Career Development of Learning Technology Staff: Scoping Study Final Report

JISC Committee for Awareness, Liaison and Training Programme

Document Notes

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Summary

This document forms the final report for the Career Development of Learning Technology Staff Scoping Study which was carried out during the period June to October 2000 with funding from the JISC Committee for Awareness, Liaison and Training (JISC circular 4/99).

The document is prefaced with an executive summary which give key findings and all the recommendations. There follows a review of the background and context for the study and an overview of the approach to data collection. Subsequent sections provide a methodological overview, findings and discussion for each of six constituent studies along with the outcomes from focus groups in the consultation phase. More detailed reports on each of the constituent studies are available from the project web site at http://sh.plym.ac.uk/eds/efffects/jcalt-project/.

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Acknowledgements

With thanks to the Steering Committee for their contribution to this project:

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1. Executive summary and recommendations

1.1 Background

During the 1990s the Teaching and Learning Technology Programme, the Fund for the Development of Teaching and Learning and a range of JISC-funded projects led to the development of an impressive range of computer-based tools and resources at a national level (Schank 1994, Reinhardt 1995, Somekh 1998). In fact the Dearing report noted that the UK was already a world leader in this field (NCIHE 1997). In 1997 HEFCE estimated that around 70% of all UK HEIs were involved in an externally-funded learning technology programme of some kind (cited in Kewell *et al* 1999). Many HE institutions have also taken seriously the challenge of the Dearing Report (NCIHE 1997): '*to harness both the communications infrastructure and the growing and developing collections of high quality learning materials within a management strategy capable of being responsive to the needs of staff, students and other stakeholders in higher education.'* Responses have included investment in C&IT infrastructure, and learning and teaching strategies which explicitly promote more effective use of learning technologies (Gibbs 1999).

Nevertheless, the currrent JISC five-year plan (draft JISC 2000) reports that the provision of technology infrastructure and resources is in danger of outstripping the skills of the community to exploit it (see e.g. 2.1.5, 2.3.8 2.7.8, 8.2, 8.7). This concern is echoed in the latest Campus Computing Survey from the United States (Green 1999), which found that:

> *Two decades after the first desktop computers arrived on college campuses, we have come to recognise that the campus community's major technology challenges involve human factors – assisting students and faculty to make effective use of new technologies in ways that support teaching, learning, instruction and scholarship.*

The overall picture is of a sector investing in C&IT as a response to immediate challenges, but only just beginning to address the long-term implications for human resource management and the work of HE staff.

This document reports on a scoping study to investigate the roles and functions of UK HE staff involved in the development of learning and teaching through the use communication and information technologies. The objectives of the scoping study were:

1. to describe the various staff functions and activities associated with the embedding, development and support of learning technologies in HE;
2. to describe the different categories of staff to whom these functions and activities are typically devolved;
3. to audit the number of staff in each of the categories across a representative range of UK HEIs;
4. to reveal patterns of staff recruitment and deployment across the audited institutions and, where possible, relate these to critical institutional factors;
5. to produce a number of case studies providing a rich picture of the roles and responsibilities of individual staff members within each of the categories identified, and across a range of different HEIs;
6. to make recommendations for further areas of study and strategic focus by the JISC CALT;
7. to provide guidelines for institutions on staff recruitment, deployment and development for effective support of C&IT for learning and teaching.

A significant proportion of staff involved in learning technologies across the sector were represented in the study either as institutional auditors or as stakeholders on the Steering Committee and in the various focus groups and workshops.

1.2 Outline methodology

The project involved several distinct studies, beginning with a role analysis of 35 diverse individuals involved with learning technologies in UK HE, with the aim of describing in greater detail the different roles and activities involved. An audit was then carried out at 23 institutions representing a quarter of all UK HEIs (not including HE colleges, from which insufficient data was received). Here the aim was to investigate the number of individuals employed in each role, their institutional locations and terms of employment, and to provide some background information about learning technology use at the institutions involved. Auditors were all 'native' members of the local learning technology team, and their contribution to the study is gratefully acknowledged. The audit looked at the number of staff employed in different roles, the coordination

of learning technologies at the institution, and fourteen key factors to diagnose institutional progress in the embedding of learning technologies.

To add detail to the picture of learning technology career development, in-depth interviews were carried out with 17 learning technology staff from four representative HEIs. Key institutional managers at these institutions - heads of personnel, staff development, educational development and learning and teaching - were also interviewed to provide an overview of the institutional context of learning technology work, following indications that new staff roles had often been overlaid on existing structures (Liber 1998) without the '*strategic overview and... new personnel structure'* which would allow them to be effective (Gibbs 1999).

A significant number of staff working with learning technologies were involved in the study either as institutional auditors (23) or as members of the focus groups, workshops and briefings which were held at crucial points (33 participants in all). Stakeholder organisations were represented on the steering group or were consulted on the recommendations during the final period of the study.

1.3 Key findings relating to learning technology staff

Staff numbers

1.3.1 Extrapolating from the audited institutions, the study found that around 7500 learning technology specialist staff (not including academic staff) were working in UK universities. Around 4500 of these were found in central units and around 3000 in non-central locations, though the latter figure is likely to be an under-estimate due to the difficulty of identifying these staff.

1.3.2 In addition, around 8000 academic staff in departments (or about 10% of academic staff in audited institutions) were actively working to embed learning technologies into their learning and teaching activities. This figure showed reasonable consistency across institutions, though it is possible that the terms 'active' and' innovative' were being applied in a context-dependent fashion.

Staff roles

1.3.3 The role analysis identified 11 distinct *roles*, though these by no means corresponded with actual divisions of labour among *individuals*, many of whom were carrying out multiple roles. These can be summarised under three categories of individuals with a characteristic range of roles for each type.

1.3.4 **'New specialists'** included the roles of *educational developer, educational researcher, technical researcher/developer, materials developer, project manager* and general *learning technologist*: In practice these roles were rarely carried out in isolation, with most individuals having responsibilities across at least two different areas. From the study it appeared that UK HEIs employed just under 2000 such staff with a specific remit for learning technologies.

1.3.5 'New specialists' were likely to be young (in their late twenties or thirties) and on fixed-term contracts, often supported by external funding. They had typically been in their current post less than two years and at their current institution less than four. They tended not to have staff reporting to them, though many had project managerial responsibilities.

1.3.6 'New specialists' were perceived by all the groups involved in the study as the 'true' learning technologists: multi-skilled and peripatetic but with learning technology work at the core of their professional identity. They were often involved in the entire process of learning technology development, support and use (hence the multiple roles) and had a pivotal institutional role in terms of coordination, liaison and the facilitation of change. Many were involved in institutional working parties or committees. Almost all delivered some form of staff development via workshops, accredited programmes and training courses and/or less formal modes of skill transfer.

1.3.7 *Educational developers* formed the core of this core group, both numerically and in terms of the perceived centrality of their role. Focus groups described the archetypal learning technologist as 'an educational developer with a learning technology specialism' and there were difficulties distinguishing this role from *learning technologist*. Senior managers confirmed that development skills were crucial in recruiting new specialists. Along with focus groups they also confirmed that educational development or '*embedding learning technologies into the curriculum'* was seen as the primary task for most institutions.

1.3.8 **Academics and established professionals** included *academic innovators* as reported above and a smaller number of *academic managers* (around 1000) with secure positions in the institutional infrastructure. These individuals had incorporated an interest in or formal responsibility for learning technologies into their existing professional identity without necessarily becoming learning technology specialists. They constituted both an expert resource in their own right and a client group for the services of staff in the other two categories.

1.3.9 *Academic managers* were generally older than the new specialists and had worked at their current institution for a longer period of time, for example in the library, computing services or educational development. They were likely to be working at a strategic level or in a facilitative role across different parts of the institution, and while they had managerial responsibility this was usually for small numbers of staff.

1.3.10 **'Learning support professionals'** were staff in non-academic roles, specifically *technical support professionals, library/resource professionals* and *C&IT skills professionals*, supporting access to and effective use of learning technologies. Some *learning skills professionals* were also included in this category. The figures suggested that around 4,500 such individuals with a learning technologies remit were employed in UK HE. Their numbers were more difficult to audit accurately but were believed by focus group participants to be rising as learning technologies became an increasingly significant aspect of the learning environment.

1.3.11 Unlike new specialists the 'learning support professionals' did not regard learning technologies as the defining focus of their professional identity but as the context in which they were now applying their professional skills. Unlike the established professionals they tended to be in the early part of their careers, without managerial or strategic responsibilities. They were likely to have a client services orientation, though some also saw their role as developing or ‘cascading skills to’ others (staff and students).

Staff locations

1.3.12 Learning technology staff were found in an average of eight different *central* units (i.e. excluding departments, faculties and colleges) at each institution. This was seen by auditors and focus group participants as an obstacle to effective coordination of effort, but not necessarily as an obstacle to promoting change overall where it was necessary to work across a range of institutional cultures, structures and practices.

1.3.13 The location most commonly associated with learning technology staff was the library/learning resources unit, followed by the learning and teaching development unit and computing/information services. Half of audited institutions appeared to have a dedicated learning technology unit, but the presence of such a unit did not lessen the number of other units/services in which learning technology specialists were located: if anything it was associated with a proliferation of learning technology roles in other areas of the institution. Central units appeared to have a coordinating function with respect to other staff in multiple locations. Generally, they were staffed by a small number of new specialists and managed by an 'established professional', who had often moved sideways within the institution to lead up the unit.

1.3.14 Many academics and learning support professionals were supporting learning technologies alongside their existing roles in academic departments, though their numbers were difficult to assess accurately. There was evidence that learning technology support may be becoming *less* centralised as budgets were devolved. While departmental staff were well placed to support the integration of learning technologies into curricula and pedagogical cultures they were also vulnerable to isolation from colleagues working with learning technologies in other departments or central areas.

Skills and activities

1.3.15 The initial role analysis identified 58 separate activities involved in the coordination, development, use and support of learning technologies. On average participants carried out at least 20 activities as ‘core’ or ‘central’ to their role, and a further 20 ‘regularly’ or ‘occasionally’, indicating that these staff required competence in an extraordinarily wide range of areas.

1.3.16 Ten activities were central for a majority of respondents, regardless of their specific role, and of these ‘*keeping abreast of current developments in learning technologies’* scored most highly.

1.3.17 All of the remaining nine were educational, developmental, interpersonal/communicative or strategic rather than technical activities. Case study participants (who did not include academic staff) confirmed these findings: all gave technical skills a lower priority than interpersonal and pedagogical skills in carrying out their current role, though this may in part be due to the ease with which they acquired new technical skills ‘on the job’. Institutional managers also reported that technical skills were less important – or easier to recruit and develop – than an awareness of pedagogical issues and an ability to operate effectively within academic culture.

1.3.18 Other skills which were important for new specialists and established professionals included: management, project management, information management (especially online information skills),

strategic organisational and networking skills and an ability to develop others. New specialists to a lesser extent also required 'traditional' academic skills in research, publication, course design and teaching.

Values and commitments

1.3.19 Learning technology specialists typically placed a high value on working in the academic community and were well qualified in academic terms. They were, however, aware that their skills could command higher salaries in other sectors. They were particularly concerned with the status of their roles and the academic legitimacy (or otherwise) of their work.

1.3.20 The values of learning technology staff emerged when they were asked about the benefits and risks of using C&IT in learning and teaching. These could be summarised as:

- A strong focus on quality student learning, often expressed as a personal commitment arising from their own experiences as learners
- A positive orientation to change (excitement, challenge, adaptability)
- Belief in collegiality and teamwork, though a sense that academic colleagues sometimes undervalued their contribution
- Commitment to building networks and working across boundaries
- Disapproval of cost-cutting and time-saving measures in higher education

1.3.21 The main advantages of working with learning technologies were seen as: the excitement of working in a new and changing field; intellectual challenge; helping students to learn more effectively; the rewards of working with academic staff; personal enjoyment.

1.3.22 The main disadvantages were seen as: lack of time and overwork; lack of personal security; lack of status and financial reward; a perceived lack of awareness and recognition from academic staff; lack of obvious career progression; the difficulty of keeping up with rapid development in several fields.

Professional development

1.3.23 Learning technology staff needed to undertake continuous professional development to remain competent in a rapidly changing area of expertise.

1.3.24 Formal development opportunities were often available for academic staff and established professionals: typically in-house workshops on learning technology use (for academics) and external conferences or briefings related to their 'established' profession (for managers, librarians, heads of computing services etc). Staff development events which integrated pedagogical with technical skills were available to academic staff at just under 60% of institutions audited, and a similar percentage incorporated learning technologies into their new lecturers' programme. Academic staff development for learning technology use was generally on the increase and in some places becoming formalised through accreditation.

1.3.25 'New specialists' on the other hand had few or no formal opportunities for professional development – most of them were delivering the opportunities described in 10.4.24 above. The most significant need expressed by these staff was for time set aside to undertake self-directed learning, particularly for the exploration of new technologies (both to find out '*how it works'* and to '*gain a vision of what it can achieve [in learning and teaching]*'). Existing expertise meant that these staff picked up technical skills extremely fast, through a process of just-in-time learning facilitated by consultation with colleagues.

1.3.26 'New specialists' placed a very high value on collaborative learning and the exchange of ideas and expertise with peers. In many respects they already constituted a research or professional community with inter-institutional networks and a strong sense of common values. Useful modes of peer learning included conferences, seminars, a *'think tank (well actually we meet down the pub and chuck some ideas around, but that has resulted in... putting in bids'*), peer discussion, skills-sharing sessions, email discussion lists, co-mentoring and collaborative problem solving in multi-role development teams.

1.3.27 New specialists were keen for time to undertake further academic study (e.g. a PhD or Masters in a learning technology related subject) and/or to pursue their own research. A lack of academic legitimacy was widely seen as a problem for individuals and for the learning technology profession as a whole.

1.3.28 Learning technology staff would also value further development in project management skills including financial planning, building collaborations across institutions, and writing bids for funding.

1.3.29 Professionalisation was generally regarded as a positive strategy, for example through the ILT, ALT, EFFECTS and other mutual recognition groups, but because of the tendency for individuals to move across ‘leaky’ professional boundaries such accreditation would need to be flexible and capable of being tailored to the individual.

1.3.30 Focus groups identified a need for development opportunities for teams as well as individuals.

Career development and progression

1.3.31 Two-thirds of learning technology specialist staff were found to be employed on permanent contracts; however, this figure may have been biased by the greater ease with which permanent staff were recognised and audited.

1.3.32 Established professionals (academics and academic managers) and 'learning support professionals' (especially technical support staff) were significantly more likely to be permanent than the 'new specialists'. However, the role of *educational developer* was significantly more likely to be permanent than other 'new specialist' roles.

1.3.33 Learning technology staff generally did not feel that there were career progression opportunities within their current institutions and professional contexts. They expected to progress either by changing institutions or moving sideways into a more managerial (or alternatively more mainstream academic) role.

