their experience, discussed the literature and supported practice observations and interviews. Special attention was given to eliciting tacit knowledge and implicit learning, and to handling the complexity of many professional situations.

Teaching and Learning Research Programme



TLRP involves over 30 research teams with contributions from England, Northern Ireland, Scotland and Wales. Work began in 2000 and will continue to 2008/9.

Learning: TLRP's overarching aim is to improve outcomes for learners of all ages in teaching and learning contexts across the UK.

Outcomes: TLRP studies a broad range of learning outcomes, including the acquisition of skill, understanding, knowledge and qualifications and the development of attitudes, values and identities relevant to a learning society.

Lifecourse: TLRP supports projects and related activities at many ages and stages in education, training and life-long learning.

Enrichment: TLRP commits to user engagement at all stages of research. It promotes research across disciplines, methodologies and sectors, and supports national and international co-operation.

Expertise: TLRP works to enhance capacity for all forms of research on teaching and learning, and for research informed policy and practice.

Improvement: TLRP develops the knowledge base on teaching and learning and policy and practice in the UK.

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Teaching and Learning RESEARCH BRIEFING

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Early career learning at work Insights into professional development during the first job

This longitudinal study observed the workplace learning of 92 professional accountants, engineers and nurses during their first three years of full-time employment. Its main focus was on informal learning and short semi-formal learning episodes. Previous research had shown that these are the major source of mid-career learning. It found out what was being learned, how it was being learned and the factors affecting learning in a wide range of work settings.

- Professional learning at this stage includes both formal and practical knowledge. Performance requires several aspects of knowledge to be combined fluently. → Expertise is complex, and is best represented by combining accounts of performance episodes with trajectories of different types of knowledge.
- Most learning takes place through work processes, and is triggered by challenging work and by consulting or working alongside others. → The allocation and structuring of work are key for learning. Learning from others depends on good relationships and an active learning culture in the work setting.
- Many learning episodes entail active support from helpful others, either colleagues on the spot or designated mentors or coaches. → On-the-spot support from colleagues is most important during the first few months. Coaching is important for some skills. The quality of feedback and emotional support is critical.
- Learning is enhanced by confidence and personal agency. These are developed by appropriate learning opportunities and a supportive workplace climate. → The local manager has a critical role in creating mutual trust and a learning culture, with opportunities for people to learn together on challenging tasks.

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The research

Modes of learning at work

We found that our participants learned more through their work than through formally organised learning events, even in accountancy, which includes a substantial programme of formal training and examinations. So we distinguished between working processes, such as working with clients, working with colleagues or tackling challenging tasks, from which they learned as they went along, and specific learning processes, such as being coached or taking a course, for which they stopped normal working. Within both types of process there were short activities, which contributed to learning, such as asking questions or receiving feedback, and these are also included in Figure 1.

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

Figure 1: A typology of Early Career Learning Processes and Activities

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 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. Working in groups with people who have different kinds of expertise helps one to understand the nature of that expertise and make better use of it.

Designated Mentors were provided by all our partner employers, but most mentoring 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 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 CPD opportunities, but only

rarely received any coaching. Nurses found it difficult to get release for CPD, and received less coaching than they needed, because it was difficult to release potential coaches.

Factors affecting learning at work

We found that support and feedback were critically important for confidence, learning, retention and commitment, especially during the new graduates' first few months when they 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 was the right level of challenge. Newly qualified nurses were over-challenged physically, mentally and emotionally by their sudden increase in responsibility and by 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, many of them seriously so. Nearly all the accountants, however, were appropriately challenged for the majority of their traineeship.

Factors affecting participants' commitment to their work, to their colleagues, and to their employers included the quality of the support and feedback they received, appreciation of the value of their work and their personal sense of agency, which was not necessarily aligned with their employer's priorities. These Learning Factors and their interactions are depicted in Figure 2 below, together with a second triangle, which mirrors the first triangle but focuses on the Contextual Factors that influence the learning factors.

The allocation and structuring of work was central to our participants' progress. It affected the difficulty or challenge of the work, the extent to which it was individual or collaborative, and the opportunities it provided for meeting, observing and working alongside people who had more or different expertise, and for forming

relationships with them that might provide feedback and support. 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. 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 speciality. 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 were in the same departments of the same hospitals.

Only one problem was common across all our partner organisations. Our findings on appraisal showed that participants' concerns about meeting both their own and their employers' expectations arose from inadequate feedback of a normative kind, and that this weakened their motivation and commitment to their organisation.

What is being learned?

Given the complexity of these occupations, it was sometimes difficult to describe what our participants learned. We envisaged them as progressing along several learning pathways at once; and allocated each type of pathway to one of eight main categories, as shown in Figure 3. Both the significance and the importance of these categories changed significantly over the three years, as the nature of the work changed. These changes were:

Dealing with more difficult and complex problems, e.g. sicker patients, larger sections of an audit, more flexible use of protocols, designing discrete components, use of formal knowledge.