1.3.34 Many managers recognised that the skills of learning technology staff were crucial to the achievement of institutional goals, but few felt that these skills were being deployed or developed in a strategic fashion.

1.3.35 Institutional managers saw recruitment and retention of learning technology staff as an area of current and growing concern. There was recognition by both managers and learning technologists that skills were being lost to other sectors faster than they were being replaced. However, there was no evidence that institutions had defined a management responsibility for the continuing professional or career development of their learning technology staff: it was widely felt that 'the nature of work in this area' was the cause of the problem.

1.3.36 Strategies for recognising teaching and learning excellence were largely in place but it was still rare for academic staff to receive promotion on teaching and learning criteria alone. The existing reward systems did not extend to non-teaching staff working in the area of learning technologies or learning and teaching development, and no alternatives were being considered by the institutions in this study.

1.3.37 Contracts and grading systems for learning technology posts were extremely varied, with little evidence of a systematic approach across or within institution and little apparent room for progression or mobility.

1.3.38 Teaching and learning managers in particular, but all institutional managers to some extent had concerns about keeping their own C&IT skills up to date.

1.4 Key findings relating to institutions

Coordinating learning technologies

1.4.1 Activities relating to learning technology development, support, embedding, management and use took place in multiple locations across institutions. In many ways this was seen as an inevitable consequence of the growing technology-dependence of the HE learning environment. However, learning technology specialists felt that a lack of coordination sometimes made their job more difficult and led to duplication of effort or failure to effectively exploit good practice across the institution.

1.4.2 A high proportion of audited institution (91%) had in place initiatives to promote learning and teaching development, but only 29% had secure budgets devoted to it in the longer term and only 14% made learning and teaching record central to academic appointments and appraisals. This implies that learning and teaching development has yet to be well embedded into the resource planning cycle or the trajectory of academic careers, findings confirmed by focus groups.

1.4.3 In a similar vein, most institutions reported a strong mission focus on learning and teaching excellence and/or a central learning technologies initiative, but less than 10% that staff in departments were expected actively to contribute to the scholarship of teaching or that departments were making a concerted effort to integrate learning technologies into their programmes. Again there seems to be a problem coordinating central policy with local priorities and practices.

Promoting change

1.4.4 At the institutional level, our audit showed two distinct *development trajectories* for the embedding of learning technologies.

(a) A focus on factors associated with institutional *expertise* in the use of learning technologies: staff C&IT skills, student C&IT skills, electronic/multimedia resources and networks and collaborations.

(b) A focus on factors associated with institutional *infrastructure* (C&IT management, C&IT infrastructure, learning technology support, learning technology funding and administrative systems) and institutional *strategy* (learning and teaching strategy and research and development).

Institutions which scored most highly on our audited factors had followed both trajectories in parallel, while the lowest scoring had failed to invest significantly in either.

1.4.5 A number of distinct *strategies for development* were also apparent, and some institutions had focused strongly on one or another. These strategies included:

(a) **academic staff secondment**, with a focus on developing academic staff skills (and hence the academic curriculum) through short-term secondments to central units where they receive targeted support to develop their own interests and expertise. The success of this approach depends on these staff returning to their original departments where they act as resources and change agents for others.

(b) **coordination/brokerage**, with a specialist learning technologies team acting as brokers, facilitators and coordinators of local activities. The central team may act as gatekeepers to specific kinds of expertise and support but ideally also as ‘knowledge managers’, building networks to share information and expertise.

(c) **updating professional expertise**, with a focus on developing the skills of central services staff (e.g. staff development, computer services, learning and teaching development, library, media services, learning skills support). The relationship between central services and departments remains one of client service, but staff are able to offer new forms of service for a more technology-based learning environment.

(d) **supporting materials production**, with central unit(s) providing specialist materials development services (e.g. web-based, multimedia, audio-visual) to academic staff and departments as clients. Here the focus is usually on high production values. Products may be marketed externally to the institution.

(e) **small-scale projects**, with specific priorities identified for funding. Resources are either distributed across departments or made available for bidding to undertake specific learning and teaching development projects. These resources may include buy-out for academic secondment and/or the support of specialist learning technology staff.

(f) **cultural initiatives**, with an institution-wide focus on a specific new agenda (such as student centred learning, open and distance learning, the virtual campus). Overall mission, planning, budgeting and coordination tend to be under the aegis of a specific senior member of staff who is closely identified with the initiative and helps to secure the support of middle management.

(g) **infrastructure initiatives**, with a major investment in networking, software, hardware, buildings and/or facilities. To ensure effective use of the new facilities, there may be a concerted programme of staff development, targeted development funding and/or the employment of new support staff.

Note that all of these strategies depended on the existence of expert learning technologies staff, though the specific skills mix required of these staff varied.

1.4.6 Teaching and learning innovation still appeared to be focused at the project level with multi-role teams brought together for short-term collaboration on relatively local developments. This was seen by some managers as a useful model for working towards organisational change in areas other than learning technology. Concern was also expressed, however, at the apparent failure to ‘mainstream’ and ‘scale up’ project-based developments.

1.4.7 Focus groups concluded that completely different kinds of strategic and organisational development were required for ‘mainstreaming’ as were required for innovations development. This would depend on:

(a) learning technology specialists working at a strategic level across institutional boundaries

(b) senior managers becoming much more aware of the issues involved

(c) closing the loop of policy, planning and resource allocation

(d) integration of technical, administrative and human systems, but

(e) flexibility within systems for continuous innovation and change

(f) central brokerage, knowledge management and *coordination without territoriality*

(g) effective recognition and reward systems for all categories of staff

Specific examples of good practice

1.4.8 Institutions which were nationally recognised as centres of LT good practice and innovation had in common: good collaborative networks; targeted support for teaching staff to integrate LTs into their courses; department/service teams with their own local planning to meet strategic aims; specialist learning technology development teams within computing services; a requirement on programmes of study to address student C&IT skills; and a requirement on departments to demonstrate pedagogical research/scholarship of teaching.

1.4.9 Where departments were required to demonstrate pedagogical research/scholarship of teaching, this was most effectively supported by a specialist central research and development unit, as well as targetted support for individual staff looking to integrate learning technologies into their courses.

1.4.10 Routine use of LTs across all programmes of study was associated with LTs being incorporated into curriculum planning, e.g. module documentation, and with changes to QA processes to take into account programmes delivered wholly or partly through use of LTs.

Staff and student C&IT skills

1.4.11 Auditors at just 60% of institutions were confident that all or most academic staff had generic C&IT skills. Only three institutions had formal mechanisms for monitoring staff skills, and in two cases this was by survey (i.e. not on an individual basis). However, most institutions did provide opportunities for staff to acquire integrated technical and pedagogical skills for embedding learning technologies, and there was some evidence of moves towards formal recognition/accreditation of skills.

1.4.12 Less than 15% of the institutions in our study audited student C&IT skills on entry, and none offered continuing review and support on a central basis. Comments indicated that student skills were generally the responsibility of departments or programmes of study, but in only 20% of cases were departments or programmes required to actually record the skills that would be expected of students, or indicate how they would be supported.

1.4.13 There was a strong correlation between staff and student C&IT skills across all institutions.

General trends in learning technology development, support and use

1.4.14 Focus groups supported the hypothesis that there had been a shift of emphasis in the use of learning technology away from developing new computer-based materials towards supporting access to existing materials. A similar shift was observed away from developing specialist educational software towards supporting the use of generic software for learning and teaching, and the integration of managed learning environments.

1.4.15 There was a general preponderance of support over development roles and focus groups supported the hypothesis that this was a period of consolidation, embedding and institutional adaptation following an initial period of investment in technical development and cutting-edge applications.

1.4.16 The infrastructure priority at most institutions was the development of a managed learning environment, integrating learning and teaching applications with other systems such as libraries, student records, (HE)MIS, intranets etc. Only 24% already had some kind of managed learning environment in place.

1.4.17 In the current focus on individual access to networked resources, there was a consensus that too little account had been taken of actual learning spaces and the facilities available to support face-to-face group learning (e.g. data projectors, electronic whiteboards, videoconferencing facilities).

1.4.18 Only four institutions audited (19%) provided the full range of: technical support; support for teaching staff in embedding the use of learning technologies; support for students in accessing and using learning technologies; and support for the development of new materials or applications.

1.4.19 Human resource issues and cultural change were regarded as the crucial challenges currently facing UK HEIs, and not the adoption of appropriate technologies per se.

1.4.20 Learning technology staff saw the quality assurance of teaching as a genuine driver for change that had helped institutions to focus efforts on the improvement of student learning. Most auditors (86%) believed that money from their institution's TQE fund would be used to enhance learning technology development and support. Once again, however, in only a third of institutions were departments or service teams developing local plans to put the central strategy into practice.

1.5 Recommendations for further study (FS)

Recommendation FS1
Further study is needed to scope the specific needs of the different groups of staff identified in Section 4 of this study in relation to JISC services, and their specific roles in facilitating access to JISC services by other members of their institutions. This study should also consider the extent to which staff in departments are taking on learning technology support roles, to identify trends and to explore effective ways of offering JISC services to and via these staff.

Recommendation FS2
An in-depth study should be carried out at a small number of institutions which have pursued different strategies for embedding learning technologies. Ideally these should include at least one example of the seven strategies identified in (7.2.2):

1. academic staff secondment
2. coordination/brokerage
3. updating professional expertise
4. supporting materials production
5. small-scale projects
6. cultural initiatives
7. infrastructure initiatives

These could be used as the basis for case studies into effectiveness of different approaches in different institutional contexts.

Recommendation FS3
The institutional audit tools should be developed further for greater ease of use and to exclude any indicators which are not significant for predicting overall institutional performance. The beta version should be distributed to all UK HEIs with clear guidelines for use, allowing institutions to compare their own performance with that of other institutions, and to compare issues longitudinally from one year to the next. There would be value to the JISC in continuing to collate and analyse data, particularly from the 23 original audit institutions, and in extending the range of the study into the FE sector (with any necessary adjustment of the tools).

Recommendation FS4
A comprehensive survey should be undertaken of how staff C&IT skills are monitored, appraised, accredited and supported across UK HE, and probably across other categories of staff not included in this study (e.g. administrative, manual). This should include consideration of personnel arrangements, formal and informal development opportunities, funding for professional and academic study, national accreditation and standards frameworks, and national providers of relevant courses and materials. The research team notes that a similar call has already gone out (JISC 9/00).

Recommendation FS5
A similar survey should be undertaken of how student C&IT skills are audited on entry, monitored, accredited and supported throughout their course of study. The research team notes that a similar call has already gone out (JISC 9/00).

Recommendation FS6
There is a need for study into institutional strategies for scaling up learning technology use and curriculum innovation from the project to the institutional/departmental level, looking in particular at:

- Closing the loop between central policy initiatives and local planning/resource allocation
- Translating generic development goals into departmental/programme goals

- How and to what effect money from the TQEF has been used.

Obvious collaborators would include the ILT, GLTC, LTSNs and the National Coordination Team/Tavistock Institute evaluation team for TLTP3.

Recommendation FS7
The JISC should continue to play a pro-active role in promoting the review and analysis of research into the student experience of learning in a technology-rich environment, for example by collating findings from its own JTAP and JCALT funded projects and working collaboratively with the Tavistock Institute on the evaluation of the TLTP and FDTL programmes. Key issues for the present time centre on the use of VLEs, specifically how they have been selected, implemented, integrated and evaluated and what impact they have had on student learning.

Recommendation FS8
Further study into academic innovators should focus on their motivations for becoming involved with learning technologies, the implications this has for their own career progression, their contribution to the development of their colleagues, departments and institutions, their relationship with learning technology specialist staff and their professional development needs.

Recommendation FS9
Further study of learning technology staff should focus on their motivation, professional identity, personal and professional aims, and preferred modes of professional development so as to address the growing problem of recruitment and retention. It is understood that a SEDA small grant has already been provided to carry out a study in this area: a modest amount of further funding could secure some firm recommendations for the JISC.

Recommendation FS10
A further study should investigate the extent to which learning technology roles have developed as a result of external funding opportunities (e.g. TLTP), and the impact which they have had on institutions. Specific issues might include their contribution to:

- Institutional 'knowledge management' and brokerage
- professional development of colleagues
- strategic planning
- foresight management and response to change
- effective project team working
- internal and external networks
- the exploitation of external opportunities

The aim of this study would be to develop clearer guidelines for future funding programmes as to how human resources arising from external funding can best be deployed in the longer term, and as to how the benefits of such outcomes can be included in impact evaluation of funding programmes.

Recommendation FS11
Further analysis of the findings from Scotland should be carried out in consultation with the SHEFC-funded ScotCIT network to ascertain whether the experience of Scottish HEIs is significantly different and to assess the value of replicating this experience – particularly the ScotCIT network itself – in the rest of the UK.

Recommendation FS12
The findings of the present study should be passed to HERA with a recommendation to carry out a more detailed role analysis of learning technology staff at representative HEIs (5.2.5).

1.6 Recommendations to the JISC (J)

Recommendation J1
The JISC should explore mechanisms for supporting the learning technology community to develop its collective expertise and for helping individuals to *'keep abreast of current developments'*, for example through:

- specialist bulletin boards
- regional and national conferences and workshops
- an online newsletter allowing dissemination of JTAP and JCALT project findings and reports of institutional activities

- mentoring and co-mentoring across institutions
- regional and national skills sharing networks

Recommendation J2
The JISC should draft a strong response, based on this report, to the HEFCE Consultation Document 00/56 on Rewarding and Developing staff in Higher Education. This response should focus in particular on points 9a, 9b, 9d and 9e, and should argue for clear guidelines to institutions on how learning technology staff and skills should be addressed in the writing of their human resource strategies. The JISC are also asked to use appropriate consultation opportunities to argue for a single salary spine for all staff working in UK HE, based on the findings of this study; also to argue for improved data recording methods for HE which recognise changing staff categories and roles.

Recommendation J3
The JISC should endeavour to identify and contact learning technology specialists working in institutional libraries, resources units, learning and teaching units and computing services departments as well as in specialist learning technology units. The JISC should then target its activities and services in a way which discriminates among these groups of staff, recognising that they have different needs, different relationships to the student learning process and different roles in bringing about institutional change. The JISC should also work with the LTSNs to identify subject-specific learning technology staff and develop a common approach to supporting them, which takes account of their subject specialism but allows them to share expertise with others in similar roles. These activities will need to be carefully integrated with the user needs analysis recommended in FS1.

Recommendation J4
The JISC should work with appropriate other bodies (e.g. SEDA, the EFFECTS project, UCoSDA, ILT, ALT, ScotCIT) to explore models of professional development for learning technology specialist staff which:

- are process based, experiential and contextual (e.g. action learning)
- engender a capacity to understand new technologies and apply them to learning and teaching, rather then insisting on a range of specific technical skills
- recognise the importance of interpersonal, communicative, pedagogical, managerial, information management, pedagogical and strategic skills in learning technology work
- promote a developmental focus and a concern for student learning
- allow room for reflection on the impact of learning technologies
- allow room for team as well as individual development
- are at an appropriate level to enhance the status and legitimacy of learning technology work
- provide flexible opportunities for individuals to develop and evidence their achievements

While it is not the JISC's role to offer accredited programmes, it is in a position to offer advice on the content and context of a framework within which programmes could be accredited and via the Learning Technologies portal to provide a forum for the national collation of resources to support such programmes.

Recommendation J5
The JISC should also work with other professional bodies e.g. ILT, the Libraries Association and UCISA to explore how appropriate learning technology expertise can be integrated into existing professional development pathways. Learning technology staff should be encouraged to seek ILT membership, which should be open to all categories of staff involved with learning and teaching on the principle of equal recognition for work of equal value.

Recommendation J6
The JISC is asked to continue its valuable work with the GLTC, ILT, SEDA and the LTSNs in developing networks and fora for the exchange of ideas and experiences among academic innovators, exploring in particular the possible role of the proposed Learning and Teaching portal and the Scottish NetCulture/ScotCIT projects.

Recommendation J7
The JISC is asked to work with the CVCP, UCISA, ALT and other relevant organisations to ensure that a range of development opportunities in strategic learning technology planning is available for institutional senior managers. This should draw on the recent training needs analysis by Management Connections Online, though recognising that the requirements of managers will not be limited to technical skills. Through its existing contacts and using the institutional auditors as model change agents, the JISC could offer:

- support for the lt-auditors email discussion list to develop into a working group on institutional strategic change, including progressive institutional managers already known to the JISC;
- support for co-mentoring and co-consultancy across participating institutions;
- support for the further development and implementation of the institutional audit tool, and analysis of lessons learned across the sector;
- regular face to face seminars for sharing of best practice in organisational change;
- one-off conferences enabling senior managers and learning technology specialists to meet and develop consensual recommendations for organisational change

Recommendation J8
The JISC is encouraged to work with UCISA TLIG to identify examples of good practice in C&IT management, for example:

- where C&IT management is proactive in encouraging learning and teaching innovation
- where academic innovators are actively involved in decisions relating to infrastructure development
- where central and local decision making processes are mutually informed and accountable
- where multi-role project teams are managed in a flexible and effective way

The aims of this would be to develop good practice guidelines for UCISA members and for JISC ASSIST on effective management practices in this area.

Recommendation J9
The JISC should also investigate the impact of the SHEFC-funded ScotCIT network and if early indications are that this is a successful approach, they should make urgent representation to the other Funding Councils of the need for a nation-wide network along similar lines. Meanwhile the JISC may have a role in providing overall coordination for a number of related networks including ScotCIT, the M1/M59 link, the South Coast Learning Technologies Network, the Welsh Universities staff development network, the EFFECTS professional development network and the Learning Technology Officers' forum of the ALT.

Recommendation J10
The JISC should continue its priority work of supporting institutional IT teams in the development and integration of managed learning environments, including wide dissemination of the outcomes of the CIS Focus projects and Managed Learning Environments workshop and ongoing JTAP projects.

Recommendation J11
The JISC and other funders of development projects are encouraged to require the development and progression of project staff to be explicitly addressed in future bids for funding.

Recommendation J12
The JISC should consider establishing a development fund, the terms of which encourage collaboration between learning technology researchers/developers and educational researcher/developers, given the evidence that these two forms of expertise are often located in different institutions and that a synergy between the two is necessary if learning technologies are to be used effectively for enhanced student learning.

Recommendation J13
The JISC are asked to consider funding or seeking funds for specific bursaries to allow individuals working with learning technologies to pursue further academic and professional studies. The JISC are also asked to add their voice to calls for recognition of subject-specific pedagogical research by RAE panels, specifically research involving the use of learning technologies.

1.7 Recommendations for Senior Managers (SM)

Relating to Learning Technology Staff (Personnel and Staff Development issues)

Recommendation SM1
The grading and job descriptions of learning technology staff should as far as possible recognise the wide range of skills required and the strategic significance of these roles for the future of the institution. Human Resource managers should work together to develop a consistent framework for job gradings, contracts, job descriptions and salary levels across the institution, and this should form a part of any human resource strategy (see HEFCE 00.56).

Recommdnation SM2
Personnel managers and in particular middle managers responsible for recruitment of learning technology related staff are asked to use short-term contracts only where external funding makes this absolutely necessary. A long-term approach to human resource planning in this area accepts that projects, responsibilities and funding sources will change but that individuals require stability, security and development over time.

Recommendation SM3
Appropriate mechanisms should be explored for ensuring that learning technology staff have protected time for professional development, including self-directed and peer learning and opportunities to pursue academic study where appropriate. Other suitable arrangements might include

- mentoring by members of the educational/staff development team, academic innovators and/or change agents seasoned in the politics of the institution
- support for research and publications where appropriate
- support to join the ILT or other suitable professional body, and to build a portfolio of CPD evidence
- opportunities for collaborative work in multi-role 'learning teams'
- a role on institutional committees and working parties where appropriate
- support for external development opportunities, recognising that these will be effectively cascaded to other staff

Recommendation SM4
It would be wise to ensure that specific development opportunities were made available in:

- identifying and pursuing external funding
- project management and planning
- communication skills appropriate to an academic community
- current issues in learning and teaching

Some of these opportunities may be available locally, for example through learning and teaching certificate courses for academic staff. Other opportunities will need to be identified outside the institution.

Recommendation SM5
Managers are urged to consider credible incentives for staff moving into or remaining in learning technology roles, for example:

- access to similar reward and recognition processes as academic staff (e.g. based on learning and teaching innovation and outcomes)
- academic participation and the freedom to pursue research
- autonomy and ownership of development projects
- intellectual and creative fulfilment: a holistic approach to development rather than providing a 'service' at a particular point in the development cycle
- direct involvement with the learning and teaching process (intrinsic rewards of feedback from staff and students)
- scope for personal development and lifelong learning
- creative engagement with and exploration of new technologies

Recommendation SM6
Managers are urged also to minimise the disincentives for staff moving into or remaining in learning technology roles, for example

- overwork, lack of support and juggling of multiple tasks
- lack of job security and uncertainty of career progression
- constant organisational restructuring and change

Relating to institutional change

Recommendation SM7
Consider using the matrix developed in Section 5 to ensure that responsibility for learning technology-related activities is clearly defined and transparent to the staff involved, and that there are sufficient staff to carry out these tasks effectively. There should be recognition that the different roles require different skills and aptitudes, and different kinds of staff/professional development.

Recommendation SM7
Consider using the matrix developed in Section 7 of the institutional audit tool to ensure that human resource planning for learning technologies is (a) *comprehensive*, covering all the stages of learning technology management, development, support and use (b) *embedded*, including staff with appropriate expertise and contacts in all departments and central services, and (c) *coordinated* (without necessarily being under a single management structure) to avoid confusion among potential users and unnecessary duplication of effort.

Recommendation SM8
Consider using the tool developed in Section 6 to analyse the institution's current performance on key factors relating to learning technologies, identify areas for priority attention, and map progress over time.

Recommendation SM9
Consider a range of strategies for recognising and rewarding staff involved in teaching innovation, including substantial changes to structures for appraisal, progression and promotion as well as smaller scale initiatives. These strategies should be available as widely as possible, including to staff not in traditional academic posts.

Recommendation SM10
Consider introducing into the appraisal system specific consideration of individual requirements for C&IT skills, and ensure that appropriate guidelines are available as to the skills which should be expected of different categories of staff. These should include both generic and role-specific skills in which use of C&IT is fully integrated into relevant professional activities. Also review the skills and support needed by students to gain functional access to learning technologies, and ensure that appropriate opportunities are available both from central services and in departments and programmes.

Recommendation SM11
The current priority for C&IT investment is integration of systems, especially of Managed or Virtual Learning Environments with student records, library systems, HEMIS and other networks. Most institutions are also moving towards campus-wide computer mediated communications and computer assisted assessment systems, and access to computer-based learning resources across subject areas.

Recommendation SM12
Institutions require dedicated staff to support learning technology development, embedding and use. Ideally support should be available in four areas:

- Technical support (hardware, software and networks)
- Support for staff embedding learning technologies into curricula
- Support for students accessing learning technologies (e.g. information literacy skills)
- Support for the development of applications, environments and resources
- (Institutions which scored highly on the audit of Key Factors also provided academic support for learning technology research and development)

Recommendation SM13
Multi-role, cross-disciplinary teams are effective at delivering change in learning and teaching practices. They should be judged according to their outcomes, rather than the ease with which they fit on the organisational chart. Institutional managers should review a range of opportunities for introducing this mode of working, including the possibility of shared, flexible and matrix management, and encourage the development of project management expertise among a wide range of staff.

Recommendation SM14
Managers should consider funding local (departmental) development projects on the principle of ‘letting many flowers bloom’, recognising that a relatively small level of funding can help to build a critical mass of innovators in departments. Learning technology specialists must be involved in decisions over how this funding is allocated, and there must be mechanisms for evaluation and dissemination of outcomes.

Recommendation SM15
A longer view should also be taken, however, when putting in place funding for learning technology

development and associated human resources. Short-term initiatives will not attract committed staff with valuable skills. For academic staff, full-time secondments to learning technology teams for a period of at least a semester are extremely effective; for learning technology specialist staff it is important to look at long-term projects and sources of funding or posts which last beyong the lifetime of individual projects, with the possibility of progression built in.

Recommendation SM16
There is an urgent need for institutions to close the loop between central strategies on learning technologies and local action planning/resource allocation, with effective communication and accountability in both directions. Systems need to be integrated but in a way which allows maximum flexibility for individuals, departments and teams to translate strategies effectively into their own contexts. Loose accountability procedures focusing on outcomes rather than processes can support local good practice and innovation.

Recommendation SM17
Departments and faculties must be involved in and take ownership of the process of change. Encouraging a shared agenda without top-down intervention means promoting arrangements such as secondments, cross-department mentoring, information-sharing forums, internal publications and discussion lists, networks of departmental representatives, teaching fellowships, internal partnerships and collaborations.

Recommendation SM18
Institutions should put in place mechanisms for ensuring that the experience of learners, and of staff working directly to improve student learning, are taken into account in all decisions regarding technical infrastructure, central administrative systems, facilities and learning spaces.

Recommendation SM19
Staff and educational development are essential activities, particularly in times of external pressure and institutional change. Individuals and units responsible for these activities should be protected as far as possible to get on with their job at critical times such as restructuring.

Recommendation SM20
Senior managers themselves need regular updating on C&IT and on learning and teaching development, but this should focus on strategic issues and priorities rather than technical skills. In particular, teaching and learning managers need regular access to and communication with senior management teams if strategic and operational activities are to be knit together.

Recommendation SM21
Teaching and non-teaching staff must be integrated into all aspects of the learning and teaching mission of the institution, including access to reward systems, input to committees and working parties, and participation in key cultural events such as degree congregations.

2. Background, review and context

2.1 Advances in communications and information technologies (C&IT) and their impact on Higher Education

Higher education in the UK, as in most of the western world, underwent dramatic changes in the last decade of the twentieth century. Frequently cited indices of change include:

- increasing student numbers (Edwards 1997, Kennedy 1997, Dearing 1997, DfEE 1998);
- decreasing unit of resource (Dearing 1997, DfEE 1998);
- greater heterogeneity of the student population, incorporating more part-time, mature and 'non-traditional' participants (Nye 1997, Dugdale 1998);
- the rise of vocational and professional courses;
- demands from graduate employers for a more skills-based undergraduate curriculum.

In common with other publicly funded sectors, higher education has also been subjected to more rigorous quality control, accountability measures, and an expectation of value for money (Middlehurst 1995, McNay 1995). This has been underlined by the fact that full-time students are now required to cover a substantial proportion of education costs themselves (DfEE 1998), frequently conducting their studies in parallel with part time or even full time work. Personal financial investment in higher education is among the factors which have placed student 'consumers' at the centre of the academic mission (Readings 1996). As part of the widening participation agenda there has also been demand for more flexible modes of course delivery including work-based and distance learning (Spender 1997).

These changes have taken place in parallel with a revolution in communications and information technology (C&IT). The convergence of telecommunications with digital computing applications has driven a massive expansion of digital networks across the face of the globe, with an accelerating drop in the cost of bandwidth (Castells 1998, Scott 1998). As the cost of accessing information has fallen, so too have the costs of digitisation, electronic data storage and online publication. Higher education has played a determining role in the development of the global internet and the accumulation of global electronic resources, and universities remain the most significant owners, providers and users of electronic information (Brown and Duguid 1998, JISC 1999, JISC 2000). Significantly, though, this status is now contested. The knowledge revolution which began with university research communities has undermined the university's privileged access to society's accumulated knowledge.

The C&IT revolution is therefore implicated in the general societal changes which have led to new demands on higher education. It has contributed to a paradigm shift in the nature of knowledge, variously described as the *postmodern shift* (Lyotard 1984, Baudrillard 1988, Usher and Edwards 1994, Newman and Johnson 1999), the shift from *mode 1 to mode 2* knowledge (Gibbons 1999, Enders 1999) or more popularly the rise of the *knowledge society* (DfEE 1998). Universities have had to concern themselves more centrally with applied knowledge, for example by offering vocational degree courses, developing inter-disciplinary areas of study, and working in much closer alliance with the non-academic organisations which make use of their research efforts. Researchers themselves have always collaborated across the grain of institutional structures, but global networking opportunities have arguably increased the strength of these collaborations relative to the academic institution (as indeed have research funding policies) (Agre 2000). Now that the same networking opportunities are extending into learning and teaching activities, the physical structures and locations of academic life seem less and less central to the idea the university (Hanna 1998). At the same time, the changing nature of work in the information economy increases both the demand and the opportunities for lifelong learning (DfEE 1998a). As work patterns become more flexible and as work itself requires a wider range of knowledge-processing skills, universities are no longer providing apprenticeship to a knowledge elite but ongoing learning opportunities to an entire workforce in permanent information revolution. Theorists such as Landow have argued that the distributed nature of electronic information in itself '*challenges conventional assumptions about teachers, learners and the institutions they inhabit'* (Landow 1992).

Despite the tendency for academic knowledge to become dispersed into multiple locations and networks, academic administrative systems have actually been strengthened by technical integration. Library systems, management information systems, student records, timetabling, computer and telephone networks, media services, e-mail, shared electronic work spaces - these rather than campus locations are what define a

modern academic institution, and they are increasingly subject to central control (Agre 1999). C&IT also enhances the incentives to standardise educational provision (Rochlin 1997), which is currently being played out in the UK through the movement towards a national qualifications framework and benchmarking of academic subjects. This is a separate but not unrelated issue to the drive for global technical standards (IMS Project 2000, CETIS 2000). In a competitive global market, learning providers are more likely to succeed if they can tailor their product to global standards, allowing learners to pick and choose transferable learning 'modules' within a national or even international accreditation and quality framework (Scott 1998). Along with government demands for greater efficiency and accountability, globalisation has therefore tended to strengthen the administrative and managerial functions of the university at the expense of academic staff in departments (Ford 1996). Bates has described the resulting institutional model as a Fordist university (Bates 1997).