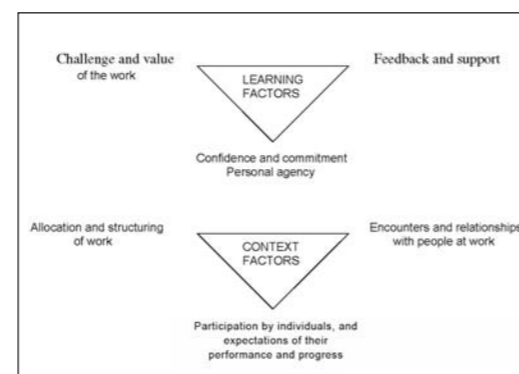


Figure 2: Factors affecting learning at Work: The Two Triangle Model

Widening their range of competence, e.g. budgets, value for money, liaising with clients, other professions or agencies, secondments, giving presentations.

Acquiring greater responsibility, e.g. being 'in charge', becoming a team leader or manager, dealing with personnel, supporting other people's learning.

We treated our pathways as learning trajectories to accommodate the discontinuities of lifelong learning. At any time:

- Explicit progress could be being made on several trajectories
- Implicit progress could be inferred and later acknowledged on other trajectories
- Progress on yet other trajectories might have begun to stall or even regress through lack of use.

This research confirmed that newly qualified professionals have remarkably varied profiles across most relevant learning trajectories, as a result of both their individual agency and of the different opportunities offered by the learning contexts through which they passed. Using learning trajectories 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. The complexity of expertise is best represented by combining accounts of 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 performance
- The conditions under which the performance took place, e.g., degree of supervision, pressure of time, crowdedness, conflicting priorities, availability of resources
- The situation that gave rise to the performance
- 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

Major implications

This project has confirmed that the majority of workers' learning occurs in the workplace itself. Formal learning contributes most when it is both relevant and well-timed, but still needs further workplace learning before it can be used to best effect. Our data suggests that there is considerable scope for enhancing workplace learning in a wide range of contexts. At the moment, workplace learning is neglected by national policies and most public and private organizations. This neglect needs to be remedied. Our key findings are:

Support and Feedback

These are critically important for learning, retention and commitment. Feedback is most effective in the context of good working relationships. Much feedback is best provided by people on the spot, such as members of audit teams and in other contexts where the local workplace has developed a positive learning culture of mutual support. More normative feedback on progress, strengths and weaknesses, and meeting organisational expectations is also needed, while the emotional dimension of working life requires ongoing attention.

Enhancing Informal Learning

The quantity and quality of informal learning can be enhanced by increasing opportunities for consulting with and working alongside others in teams or temporary groups. Both being over-challenged, like some of the nurses in the first few months, and being under-challenged, like several engineers, are detrimental to learning and bad for morale. Both problems can be tackled by giving greater attention to the allocation and structuring of appropriate work.

The Manager's Role

Managers have a major influence on workplace learning and culture that extends far beyond their job descriptions. Their role is to develop a culture of mutual support and learning, not to provide all the support themselves. This task should be given much greater priority in management development programmes, incorporated into qualifications for managers and supervisors, and included in the appraisal of all managers.

Knowledge Required

Novices, mentors and managers all need:

- To have greater awareness of the range of ways through which people can learn in the workplace (Figure 1)
- To be able to discuss learning needs in the context of a portfolio of perceived learning trajectories (Figure 3)
- To recognise and attend to the factors which enhance or hinder individual or group learning (Figure 2).

Strategic Significance

The research indicates what needs to be done to develop a learning organisation that is more than a rhetorical aspiration. Factors that enhance learning also enhance retention, quality improvement and organisational performance. Hence senior management needs to address the strategic significance of all these factors in a holistic way.

Task Performance	Role Performance
Speed and fluency Complexity of tasks and problems Range of skills required Communication with a wide range of people Collaborative work	Prioritisation Range of responsibility Supporting other people's learning Leadership Accountability Supervisory role Delegation
Awareness and Understanding Other people: colleagues, customers, managers, etc. Contexts and situations One's own organization Problems and risks Priorities and strategic issues Value issues	Handling ethical issues Coping with unexpected problems Crisis management Keeping up-to-date
Personal Development Self evaluation Self management Handling emotions Building and sustaining relationships Disposition to attend to other perspectives Disposition to consult and work with others Disposition to learn and improve one's practice Accessing relevant knowledge and expertise Ability to learn from experience	Teamwork Collaborative work Facilitating social relations Joint planning and problem solving Ability to engage in and promote mutual learning
Academic Knowledge and Skills Use of evidence and argument Accessing formal knowledge Research-based practice Theoretical thinking Knowing what you might need to know Using knowledge resources (human, paper-based, electronic) Learning how to use relevant theory in a range of practical situations	Decision Making and Problem Solving When to seek expert help Dealing with complexity Group decision making 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

Figure 3: A Typology of Workplace Learning Trajectories