Within the Fordist model (though not consciously so), Hanna (1998) distinguishes seven organisational strategies for universities in the digital age. Of these, six offer some version of the 'virtual university' paradigm (Bates 1995b, Daniel 1996, Sandelands and Wills 1996, Recker 1998, Barker 1999). The learning and teaching activities of this university have dispersed entirely into the global internet, with only the core activities of administration, management and (perhaps) instructional design being centrally located. 'Core' staff are no longer tenured academics with a strong research record - who become part of the flexibly-employed periphery - but administrators and new professionals who facilitate the smooth running of the enterprise. The seventh model is of a traditional university extending its boundaries through the use of C&IT, perhaps by sharing an intranet with regional colleges, local study centres, and learners based in local workplaces. The nature of academic work is less radically disrupted by this model but there is still a major redefinition of core and peripheral university business.

All of these predictions are a long way from being realised. Even in the US only 40% of higher education courses currently have any web presence at all (Green 1999), and the availability of online courses has if anything enhanced the cultural cachet of the campus experience (Cuneo and Campbell 2000). In a survey of UK HEIs, Henkel and Kogan (1999) found that larger and older universities have responded to external pressures not through strong management and more flexible models of academic work but rather by reinforcing faculty structures and academic credibility. With the exception of some specialist distance learning organisations, UK HEIs have in the last couple of years moved away from ambitious plans for exploiting global markets and refocused on sustaining their existing markets in the UK (Kewell, Conole and Oliver 1999), where student consumers seems to be putting their money on the face-to-face learning experience. More relevant to the majority of UK HEIs, then, will surely be an 'enhanced classroom' model in which C&IT is used to facilitate communication and provide access to electronic resources within a framework of tutor-led learning activities (Smith 1997, Barker 1997, Thompson and Chute 1998, Shneiderman *et al* 1998, Hart, Ryan and Bagdon 1999). Even if this model prevails over the virtual campus, however, it seems clear that universities will be relating to a much wider and more disparate community of learners, with a much more provisional commitment to the institution in particular and to academic culture in general. There seems little doubt also that the role of teacher-researcher will be increasingly displaced from the centre of the academic institution by new forms of academic work.

Finally, a very direct impact has been made on UK higher education by the various funding council initiatives to support the use of C&IT in learning and teaching. During the 1990s the Teaching and Learning Technology Programme, the Fund for the Development of Teaching and Learning and a range of JISC-funded projects led to the development of an impressive range of computer-based tools and resources (Schank 1994, Reinhardt 1995, Somekh 1998). In fact the Dearing report into Higher Education noted that the UK was a world leader in this field (NCIHE 1997). Later rounds of funding have been directed at ensuring these resources are effectively embedding into learning and teaching curricula and that the lessons learned are effectively transferred to other institutions. Other enduring legacies of the 1990s C&IT funding rounds include an ethos of collaborative working among learning and teaching professionals, and a wealth of local expertise in learning technology development, use and support. These legacies are far from insignificant: in 1997 HEFCE estimated that around 70% of all UK HEIs were involved in an externally learning technology programme of some kind (cited in Kewell *et al* 1999).

The overall picture is of a sector investing heavily in C&IT as a response to immediate challenges, but only just beginning to address the long-term cultural and institutional implications of the C&IT revolution, and in particular its impact on the roles of staff employed in HE.

2.2 Impact on Higher Education staff

The changes outlined above have had far-reaching effects on the nature of academic work. Some of the implications for academic researchers have already been discussed, but the primary focus of this study is the impact on learning and teaching staff. As early as 1994, Schank anticipated a move away from the

'*classroom-based learning paradigm which has the teacher as the all-knowing expert, to one of team learning and mentoring with active participation by students*' (Schank 1994: see also McAleese 1998, Somekh 1998, Kewell *et al* 1999). The rise of learning and teaching certificate courses (McKay and Frearson 2000) has helped to cascade learning theories to a new generation of lecturers, and few would now subscribe to anything other than a constructivist approach (Rodenburg 1998). More cynically, however, one can observe that classroom practice remains driven by local culture, the exigencies of the local infrastructure, and the competing demands of research and quality assurance. Goodyear (1997) while agreeing '*that the work of teachers is shifting from information transmission to the design and management of learning tasks and learning environments'* is critical of constructivism as a hegemonic paradigm for learning and teaching, arguing that it *'contains much which is either old and true or new and false'.* Strategically and rhetorically, university teaching has moved away from an 'information transmission' model for the simple reason that information is no longer a unique selling point of the academic institution.

Resource-based learning is therefore gaining currency as a way of dealing with massification at a time when the status of the academic resource base - at least at any single academic institution - is falling. To counter this effect, learning and teaching strategies have begun to focus more explicitly on process skills rather than knowledge content (Dyrli and Kinnaman 1994, Lee and Reigeluth 1994, Dooley 1999). Process skills are by definition not the domain of subject experts, and alongside the role of subject tutor a host of 'new professional' roles have therefore arisen (Gornall 199b), including librarians, learning skills advisers, IT trainers, graduate teaching assistants, careers advisers and access officers, which facilitate student learning outside specific programmes of study. The demand for new modes of delivery has called into being a second category of new specialists with a remit for development rather than support – that is, staff who work with other staff to facilitate the permanent revolution in teaching and learning practices which is required in the current era of *supercomplexity* (Barnet 1999 and 2000). Bates (1997) argues that IT has not only supported but helped to bring about these changes of role:

> *For the extra cost of using technology to be justified it needs to be accompanied by the re-organization of the teaching process, moving away from fixed, scheduled group instruction to more flexible and individualized modes of learning.*

These changes in the modes of engagement between student learners and teaching-related staff have certainly facilitated the move to a mass higher education system, but they have had profound implications for the academic work and relationships of learners (Kennedy and McNaught 1997, Reeves and Reeves 1997) and for academic staff (Martin 1999, Oliver 1999, Coaldrake 1999). One change which has accompanied massification but in many ways works counter to the trend towards process skills has been the division of the higher curriculum into smaller and more discrete units (or modules), thus allowing for credit accumulation and transfer between institutions. Again this is part of the general picture of standardisation and flexibility which allows mature, vocationally-oriented or remotely located students to participate in higher education with much greater ease – and which is related to the general drive for international standards in the description of learning objects (IMS 2000). Learning and teaching staff, however, may find this arrangement less rewarding as they deliver discrete learning 'chunks' to a heterogeneous group of students in a quasi-industrial production process (Ford et al 1997). The modular system also militates against the development of personal tutoring relationships, which are among the strongest incentives for staff to invest in this area of their work.

Mass-delivery modules such as the compulsory units which comprise the first year of many degree courses have heralded the end of 'craft-based' curriculum development. The single academic undertaking every aspect of course design and delivery is increasingly replaced by a teaching team with a more or less clear division of labour among academic subject experts, graduate teaching assistants and learning professionals including in some cases 'instructional designers' (see below).

Inevitably there has been an impact on what Winning (1998) terms the 'psychological contract' between academic staff and the institution. Martin (1999) in *Changing Academic Work* explores some of the tensions which have resulted: between greater diversity of student population and closer government scrutiny and control; between individualism and cooperation; between accountability and reward; and between the traditions of the academy and the demands of the market. While some staff have clearly risen to the challenge of innovating their professional practice (Silver 1998) this has been far from universally the case.

2.3 Staff development as a response to the changing demands

The JISC five-year strategy (JISC 1996: 'Human and Organisational issues') reported that '*the provision of technology was in danger of outstripping the ability of the community to exploit it. There is a real need to ensure… staff are adequately trained to feel at ease with such applications.'* A more recent report (HEFCE, 1999) confirms the widespread failure to exploit the full potential of C&IT for learning and teaching, despite the recommendations of Dearing to institutional managers (NCIHE 1997) and despite the significant

investments made in infrastructure and materials development. However, it is far from obvious that traditional staff development activities such as project based 'dissemination' and voluntary short-course 'training' (of the kind advocated by the JISC) are adequate to the changes in practice which are required (McAleese 1998, Ellis et al 1998). Several commentators (Bennett 1994, Knight 1994, Evans and Nation 1997) have suggested that effective staff development should be an ongoing process, in which individuals are given opportunities to reflect critically on and adapt their own practice rather than have new practices imposed on them. This seems particularly likely to be the case where wholesale changes in the learning environment are involved.

It is increasingly recognised that acquiring this expertise will occupy a considerable proportion of the lecturers' first years in the profession (THETO 2000). Adapting to a technology-rich environment seems likely to require a similar kind and depth of engagement, though experienced lecturers undoubtedly have relevant skills which can be translated effectively into the new context. However, there are many disincentives to individuals making this kind of investment, such as the research assessment exercise, the collegial basis of traditional academic culture, and the intellectual attractions of discipline-based scholarship. As more complex forms of expertise are needed for learning and teaching, so stronger incentives are required if academic staff are to acquire them.

The TLTP-funded EFFECTS project was launched in 1998 specifically to meet the needs of staff working to embed learning technologies into the HE curriculum. Specialised programmes of professional development are now being delivered at seven institutions and the EFFECTS framework is being used to develop similar programmes at other institutions around the UK. The project is seeking national recognition to help ensure proper career progression and reward for staff involved in embedding C&IT. Along with previous studies (e.g. ITATL 1997, HEFCE 1999), project evaluation has found an endemic lack of recognition and career progression for all staff working in this field, and considers this a serious barrier to the uptake and development of C&IT for learning and teaching.

In Canada, a study of 'Skills for the New Learning Technology Domain' (Association of Canadian Community Colleges 1997) noted that while early adopters were often self-supporting, more structured support was needed to build skills across the entire staff population. Skills to be developed included:

1 generic technical skills in the educational technologies;

2 skills in mentoring, coaching and counselling both on campus and at a distance;

3 educational technology expertise at the departmental level, for departments wanting to effectively use the technologies;

4 instructional design skills, as these apply to educational technologies;

5 skills in negotiating brokering agreements; and

6 skills which support a partnering approach.

The EFFECTS learning outcomes (Beetham and Bailey 1999) also call for a wide range of aptitudes including:

- Review of learning technologies
- Analysis of available technologies in context
- Planning effective learning activities and/or designing effective learning materials
- Implementation skills
- Evaluation and critical review of outcomes
- Dissemination and embedding of outcomes
- Taking responsibility for personal professional development

However, individual development must be placed in the context of the need for institutional development. A study by McNaught *et al* in Australia (McNaught 2000) identifies six organisational factors crucial to successful learning technology staff development. These are:

- Balance between central and local provision of staff development services.
- Frequent review of support services.
- Finding the optimal relationship between staff development and production support
- Mapping the services of each provider and ensuring co-ordination

- Ensuring staff have time to learn new skills
- Ensuring support is flexible, appropriate and adaptable.

Looking beyond academic staff, Arbuthnott (1998) claims that the biggest barrier to successful use of communication and information technologies in the learning and teaching process lays in the lack of IT literate managers while Haworth (1988) agrees that an essential ingredient is staff at a senior level who can work horizontally across the institution, against line management structures to ensure co-operation and co-ordination in adopting new systems. All of these studies suggest that without significant organisational development, investment in individual staff development may be wasted (Kinnman 1998, Kewell et al 1999).

2.4 Emergence of learning technology specialists as a response to changing demands

The Atkins Report (HEFCE 1998) found that:

New categories of learning support staff such as learning technology officers and web editors are emerging with institution-wide responsibilities to help embed CAL and ICT. Sometimes they are seconded academics. They can be found in computing services, staff development units, CAL units, or attached to particular schools and faculties. The functional boundaries between them and other staff may currently seem blurred, but nevertheless, to be effective, they need access both to subject-specific and to generic technological expertise.

We have already documented the growth in the numbers of university staff who are developing, producing and using learning technologies on a regular basis. For some of these staff, learning technology use has become a central focus of their professional identity such that learning technologies could be seen as an emergent profession or even an emergent academic discipline in its own right. In a 1997 paper calling for a national recognition scheme for learning technologists, Steeples argues that this profession is essentially multidisciplinary, incorporating training analysts, instructional designers, subject-matter experts and academic staff, conventional training specialists, programmers, project managers, video production specialists, evaluators, instructional psychologists, and those involved in marketing and customer relations. Staff roles range from the *'C&IT aware manager'* (NCIHE 1997), through the many non-academic or '*new professional'* staff involved in the learning process (Gornall 1999a) to the academic staff who have embraced curriculum innovation as part of their professional role. Perhaps unsurprisingly, then, the profession has generally developed in a piecemeal fashion within existing organisational structures and staffing arrangements or, at best, overlaid on those structures (Liber 1998) in ways which may undermine its effectiveness.

As a result of its ad hoc development, the location, job title, status and career progression of learning technology specialists vary widely across different institutions and according to whether they have become involved with learning technologies from an academic, managerial or technical background (Gornall 1999b). Indeed, learning technology development is one area in which the boundaries between academic and para-academic staff have become particularly permeable. In *Institutional Learning and Teaching Strategies: A guide to good practice* (HEFCE 1999) Gibbs counsels that: '*New forms of teaching often involve new teaching roles and these may require new categories of staff on new conditions of service... It can be very difficult for departments to negotiate such new roles and associated salary structures, and to select, train and support new types of teachers, without the institution taking a strategic overview and providing a new personnel structure within which such developments can take place.'*

This situation could be contrasted with the role of instructional designer in the US and cognate education systems, which has emerged much more clearly as a professional identity and body of authorised practice. While it is dangerous to generalise about a system as diverse as US Higher Education, there has been a long-standing trend for curriculum design and curriculum delivery to be carried out by quite separate staff, leading to structural distinctions between professors and other tenure-track academics, and between tenured academic staff and graduate teaching assistants. In the UK, on the other hand (except at the Open University) there is a strong cultural bias towards individuals writing their own teaching materials throughout their academic careers. This is defended both through positive argument - e.g. asserting a link between personal research commitments and effective teaching - and negative resistance to innovation, e.g. through the much-lamented 'not-invented-here syndrome'. As a result, curriculum design and development may more readily be identified as a separate process in the US, with its highly managerial academic culture, and the work of instructional designers may have a correspondingly clearer role within in the overall division of labour. The picture in the UK and Australia is much more complex, and the roles which have evolved around curriculum design, development and delivery are less readily defined. A measure of this difference is the degree to which UK and Australian journals on learning technology address a pot-pourri of technical,

pedagogical, managerial, cultural and resource-management issues, assuming an audience with a interconnected responsibilities and interests.

Not surprisingly, then, there is a lack of information about the institutional recruitment, development and deployment of learning technology specialists. The Bett Report underlines the fact that the sector does not even collect reliable data on non-academic or short-contract staff (IRPC 1999, Recommendation 1). While there have been a number of studies of the growth of fixed-term contract employment in HE (Batten and Skinner 1997, THES 1999, Chitnis and Williams 1999) these have tended to concentrate on research contracts rather than contracts arising from innovations funding. Working in an emergent field, it is particularly important that the roles of learning technology specialists should be subject to 'j*ob evaluation, or some other job analysis and ranking system'* (IRPC 1999, Recommendation 28) if they are to be valued alongside more traditional staff. This is particularly urgent in light of the current recruitment crisis for learning technology specialists in US higher education. The Campus Computing Project 2000 Survey reported that:

> *the key IT challenges in higher education involve people, not products... The exploding demand for technical talent means that campus IT personnel can often walk across the street and easily increase their income by 30 or 50 percent ... Even though institutions spend a huge portion of their IT budgets on personnel, colleges and universities remain significantly understaffed in the area of user support... the number of technology users to technology support personnel remain two to five times the level found in comparable corporate environments.*

The institutional and personal challenges form the background to the scoping study of learning technology staff in UK HE.

3. Overall methodology and data sources

3.1 Rationale and overall approach

The study approach was designed to produce both a broad picture of developments across institutions and a rich picture of the roles, skills and career pathways of individuals. The methodology therefore consisted of three distinct stages:

- tool development and piloting;
- five constituent studies and
- a series of underpinning focus groups

A prevalent theme of the methodology adopted was iterative consultation both to improve study design and to enrich the analysis of findings. Almost all the terms under investigation (*learning technologies, academic/support staff, training/development, teaching and support of learning, institutional change*) were contested ones. The involvement of a wide range of stakeholders was essential to ensure that the quantitative nature of auditing did not obscure these complexities. A further motive was to gain recognition across the learning technology/UK HE community for the rationale, procedures and findings of the study, in order that any recommendations could be acted on swiftly and consensually. A series of focus groups and two mailbase discussion lists were therefore established, data from which helped cross-correlate aspects of the constituent studies and reinforce triangulation.

Figure 1 gives a graphical representation of the different data sources and the ways in which they were accessed during the study. The methodology for each constituent study is described in more detail in the relevant sections.

3.2 Stakeholders

The stakeholders identified in the early stages of the study were as follows:

Stakeholder group	Involved in the study as:
1. Staff involved in learning technology use in UK HE	• subjects of the Role Analysis study • subjects of the Institutional Audit • subjects of the case studies • member of the Steering Group (TLT Officers representative)
2. Key learning technology contacts/coordinators at institutions	• data collectors for the Institutional Audit and Institutional Factors • members of Focus Groups • members of the email discussion list • (occasionally) subjects as members of group 1
3. Decision makers at institutions (e.g. Personnel, Educational Development, Staff Development, Senior Managers)	• subjects of the Stakeholder Interviews • members of the Steering Group
4. Relevant inter-institutional professional bodies (e.g. SEDA, UCoSDA, SCONUL, ALT, NATFHE, AUT)	• subjects of the Stakeholder Interviews • members of the Steering Group
5. HE funders (represented by the funders of the current study, the JISC)	• members of the Steering Group

Two sets of stakeholders we did not feel able to address for practical reasons were (a) students and (b) staff *not* currently involved in learning technology use. For the purposes of the study, stakeholders were involved in: instrument design and implementation (via the steering group and the briefing workshops for institutional auditors); interpretation of findings (via the focus groups for institutional auditors); and the development of recommendations (via the focus groups, the email discussion list and the final steering group meeting).

3.3 Role of institutional auditors

The role of institutional auditors was crucial to the approach and success of the study. Given the difficulty in identifying all the staff involved, auditors needed to have contacts across their institution and were almost certain to be involved with embedding learning technology themselves. We were looking to audit a wide range of factors, from institutional policy and mission to practical details of technologies in use, so auditors would need to be working at an appropriate level (or levels) to have access to this information, and must be in a position to negotiate the time needed for data collection. It can be seen that in terms of role and institutional location, the institutional auditors represented a microcosm of the issues under investigation.

Auditors were identified largely from personal contacts of the working group, although institutional contacts of the EFFECTS projects and secondary contacts of other auditors were also approached. In all, around 80 contacts were approached. Of those who responded (around 60), over 45 (75%) reported that *'interesting things'* were happening in their current role and location. Examples (in descending order of frequency) were that:

- their unit was being reorganised, rebadged, or given a new set of responsibilities
- they had become involved with a new learning technologies initiative (internally funded) or project (externally funded), which entailed new responsibilities
- their job title, role or responsibilities were being changed
- they had just been appointed to a new job

Sometimes a combination of the above factors were in play. These uncertainties were given in roughly equal proportions as a *barrier* to devoting time to the institutional audit, and as an *opportunity* to win status, time and resources for the audit while senior managers were particularly interested to benchmark the current situation.

Institutional auditors were invited to two briefing workshops, in Bristol and Glasgow, in advance of the data collection phase. A third EFFECTS workshop in York was used as a supplementary briefing session. The workshops were used as an opportunity to achieve consensus on definitions and terms, to explore a range of data collection strategies, and to finalise the audit tools in the light of feedback. In all, thirty three institutional auditors attended one of these sessions, twenty three going on to complete and return an audit for their institution.

Where available, reasons for not completing the audit were (in descending order):

- lack of time available;
- lack of support from senior/line manager;
- institution worried about release of sensitive information.

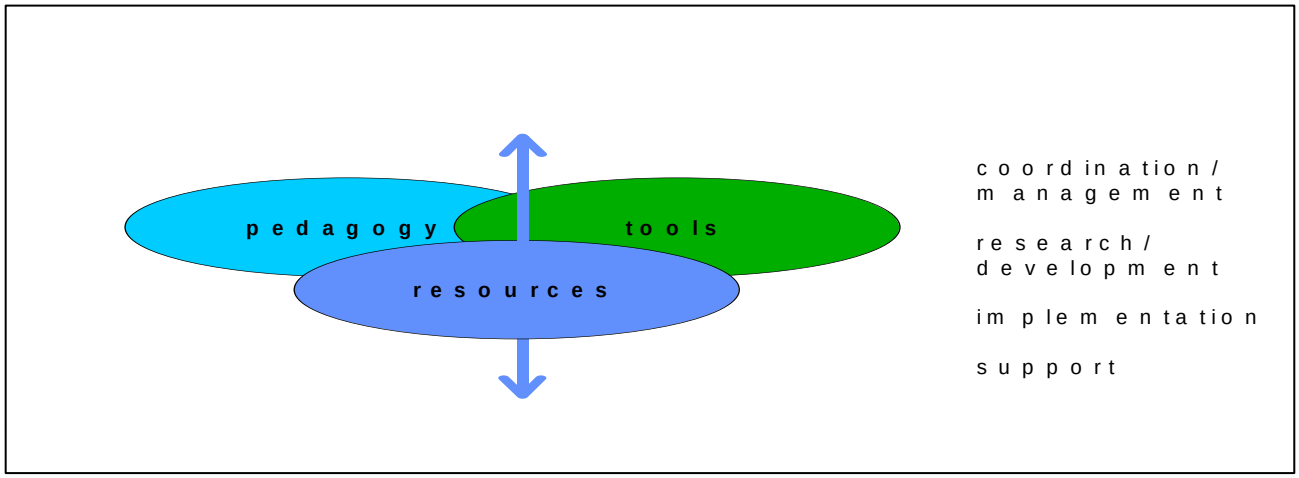
It follows that our sample was biased towards institutions where:

- a suitable auditor could be identified;
- the auditor was willing and able to attend a briefing workshop;
- the auditor was willing and able to devote the necessary time to data collection.

3.4 Analytical model used in this study

Following a review of relevant literature (see section 2), the research coordinator developed a concise functional model to represent the cycle of learning technology development and use. The intersecting ellipses in figure 2.1 below represent various aspects of a learning interaction.

Figure 2.1: Learning technology use and institutional roles



The interaction involves specific learning and teaching practices (***pedagogy***), specific technical ***tools*** (such as communication systems, hardware and software), and specific ***resources*** (including learning resources but also institutional resources such as administrative systems and human resources). This activity can be supported at a number of different levels, according to typical divisions of labour within an academic institution, which are represented on the vertical axis as ***co-ordination/management***, ***research/development***, ***implementation*** and ***support***. An intersection of the three aspects of the learning interaction with the four levels of support gives the following matrix (Table 2.1). Note that implementation remains the prerogative of academic teaching staff and learning support staff, working directly with students.

	Co-ordination/ Management	**Research/ Development**	**Implementation**	**Support**
Pedagogy (learning activities, teaching practices)	*Academic leaders (HoDs), Senior management (learning and teaching), managers of these people ->*	*Educational developers, academic staff as researchers, educational researchers and evaluators*	Academic staff and learning support staff working to support student learning in modules/courses/ programmes (through the use of learning technologies)	*Learning support staff (non-subject), student skills advisers, careers counsellors, IT trainers, help desk staff*
Tools (technical infrastructure)	*Service managers and team leaders (IT, estates, learning facilities), managers of these people ->*	*Computing development teams, project teams, network developers, technical researchers*		*Technical support staff, network maintenance staff*
Learning resources	*Service managers and team leaders (library, AV and media, learning resources), managers of these people ->*	*Multimedia developers, web site developers, AV production staff, resource locators and evaluators academic staff as authors*		*Librarians and electronic librarians, LT support officers, web site managers, audio visual and media staff*

Table 2.1. Matrix of activities involved in the use of learning technologies

If we were correct in our assumptions about learning technology use as an activity, and in our assumptions about typical divisions of labour within academic institutions, then we would expect to find distinct roles corresponding to the cells in the matrix.

When it came to overall institutional structures and processes, it was necessary to extrapolate from the three aspects of the learning situation to give three aspects of the wider institutional context. The specific pedagogical practices of individual teaching staff were therefore contextualised within the overall learning and teaching *culture* of the institution. The tools available for learning and teaching were contextualised within the institutional *infrastructure*. The knowledge resources available for learning and teaching were contextualised within the overall *expertise* available in the institutional community, including such knowledge resources as the library. We were then able to extend the 'roles' axis to include institutional policy making and planning as shown below (Figure 2.2), which do not generally have a direct bearing on the learning and teaching interaction.

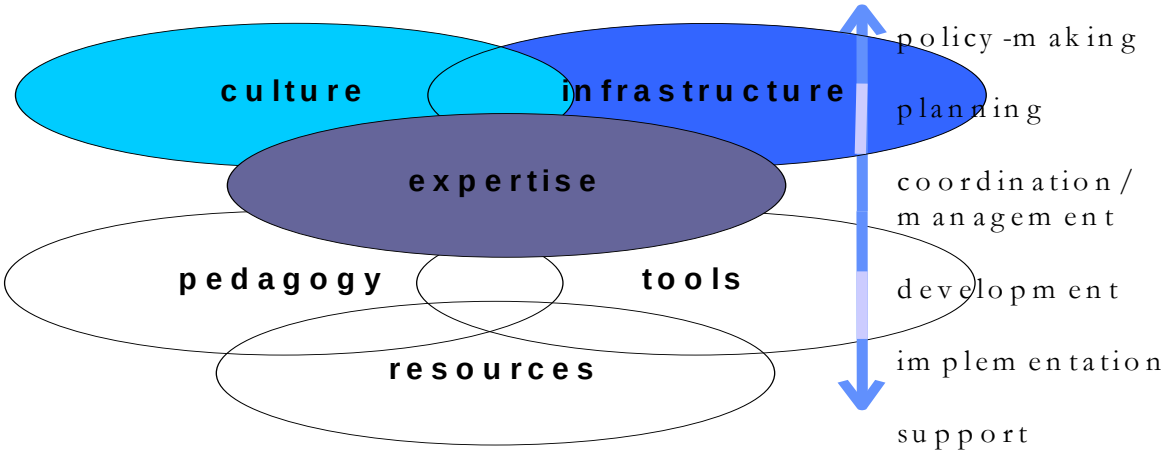


Figure 2.2: Institutional model for embedding learning technologies

The resulting model is similar to that developed by McNaught *et al* (2000) for an Australian HE context. McNaught identifies three interacting factors which determine the institutional adoption of computer supported learning: policy, culture and support. Her account of these factors includes many of the same issues as ours, though they are grouped rather differently. There are also similarities with the Dearing (NCIHE 1997) model with intersecting areas of infrastructure, management and content. The advantage of our model is that it takes the student learning scenario as primary, mapping institutional structures and practices onto that scenario in the assumption that their ultimate rationale is to support student learning. In this it more closely resembles Laurillard's (1998) *Conversational Framework for the Learning Organisation*, which is explicitly derived from her conversational framework for individual learning (Laurillard 1993), despite ours being a structural rather than a process model.

Plotting areas of responsibility against three levels of strategic activity (overall policy-making, strategic planning and hands-on coordination or management) gives the following matrix (table 2.2). Descriptive statements for each strategic activity were elicited from the project working party based on their knowledge of typical practice in their own institutions. These were tested and refined against the perceptions of the institutional auditors.

	Policy and vision	**Planning and resourcing**	**Managing and coordinating**
a) Culture: learning and teaching practices	*Developing mission statements, policies and strategies which support learning and teaching innovation* *Raising the profile and championing the cause of learning and teaching* *Setting broad priorities and objectives in relation to learning technology research, development, embedding and use.*	*Local (e.g. department, service team) planning and resource allocation to meet broad priorities and objectives* *Designing QA and appraisal procedures which support learning and teaching innovation*	*Managing human resources (coordinating departments and teams) to fulfil development plans* *Implementing QA, appraisal and monitoring procedures to support learning and teaching* *Acting as change agent, facilitator, bridge builder.*
(b) Infrastructure: physical, technical and organisational environment	*Ensuring the institutional infrastructure supports the effective use of learning technologies and responds to new learning and teaching needs* *Ensuring appropriate funding structures are in place* *Establishing flexible administrative systems to encourage innovation*	*Allocating resources to support appropriate infrastructure development* *Designing feedback/ monitoring systems to ensure institutional infrastructure supports the needs of learners*	*Managing physical and technical resources of the institution (to support effective use of learning technologies)* *Applying QA/audit procedures (to ensure infrastructure supports student learning with technologies)* *Ensuring coordination among different administrative systems*
(c) Expertise: information, knowledge and networks	*Promoting educational, technical and strategic research and development* *Supporting a culture in which learning technology expertise is developed, shared and operationalised*	*Seeking funding to support R&D* *Building internal and external networks* *Designing feedback systems for staff development and organisational learning*	*Managing the information resources of the institution* *Auditing the needs of the institution with respect to learning technology skills* *Providing a gateway to relevant information and expertise* *Coordinating research and development projects*

Table 2.2: Framework for learning technology based strategic activity at HE institutions

This analytical model formed the basis for the development of the audit tools.

3.5 Audit tools

The key instruments for the study were:

- a role analysis tool
- an institutional audit tool (in four sections)

- a case study questionnaire and format for follow-up interviews
- an appropriate format for semi-structured interviews with senior managers and stakeholders
- 'key issues and hypotheses' for a series of focus groups.

The first two of these form major deliverables for the project. Development of the tools is described in greater detail in the constituent studies.

3.6 Constituent studies

Five distinct but inter-related studies were carried out, each with different objectives.

Study	**Addressed objective(s):**
Role analysis	1. to describe the various staff functions and activities associated with the embedding, development and support of learning technologies in HE 2. to describe the different categories of staff to whom these functions and activities are typically devolved
Institutional audit	3. to audit the number of staff in each of the categories across a representative range of UK HEIs
Key institutional factors	4. to reveal patterns of staff recruitment and deployment across the audited institutions and, where possible, relate these to critical institutional factors
Case studies	5. to provide a rich picture of the roles and responsibilities of individual staff members within each of the categories identified, and to offer a longitudinal account of development and career progression
Stakeholder interviews	6. to map more fully the strategic environment in which UK HE institutions are employing and deploying learning technology staff (additional objective, not given in original bid)
Focus groups	7. to develop recommendations for further areas of study and strategic focus by the JISC CALT; 8. to provide guidelines for institutions on staff recruitment, deployment and development for effective support of C&IT for learning and teaching.

3.7 Focus groups

Focus groups were used throughout the study to involve key stakeholders in the development of study tools and the interpretation of results, as well as in the final development of recommendations. The focus groups took three forms: representative stakeholders from across the sector in the form of the steering group (membership details given in appendix #); an email discussion forum including all the institutional auditors and others who had attended briefing workshops but not completed an audit; and smaller focus groups of auditors who were able to attend face to face sessions in the latter part of the study.

4. Constituent studies: Role analysis

4.1 Outline

4.1.1 Rationale

Before auditing the roles, career progression, institutional locations and skills of learning technology staff it was necessary to define our target population. The difficulties in distinguishing 'staff involved with learning technologies' are two-fold:

- Staff for whom learning technology development, implementation and use is a core job function have a wide range of job titles and descriptions (Rius Riu 2000). They tend to work in a wide range of different units with discrete and sometimes poorly articulated functions (Armitage 1999, HEFCE 1999). They may be on permanent or temporary contracts, and on academic, academic related, technical or administrative grades (Gornall 1999a). They are also found in peripheral locations such as in faculty or departmental support teams, where their job titles and descriptions are even more various depending on local culture and perceived priorities for support.
- Many staff currently employed on academic, library or technical contracts are becoming involved in learning technology development, management or use (JISC 2000). At present these staff may not be contemplating any change of job title or role (i.e. they may not become 'learning technologists') but their existing roles are clearly changing in response to the need for skilled users of learning technologies in a variety of institutional locations. As this demand accelerates, staff with cross-over roles may become the norm rather than the exception. It would be misleading therefore to exclude them from the survey.

4.1.2 Development of the role analysis tool

A role analysis questionnaire was developed, based on a number of sources:

- EFFECTS learning outcomes and sample evidence (Beetham and Bailey 1999)
- HERA categories of job functions and activities
- analysis of the mission statements of a number of learning technology-related units and services, along with job descriptions from a sample of job advertisements for learning technology staff
- piloting with four members of staff employed in a range of learning-technology related roles at two UK HEIs.

The final tool comprised 58 separate activities involved in the development, embedding, use and support of learning technologies.

4.1.3 Sampling and implementation

An opportunistic sample of two UK institutions was used for the study. Although both were based in England, they differed markedly in their institutional type, research profile and histories of learning technology use. Subjects were chosen via networking and snowball sampling procedures, designed to ensure the inclusion of staff from as many areas of institutional activity as possible which could have a bearing on learning technology development, implementation and use. A total of 72 members of staff were identified and contacted by email, with 33 returns received. This gave a reasonable spread across subject locations and areas of work, including: technical support, library and learning resources, staff development, student (learning) skills support, specialist learning technology support, learning technology research and development, and educational research and development. Subjects indicated on a scale of 1 (not relevant) to 5 (central/crucial) how important each activity was in carrying out their current role.

4.1.4 Data analysis

The statistical method used borrowed from the psychological technique of factor analysis, which aims to identify factors which might explain the observed relationship between scores on different tests. Correlations are calculated between every possible pair of ratings and arranged in a matrix. The researcher then looks for ‘clusters’ or groups of ratings which correlate significantly with one another. In this case the ratings given by respondents were the degree to which they undertook specific activities, and the activity clusters were taken to represent discrete roles in learning technology development, support or use.

4.2 Key findings

4.2.1 Core activities

A number of activities were scored at 4 or 5 (i.e. significant or crucial to their role) by over 50% of the sample. These were taken to be 'core activities' for staff involved with learning technologies, and proved in the later factor analysis to form a robust cluster of their own. In descending order of frequency these were:

Activity	**%**
Actively seek to keep abreast of developments in learning technologies	70
Facilitate access to learning technology expertise and services	67
Liase & collaborate with other units in the university having related interests & objectives	61
Act as consultant, mentor or change agent for other staff	58
Advise and assist with introduction of new technology into learning & teaching programmes	58
Increase colleagues' awareness of best practice in learning technologies	58
Enable exchange of ideas and experience in technology-based learning and teaching	55
Facilitate & support access to computer-based learning resources	55
Consult with support staff on appropriate use of learning technologies	52
Identify needs & opportunities for development/deployment of learning technologies	52

Table 5.1: Activities scoring >3 for >50% of the sample

4.2.2 Technical self-development

The most highly scoring activity was not the exercise of a specific technical skill but the general self-development activity: *keep(ing) abreast of developments in learning technologies*. Staff in our study were paradigmatic 'lifelong learners', requiring continuous personal and professional development to remain competent in a rapidly changing area of expertise.

4.2.3 Non-technical skills

The other nine core skills were non-technical. One could be described as **strategic** (*Identify needs & opportunities for development/deployment of learning technologies*) and the rest are **interpersonal** (*Act as an adviser, change agent or mentor... Advise and assist with... Consult... Enable... Facilitate and support... Liase and collaborate*...) or **communicative** (*Increase colleagues' awareness of best practice* and *Enable the exchange of ideas and experience*). While technical competence is clearly necessary to professional credibility, technical skills would seem secondary to interpersonal and communicative skills for the majority of activities carried out by the majority of learning technology staff.

4.2.4 Distinct roles

Through factor analysis as described in 4.1.4 above, 11 distinct roles were identified among the audited staff. These are summarised in the table below.

Role	**Description of role (typical tasks)**
1. Educational developer	▪ Support staff in adapting their practice to incorporate learning technologies (via workshops, consultation etc) Increase awareness of best practice ▪ Enable exchange of ideas and experience in technology-based learning and teaching ▪ Evaluate the outcomes of integrating learning technologies into the curriculum Establish procedures/protocols for evaluating the impact of learning technologies ▪ Work with other organisations and institutions e.g. in collaborative projects ▪ Work with learning technology organisations external to the institution.(e.g. ALT, SEDA, TLTP, FDTL, UCISA
2. Educational researcher (learning technologies)	▪ Undertake original research related to learning technology development and use ▪ Contribute to learning-technology related journals, books and web sites ▪ Enable exchange of ideas and experience in technology-based learning & teaching (nationally and internationally) ▪ Collate and disseminate learning technology-related knowledge and expertise

3. Technical developer/ researcher	▪ Design/develop computer-based learning environments ▪ Design/develop web-based applications for use in learning and teaching ▪ Develop networks and network applications for use in learning and teaching ▪ Evaluate computer-based learning environments and applications for use in learning and teaching
4. Resource/materials developer	▪ Design/develop computer-based learning materials ▪ Adapt and customise electronic learning materials to meet particular course needs ▪ Adapt content for computer-based learning environment ▪ Provide content for computer-based learning materials or learning environment ▪ Adapt existing programmes and modules to incorporate use of learning technologies
5. C&IT skills professional	▪ Assist and support students in developing general C&IT skills ▪ Assist and support students in developing C&IT skills for a specific subject area or learning activity ▪ Address students' 'new literacy' skills (e.g. online information retrieval and evaluation) ▪ Assist and support staff in developing general C&IT skills ▪ Assist and support staff in developing C&IT skills for a specific subject area or learning activity
6. Librarian/ resources professional	▪ Facilitate and support student access to electronic resources ▪ Support, update and maintain electronic learning materials ▪ Facilitate student access to learning technology expertise and services
7. Technical support professional	▪ Provide technical support for hardware and networks used in learning and teaching ▪ Provide technical support for software and systems used in learning and teaching
8. Learning technologist (general)	*This category was included in the institutional audit to cover learning technology specialists who did not fit into any of the more specialist categories e.g. staff of externally funded learning technology or learning and teaching development projects. It had no specific activities but the ten 'core' activities were included here as an indicator of likely areas of work.*
9a. Manager (teams)	▪ Form local strategy/policy related to learning and teaching, C&IT development, learning technologies ▪ Secure funding for learning technology related developments ▪ Hold/co-ordinate learning technology related meetings in department/ team/institution ▪ Liase and collaborate with other units in the institution having related interests and objectives ▪ Identify and overcome barriers to development/use of learning technologies ▪ Identify needs and opportunities for development/deployment of learning technologies
9b. Manager (projects)	▪ Manage resources for learning technology projects ▪ Manage teams of learning technology researchers and developers ▪ Manage learning technology R&D projects (internally or externally funded) ▪ Work with learning technology organisations external to the institution.(e.g. ALT, SEDA, TLTP, FDTL, UCISA)
10. Academic innovator	▪ Deliver, support and assess student learning by means of C&IT ▪ Adapt existing programmes and modules to incorporate use of learning technologies ▪ Update and review learning programmes to include learning technologies ▪ Support, update and maintain electronic learning materials ▪ Provide content for computer-based learning materials or learning environment

4.2.5 Multiple roles

Although these roles can be functionally separated, they do not correspond to actual divisions of labour among individuals. In other words, most staff involved with learning technologies are performing multiple roles, requiring a very wide range of skills and aptitudes. On average, respondents returned almost 20 (19.9) scores of either 4 or 5, indicating that just over a third (34.4%) of all the activities were important or central to their role. Respondents also returned almost 22 scores of either 2 or 3, indicating that again just over a third (37.4%) of the 58 activities were performed regularly or occasionally. Taken together, these findings show that the learning technology staff in the study performed 71.8% or almost three-quarters of this very varied range of activities on at least an occasional basis.

4.2.6 Holistic approach

In exploring finding 4.2.5 with focus groups, it emerged that learning technology staff in UK HEIs tend to be involved in the entire process of learning technology development, support and use, rather than in a specific part of this process. This may entail facilitating and coordinating activities, and/or actual hands-on involvement. The holistic approach is particularly characteristic of 'core' learning technology staff in roles 1, 3, 4, 8 and 9b. Some of the roles (particularly 5, 6, 7 and 10) may be performed by other professionals (e.g. librarians, learning skills advisers, computing services staff and academics) for whom learning technologies represent a peripheral area of activity. These staff are more likely to be performing just one of the identified roles, alongside other activities not directly related to learning technologies.

4.2.7 Change agency

The interpersonal activities which scored most highly in our survey suggest that learning technology staff tend to occupy a pivotal institutional role in terms of negotiation, liaison and the facilitation of change. This finding was confirmed through focus groups and the email discussion list.

5. Constituent studies: Audit of staff

5.1 Outline

5.1.1 Design of the audit tool

The audit tool was designed to be administered by a single institutional auditor at each HE institution in the sample. There were four sections:

1. Baseline institutional data
2. Staff involved in learning technologies (development, support and use)
3. Institutional structure and management
4. (Other) key institutional factors

The first two sections are reported in this study, and the second two in the subsequent study.

Section 1 of the audit collated baseline information about the institution, most of which was publicly available via the Higher Education Statistics Agency and was collected by the researcher prior to the actual audit. Factors collated in this section included, type and location of institution, size (student FTEs), research income and staff/student ratio. The first three of these were considered crucial for sampling purposes.

Findings of the role analysis study were used as the basis for Section 2 of the audit. Auditors were asked to identify the total number of staff carrying out each identified role at their institution. They were also asked to subdivide the numbers within each role according to two further criteria of interest. First, staff might be either centrally or peripherally located in the institution, and in each case they were asked to provide the name of the centre, unit, team, service area or department where these staff could be found. This was in order to build up a picture of how learning technology staff were deployed at HE institutions. Second, staff might be on either permanent or temporary contracts. In the latter case particularly, auditors were asked the source of funding for the post. We also invited auditors to comment on the data they had provided and the process of collection.

5.1.2 Piloting and implementation

An initial draft of the audit tool was piloted at the two lead institutions. Problems with the tools and overall methodology were identified and adaptations made. This stage also included further consultation with the expert panel to confirm the appropriateness of the methodology and the relevance of the questions asked.

Auditors at 23 UK HEIs carried out the audit between during June and July 2000. Following consultation at the briefing workshops and on the mailbase list, auditors were asked to estimate *whole* numbers of staff whose *principle* responsibilities were described by each role. Many in fact returned fractions of whole numbers, and several others commented on the difficulty of the exercise – testimony to the complex employment arrangements of many staff working in this field. Multiple posts, with individuals employed (for example) on two 0.5 contracts concurrently, or other, far more complex variants on this theme, appear to be commonplace. An exception was made to the '*principle responsibilities'* rule in the case of academic innovators. Here auditors were asked to estimate total number of academic staff who were involved with learning technologies *for any proportion of their time,* however small. The role of academic innovator was not expected to entail a full-time engagement with learning technologies, and auditors were asked to include anyone with such a full-time commitment in one of the other categories. Figures for academic innovators represented an informed estimate on the part of auditors, using resources such as:

- recent audits of LT use among staff;
- list of internal staff contacts for LT team/unit;
- list of staff with internally funded LT projects;
- list of staff who have been given secondments for LT related development;
- list of staff attending development programmes and events related to LTs;
- list of staff making use of LT support services.

Note that the final data analysis was carried out on 22 institutions, excluding the one higher education college which returned a complete audit. This was due to the obviously unrepresentative nature of this sample.

5.2 Key findings

5.2.1 Academic innovators

Around 10% of academic staff in our surveyed institutions could be described as learning technology innovators, who are actively involved in:

- Delivering, supporting and assessing student learning by means of C&IT
- Adapting existing programmes and modules to incorporate use of learning technologies
- Updating and reviewing learning programmes to include learning technologies
- Supporting, updating and maintaining electronic learning materials
- Providing content for computer-based learning materials or learning environments

(Role 10, 'academic innovator'). This figure was fairly consistent across institutions, suggesting that there are probably around 8000 such staff working in UK universities. Note that this 'role' may actually not demand a very high percentage of FTE spent on work relating to learning technology use. Note also that 'innovation' is a context-relative term: the definition was carefully worded to exclude routine use of well-supported technical applications, and institutions vary widely with respect to which technologies are routinely used. Section 6 (Institutional Factors) has more information on this issue.

5.2.2 Learning technology specialists: numbers

Almost 2000 learning technology specialist staff were identified in our audit sample, suggesting that there are around 7500 such staff currently working in UK universities (that is including all of the groups identified in the role analysis *except* the academic innovators). These roles are audited by FTE, though with some provisos (see below).

5.2.3 Learning technology specialists in relation to academic users

Across the audited institutions there was slightly less than one learning technology specialist identified for each academic who was using learning technologies. However, this figure should not be taken as indication of a high level of support available for academic innovators, given that:

- not all of the other staff are actually involved in supporting academics: many work instead to support students, develop resources, manage technical infrastructure and work on research/development projects
- the figures for support roles 6 and 7 may have been inflated (see 5.2.6 below)
- staff who *are* employed to support academics may in any case spend much of their time working with the 90% who are not innovators, e.g. raising awareness, supporting routine uses of C&IT

5.2.4 Emergent roles in departments

There are clearly staff in academic departments, particularly in 'support' roles, who are taking increasing responsibility for supporting learning technologies alongside their existing roles. Several auditors claimed that learning technology support at their institutions had become less centralised as budgets had been devolved to faculties and departments. Focus groups made two points about this finding:

- These staff are particularly well placed to support the integration of learning technologies into curricula, providing they participate in the specific pedagogical culture of their department or discipline area.
- These staff are vulnerable to isolation from colleagues working with learning technologies in other departments or central areas, and their activities may be poorly articulated with, or even excluded from, strategic planning.

5.2.5 Value of the audit tool

Auditors found it easy to use the classification system and agreed that it provided a useful descriptive framework for a very heterogeneous population of staff. They appeared to have little difficulty identifying staff to fit the given descriptions, and the 'general' category (designed to 'mop up' staff whose roles did not fit within the more specialist categories) returned the lowest figures of all.

5.2.6 Numbers in specific roles

The most prevalent roles among the learning technology specialists were learning resources support (6) and technical support (7). It is possible that these figures were artificially inflated by the difficulty of distinguishing staff with specific learning technology remits among the relatively high number of librarians, learning resource staff and technical support staff found in the average university (note however that auditors were given specific advice on this point). There was a significant preponderance of support roles over development roles. The numbers of each role found in audited institutions (FTE) are illustrated in Figure 5.1, while the numbers are extrapolated for the whole of UK HE (excluding HE colleges) in the table below (Table 5.1).

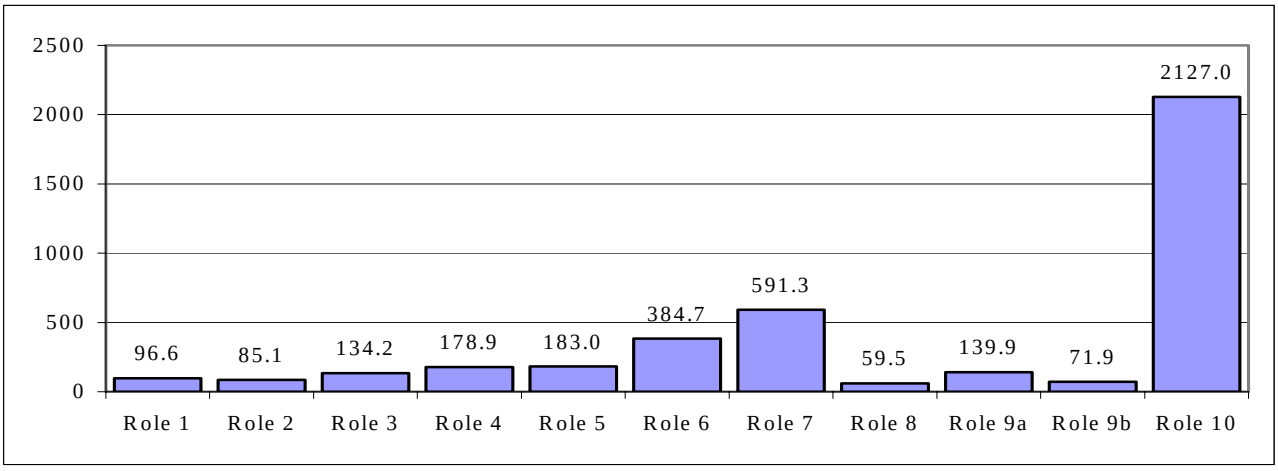


Figure 5.1: Numbers in each role at audited institutions.

	Role 1	Role 2	Role 3	Role 4	Role 5	Role 6	Role 7	Role 8	Role 9a	Role 9b	Role 10	**Total**
Total no in sample.	96.6	85.1	134.2	178.9	183.0	384.7	591.3	59.5	139.9	71.9	2127.0	**4052.1**
Per 1000 students	0.3	0.2	0.4	0.5	0.5	1.1	1.7	0.2	0.4	0.2	6.0	**11.5**
Extrapolated for all UK HE	380.2	334.9	528.1	704.1	720.2	1514.0	2327.0	234.2	550.7	282.9	8370.7	**15947**

Table 5.1: Numbers in each role extrapolated for all UK HE (excluding HE colleges)

5.2.7 Permanent versus temporary contracts

Two-thirds of learning technology specialist staff were thought by auditors to be employed on permanent contracts; however, this figure is likely to be biased upwards by the greater ease with which permanent staff were recognised and audited.

5.2.8 Central versus non-central locations

The proportion of learning technology specialists found in central units as opposed to schools, faculties, departments and colleges was around 3:2. As with finding 5.2.7, this figure may be biased towards central services due to the difficulty of identifying staff in other locations.

5.2.9 Analysis of variance: key institutional factors

Welsh universities were observed to have significantly more educational developers than Scottish universities, while institutions in Scotland had greater numbers of technical developer/researchers than their counterparts in Wales. The cultural and historical reasons for these differences are unclear, though one could speculate that the latter finding is due to the greater investment in C&IT infrastructure, particularly in the Metropolitan Area Networks, that has taken place north of the border.

5.2.10 Analysis of variance: other factors

A high (THES) league table rating was associated by analysis of variance with fewer (learning technology specialist) educational researchers but with *higher* numbers of technical researchers/developers. This is analysed further in discussion point 5.3.7.

5.2.11 Permanent vs temporary by role

The role of educational developer is significantly more likely to be permanent than other roles, as are the roles of technology support and team manager. These roles may be particularly susceptible to 'cross-over', with existing members of staff (on permanent contracts) adopting new responsibilities as institutions make more use of learning technologies.

5.2.12 Central vs peripheral by role

Those working with C&IT skills and learning resources are significantly more likely to be centrally located, which follows intuitively from the observation that these roles have a fairly long history as support services provided to students outside of their subject-specific programmes of study.

5.2.13 Multiple locations of learning technology staff

In every institution audited, learning technology specialists were found in at least four different *central* locations (i.e. excluding staff located in departments, schools etc), the average being around eight. All auditors remarked on this as an obstacle to accurate data collection, but many also saw it as an obstacle to effective working.

5.2.14 Most prevalent locations of learning technology staff

The location most commonly associated with learning technology specialist staff was not in fact a learning technology specialist unit but the library/learning resources unit, followed by the learning and teaching development unit and computing/IS services. Other areas where learning technology staff were often located were learning and teaching support and learning technology support, and to a lesser extent learning technology research and development.

5.2.15 Specialist learning technology units

Two locations were of particular interest as they were specifically concerned with learning technologies: LT support and LT development. Exactly 50% of the universities audited appeared to have one such unit, and two (9%) had both. The role most likely to be located in such a unit was team manager/coordinator, suggesting that specialist units may have a coordinating role with respect to staff distributed across the institution, rather than bringing all these staff together into a single learning technologies 'empire'. Role 4 (materials development) was particularly likely to be found in a learning technology support unit, while role 3 (technical developer) was particularly likely to be found in a learning technology development unit.

5.2.16 Impact of a central learning technology unit

The presence of a central learning technology support and/or development unit did not lessen the number of other units in which learning technology specialists were located: if anything a central specialist unit seemed to be associated with a proliferation of learning technology roles in other areas of the institution (not tested for statistical significance).

5.2.17 Difficulty of locating learning technology staff

There was a general lack of consensus across institutions, and lack of certainty within institutions, as to where staff were located Some ‘locations’ turned out on examination to be the names of projects, working groups or short-term funded initiatives. Roles 2 (educational researcher), 8 (learning technologist) and 9b (project manager) were particularly difficult to assign to any specific institutional location. Discussion point 5.3.# expands on this issue.

5.2.18 Core versus external funding

Among institutions where funding information was given, roles 4 (materials developer), 5 (C&IT skills professional), 6 (librarian/resources professional), 7 (technical support professional), 8 (learning technologist)

and 9a (team manager/coordinator) were universally core funded, though at one university both 8 and 9a were also supported by external funding. The other roles (educational developer, educational researcher, technical developer and project manager) were described as externally funded at just over half of the institutions where auditors gave funding information. As with the findings 5.2.7 and 5.2.8, externally funded staff may have been less visible to auditors and the findings may conceal considerable numbers of these.

5.2.19 Sources of funding

The existence of external funding opportunities did not appear to make a role either more or less likely to be core funded. By far the most cited sources of external funding were the HE funding councils, especially the TLTP and FDTL programmes, with the JISC and the European Union also appearing in significant numbers.

5.3 Discussion issues

5.3.1 Academic innovators

Despite the nature of data collection (see 4.3), the figure of 10% remains remarkably consistent across institutions. This indicates that the adoption of learning technologies has moved beyond the 'innovators' to the 'early adopters' in UK HE (Rogers 1983 and 1995, Geoghegan 1994) but has yet to reach the 'early majority' (defined by Rogers as around 16%+ of a population). From the locations given they appear to be evenly distributed across subject areas. We should note, however, the self-fulfilling nature of Rogers' categories: since they are concerned with 'innovation' and since what is 'innovative' changes over time and across different institutional locations, the 10% figure may disguise considerable differences among institutions and over time in terms of learning technology adoption. During the briefing workshops for institutional auditors it became clear that once specific technologies are rolled out across an institution – and there is an expectation or even requirement on staff to use them – use of these technologies *per se* ceases to be innovative. The focus of learning technology specialists then moves from supporting use *per se* to supporting innovative, pedagogically effective use, which allows a new set of 'innovators' to emerge.

5.3.2 Career development and progression for academic innovators

Academic innovators were included in this study because they were expected to constitute a significant percentage of the staff working with learning technologies. For the purposes of the remaining studies they were treated separately or not at all. This was (a) because the funders were interested in specialist learning technology staff who had not been the subject of previous research and (b) because the part-time nature of their involvement with learning technologies put the academic innovators in a different category of human resource. Academic staff on full-time secondment to learning technology roles were included among the learning technology specialists according to their principle area(s) of activity.

Nevertheless, it should be noted that:

- Academic innovators formed the largest group of staff involved with learning technologies
- The academic innovator role was not clearly distinct from other roles; there was particular overlap in the area of learning materials development (finding from role analysis reported in section 4).
- This implies that some academic innovators become full-time learning technology specialists, at least for some portion of their careers, and that the population of academic innovators could represent a useful source of new learning technology specialists if there were incentives for such a career move. Focus groups were able to supply several examples of academics crossing over into learning technology roles.
- Academic innovators who do not become full-time specialists nevertheless represent an essential human resource for the academic community, as well as being the primary clients for the service of learning technology support staff. Their involvement in learning technologies has significant implications for their own professional development and progression which it was beyond the scope of this study to explore.

5.3.3 From technical development to educational development

Auditors at the focus groups tended to support the hypotheses (derived from the figures) that there has been a shift of human resource since the early to mid 1990s (HEFCE 1998) away from developing new computer-based materials and applications towards supporting the embedding of existing materials and applications into the curriculum (Brophy 1997, HEFCE 199a, HEFCE 1999, JISC 1999). Hypothetically, technical development activity has become concentrated in specialist centres of excellence or outside of academia in commercial software houses, while high-quality materials development has similarly become concentrated in

centres of excellence (e.g. left behind after the first two phases of TLTP funding) and commercial publishing houses. Educational development on the other hand has become a ubiquitous activity. Focus groups supported the hypothesis that this is a period of consolidation, embedding and adaptation in institutions (HEFCE 1997b, HEFCE 1999). Auditors also supported the hypothesis that within institutions, the significance of the educational development role was rising relative to technical and resources development.

5.3.4 From CAL to VLEs

There appears to be a related trend away from standalone computer assisted learning packages towards the use of generic C&IT applications for learning and teaching activities (Grabinger 1997, Fowler 1999) and the development of course materials for delivery via managed learning environments (Harasim *et al* 1995, HEFCE 1998, JISC ASSIST 1999).

5.3.5 Emergent roles in departments

It seems certain from the figures and the auditors' comments that there are support staff in departments who may not be learning technology specialists but who are taking increasing responsibility for supporting learning technologies alongside their existing roles (e.g. academic, technician, librarian). Several auditors claimed that learning technology support at their institutions had become less centralised as budgets had been devolved to faculties and departments. A number of points can be made about this trend:

- There is no doubt that stronger focus on the pedagogical aspects of learning technology use (Conole and Oliver 1998, Beetham 1999) will make the identification and support of subject-specific learning technology staff an area of particular concern for the future.
- These staff are particularly well placed to support the integration of learning technologies into curricula, providing they are a part of the specific pedagogical culture of their department or discipline area.
- However, these staff are vulnerable to isolation from colleagues working with learning technologies in other departments or central areas, and their activities may be poorly articulated with, or even excluded from, strategic planning.

5.3.6 Learning technology workers are mobile and peripatetic

Attempts to 'fix' learning technology staff roles in relatively permanent institutional locations worked against the natural inclination of auditors to identify these roles with current projects, initiatives and shorter-term priorities. The crucial roles of educational researcher, general learning technologist and project manager are particularly mobile/peripatetic. Identifying and supporting staff in these roles will require particularly creative approaches which do not follow lines of management or institutional structure.

5.3.7 Coordination of learning technology specialists

The findings suggest that specialist units may have evolved a coordinating function with respect to staff who are dispersed around other units. However, there was also evidence of frustration among auditors over the difficulties of coordinating staff in a wide range of locations. All staff working with learning technologies reported spending a considerable amount of time building personal networks and liasing among different central services and units. While these activities certainly benefit the institution, they might be carried out more efficiently if they were recognised, valued and coordinated.

5.3.8 Learning technologies and league table ratings/research profile

Higher-rated universities (THES league table) and institutions with a high research income apparently see technical development as a priority for the investment of human resource, with attendant opportunities to attract research, development and innovations funding into the institution. Lower-rated and less research-oriented institutions either lack the funding for such investment or are more concerned with embedding existing technologies into the curriculum and improving the student learning experience. Human resource here is concentrated towards educational development and support.

5.3.9 Divisions of labour

Contrary to expectations, auditors seemed to have little difficulty distinguishing among the different categories of learning technology staff: the generic learning technologist category proved to be the least used. This may be because individual learning technologists are *becoming specialised* in one or other aspect of this highly complex and multiply-determined role. Equally, it may indicate that individuals with very

different backgrounds and institutional locations (librarians, computer support officers, learning skills advisers, educational researchers, staff developers) are actually *converging* on the role of learning technologist, or are adopting new activities related to learning technologies within their existing roles. Both hypotheses received some support from focus groups.

Auditors may have been responding to the cue that these individuals *ought* to be separately identified, despite what we discovered in the preliminary study – that their functional roles are often difficult to distinguish. Of course it is not possible to conclude from the audit which model of deployment – Fordist division of labour (Stanworth 1998, MacAleese 1998), or multi-competent individuals working against the grain of institutional structure (Grabher 1995, Rius Riu 2000) – is most successful at embedding learning technologies. It may be that different models are appropriate for different institutional settings.

5.3.10 Permanent contracts and temporary roles

From comments on the mailbase list, it appears that staff on permanent contracts '*tend to be on permanent posts altho' projects are temporary'*, and these staff are frequently employed on a number of different projects simultaneously. A member of the National Coordination for TLTP and FDTL (phone call 21/09/2000) confirms that external project funding is often used to buy out time from existing permanent staff at an institution, as well as to employ new staff on temporary contracts. Thus the preponderance of permanent contracts may hide a patchwork of conflicting roles and short-term commitments to different initiatives and projects.

5.3.11 Institutional differences

Other than those noted in 5.3.7 above, surprisingly few significant differences were noted with regard to the three main institutional variables. One might have expected the 'new', post-1992 universities, which have historically invested more heavily in teaching relative to research, to employ significantly greater different numbers of learning technology staff, and this appears not to be the case. Note however that our figures are adjusted against student FTE numbers rather than staff numbers, and that 'new' universities have significantly fewer staff per student (based on HESA 1998-99: statistically significant at p=0.001). In other words, if the numbers of learning technology staff per student remain relatively constant across the sector, then in parts of the sector with a lower unit of resource to devote to staffing this indicates a relatively higher priority given to the support of learning technologies.

5.3.12 Organisational good practice

From the perspective of classic organisational development theory (Chandler 1962, Leavitt and Bahrami 1988, MIT90 project 1990, BeCTA 1998, TALENT 1998, Green 1999) our findings suggest deficiencies among the audited institutions in terms of organisational focus and coordination of key roles. On the matrices developed by both BeCTA and the TLTP3 TALENT project for auditing technology readiness in UK HEIs, these features would be expected to have negative effects on a university's capacity to embed C&IT effectively. Both these matrices, however, are based on the MIT90s project work from the late 1980s/early 1990s (Morton 1997), in which a highly managerial structure with clear divisions of labour was taken as paradigmatic of 'good' institutional practice. Our focus group findings show that there are both advantages and disadvantages to centralisation when it comes to organisational change, particularly in the mixed managerial/collegial cultures of UK academic institutions.

5.3.13 Learning technologies and the learning organisation

An alternative to the interpretation given in 5.3.12 comes from learning organisation theory (Senge 1990, Prusak 1997, Schank 1997) and knowledge management (Davenport 1997, 1998). These suggest that learning technologists' mode of working may be a prototype for the future rather than a throw-back to a less coordinated past. Specifically, their commitment to short-term projects and initiatives rather than long-term structures allows learning technology staff to work in a highly effective way across all layers of institutional culture. The danger is that organisations will fail to promote this way of working if status, security and recognition continue to be associated with defined roles rather than with actual outcomes.

6. Constituent studies: Institutional factors

6.1 Outline

6.1.1 Development of the audit tool

The final part of the audit tool was designed to collect data about a range of factors relating to current use of learning technologies at each institution. This section was based on an existing matrix developed by the TLTP3 TALENT project (TALENT 1999) and already used at a number of UK HEIs to audit institutional readiness for learning technologies. The TALENT matrix describes five states of institutional readiness, from 'localised' to 'innovative', with brief descriptions of each state with respect to fourteen key factors. Institutions can be rated from one to five on each factor by choosing the description which matches most.

The working group identified a number of problems with this matrix. First, it was based on a model that had been developed in by the MIT90 group in the US and defined readiness in terms of progress towards a highly centralised, managerial approach to the use of learning technologies, driven by top-down decision making. It was felt that this entailed a particular value judgement which did not sit comfortably with the hybrid culture of UK higher education. Second, the matrix descriptions often referred to a number of distinct issues within a single institutional description, and this proved confusing. Third, the aim was to capture the actual experience of learning and teaching staff at the institution in question rather than institutional mission statements, and it was felt that measures could be developed which gave more prominence to this viewpoint.

A list of key factors was derived from elements of the TALENT audit, the outcomes of EFFECTS workshops for institutional decision makers, and a review of the literature on institutional embedding of learning technologies (Higher Education Quality Council 1994, Wright and O'Neil, 1995, Ford *et al* 1996, Bates 1997, Davis 1997, Somekh *et al* 1997, Lueddeke 1998, Taylor 1998, Hart *et al* 1999, McNaught 2000). These fitted well into the three broad areas of institutional focus (culture, infrastructure and expertise) and proved robust when tested with institutional auditors. The consultation and briefing process was used to arrive at a list of indicators which could be used to measure institutional status with respect to each factor. In the final audit tool, each indicator took the form of a positive statement about the institution, with which auditors indicated their agreement on a scale of one to five. The decision to use only positive statements was taken in part for ease of data analysis and in part because negative statements were judged 'too subjective' in our briefing workshops and were thought likely to arouse suspicion or disagreement among staff. By phrasing each indicator as a statement we also hoped to disseminate the findings of the consultation period in the form of positive strategies for institutional change.

6.1.2 Data collection

This part of the audit was less likely to be carried out by a single auditor, and more likely to be carried out using (in descending order of frequency):

- Consultation among a group of colleagues, all with an interest in learning technologies;
- Distribution of the audit to heads of department or other senior stakeholders at the institution, with the auditor submitting an average of responses given;
- A focus group of stakeholders, with the aim of reaching a consensual response.

6.1.3 Data analysis

For each indicator, the mean institutional score was calculated, along with the standard deviation and the percentage of institutions scoring a 1 or 2 ('true' or 'mostly true'). As with the Role Analysis study (see 4.1.4) t he statistical method of factor analysis was also applied to look for underlying clusters of association. The technique was applied first to the fourteen factors themselves (using the mean of institutional scores on each indicator) with a significance level of $p<0.01$, and second to the individual indicators with a significance level of $p<0.0001$ – the lower level designed to produce a more manageable number of clusters. The second operation resulted in a matrix of more than 10,000 cells.

6.2 Key findings

6.2.1 Value of the audit tool

Overall, auditors were highly enthusiastic about this section of the study. Many reported that it had had a significant impact at a strategic level, for example by bringing together a group of senior managers or change agents to discuss the issues involved.

6.2.2 Analysis by factors

Staff use of learning technologies (2) was associated (at a significance of $p<0.01$) with a number of other institutional factors:

1. General profile of learning and teaching (use of learning technologies correlated positively with a high profile of learning and teaching generally within the institution)

3. Learning and teaching strategy (use of learning technologies correlated positively with a well-formulated learning and teaching strategy, especially if there was strong support for learning technology use)

5. Research and development (use of learning technologies correlated positively with support for learning technology research and development)

7. C&IT infrastructure (use of learning technologies correlated positively with investment in C&IT, particularly with investment in campus-wide applications such as groupware, CAA, VLEs and CMC)

8. Learning technology support (use of learning technologies correlated positively with dedicated staff to support their development, embedding and use)

11. Staff C&IT skills (use of learning technologies correlated positively with support for staff C&IT skills)

12. Student C&IT skills (use of learning technologies correlated positively with support for student C&IT skills)

13. Electronic/multimedia resources (use of learning technologies correlated positively with the development and effective management of institutional electronic resources).

6.2.3 Two development trajectories: expertise and infrastructure/policy

Within this overall picture there appear to be two distinct development trajectories adopted by the institutions audited. First, there was a well-defined cluster of factors associated with overall institutional expertise in the use of learning technologies (11. Staff C&IT skills, 12. Student C&IT skills, 13. Electronic/multimedia resources and 14. Networks and collaborations). Second there was a cluster of factors associated with institutional infrastructure (6.C&IT management, 7. C&IT infrastructure, 8. Learning technology support, 9. Funding and 10. Administrative systems) and institutional strategy (3. Learning and teaching strategy and 5. Research and development). Some institutions appear to have followed both trajectories in parallel while others have focused on one or the other, or have failed adequately to address either.

6.2.4 Correlating factors

Recognition and reward for staff working with learning technologies appear to be strongly associated with research and development opportunities. Administrative systems which support learning and teaching innovation seem to be strongly associated with central support for student C&IT skills: however there may be a common causative factor here in the degree of institutional centralisation as opposed to devolution of responsibility to departments and schools.

6.2.5 Profile of learning and teaching

Audited institutions generally scored highly on overall profile of learning and teaching. All bar two institutions (91%) had initiatives to promote learning and teaching excellence and innovation, though only 29% had secure budgets devoted to learning and teaching. This implies that while learning and teaching may qualify for short-term funding it has yet to be well embedded into the resource planning cycle. In a similar vein, two thirds reported that the institution had a strong mission focus on learning and teaching excellence, but less than a quarter that staff in departments were expected actively to contribute to the scholarship of teaching. Learning and teaching also had a significant role in most senior management teams (76%), but this was the indicator which showed the widest range of responses.

6.2.6 Staff use of learning technologies

This factor showed a wide range of institutional responses, from a mode score of 1 (completely true) to a mode score of 5 (not at all true). Only four institutions (19%) did not provide central support for the use of learning technologies, though the arrangements were often complex. An even higher percentage of institutions (86%) had some kind of central initiative to promote good practice and innovation in learning technologies. However, despite central support, less than 10% of auditors felt that departments across their institution were making a concerted effort to integrate learning technologies into their programmes. The mode score for this indicator was, unsurprisingly, 3 (true in parts).

Most auditors (86%) believed that money from their institution's TQE fund would be used to enhance learning technology support. Comments were extremely positive, both as to the input which learning technology specialists had had to the writing of learning and teaching strategies, and as to the likely outcomes for learning technology investment. Once again, however, in only a third of institutions were departments or service teams developing local plans to put the central strategy into practice.

6.2.7 Recognition and reward

All the audited institutions had some mechanism in place for rewarding and recognising innovation such as the use of learning technologies, though again there was wide variation. The most popular strategies were the funding of small-scale development projects and the provision of a forum for publicising staff activities in this area. Less popular were specific career rewards for individuals, such as secondments or promotion/progression. Strategies which required substantial structural changes were least popular of all. Learning and teaching record was central to academic appointments and appraisals at just 14% of audited institutions, and the same percentage had learning and teaching innovators occupying positions in senior management. However, comments showed that real career opportunities *are* being put in place, often for the first time.

6.2.8 Research and development

Very few institutions (<10%) expected academic staff to demonstrate pedagogical research and scholarship of teaching as well as subject-specific research. The picture for specialist learning technology research and development was also very patchy, with some institutions that scored highly on other ‘cultural’ factors scoring significantly worse on R&D. The overall mean score for this factor (3.0) was the lowest in this section. Only around half of audited institutions supported practitioner-based research and development in departments or had any specialist learning technology research record. The lack of a faculty of department of education was seen as a disadvantage by some; however, other comments implied that the situation was improving. Four of the five highest scoring institutions in this factor were post-1992 universities while four of the five lowest scoring were pre-1992. This factor was strongly associated by analysis of variance with recognition and reward.

6.2.9 Other 'cultural' factors

Several auditors commented that a major infrastructure investment - e.g. a virtual learning environment - had led to significant cultural change due to top-down requirements and incentives for staff to adopt the new system.

6.2.10 C&IT management

This factor showed the widest possible variation, from an institution awarding itself nothing but 5s to an institution awarding itself nothing but 1s. Over 80% of auditors felt their C&IT infrastructure was well managed, coordinated and planned, though on the specific issues of planning, strategy and management they were less positive. Several felt that that C&IT management tended to be reactive rather than pro-active when it came to learning and teaching innovation: however finding 6.2.10 shows that this is far from universally the case.

6.2.11 C&IT infrastructure (1): networks and basic applications

At least 70% of audited institutions had a campus-wide intranet, robust JANET connection and good staff and student access to basic learning technology applications. It was of course worrying to find a minority of institutions for whom none of these statements was completely true (14%). Almost 60% of audited institutions were also connected to a MAN, WAN or similar network to serve distance learning students. Three auditors qualified the generally good state of networks by noting that students had to use dial-up to access campus services from home.

6.2.12 C&IT infrastructure (2): groupware and learning environments

CMC systems were found to have 57% penetration of the audited institutions, while groupware, CAA and online learning environments had just 24% penetration each. Despite the fact that these applications are generally intended for institution-wide implementation, the preponderance of mid-range responses suggested that in most institutions they were being introduced, or at least adopted, very unevenly ('*in pockets', 'available to enthusiasts'*). Comments supported this assumption.

6.2.13 C&IT infrastructure (3): learning spaces

Auditors were unimpressed with computer access in their institutions' lecture rooms and seminar rooms, with mean ratings of 3.4 and 3.9 respectively. Only one institution had both. Several auditors took the opportunity to complain about arrangements for data projection in their lecture rooms, which seemed designed to discourage innovation.

6.2.14 Learning technology support

Institutions were audited on four aspects of support: technical support; support for teaching staff in embedding the use of LTs; support for students in accessing and using LTs; and support for the development of new materials or applications. Four institutions (19%) had or were close to having learning technology support across the board, one professed to have almost no support, while the rest showed very uneven development. There was no obvious association, for example, between support for staff access and support for student access, or between support for LT use and support for LT development (hypotheses not tested for statistical significance). This picture of uncoordinated areas of support is borne out by the qualitative data. New posts were being created in a large number of institutions, though there was no evidence that they were being better coordinated with one another. Learning technology applications were fairly likely to be centrally supported by computer services but less likely to be available and supported locally – for example if a specialist application is required to teach a particular subject area. Support for the development of in-house applications and learning materials was found in only 38% of institutions audited.

6.2.15 Learning technology support staff: appraisal, development and progression

Auditors gave the widest possible range of answers on this issue. In their comments, they distinguished between appraisal/development - which is usually a matter of institutional policy - and career progression, which can be locally very problematic. Two auditors felt that more opportunities were available to LT staff with academic contracts than to those without. However, other auditors noted that even for staff on academic contracts, and even within a generally progressive culture, there were specific difficulties in providing development for such varied and rapidly changing roles.

6.2.16 Funding for learning technologies

Not surprisingly, there was a positive consensus (86%) that institutions were making an ongoing investment in C&IT resources and infrastructure. Over 75% of institutions also had some kind of central initiative to fund learning technology development projects, only slightly fewer than the number with general learning and teaching initiatives. There was less consensus about the other factors, which represented various forms of ongoing, systematic funding. For example, only around 50% of learning technology support teams had secure central funding. Four auditors mentioned TQEF as having provided an additional resource stream but two queried how secure this really was. Ranking institutions by overall mean score on this factor, only two pre-1992 universities made it into the top half of the table. External funding opportunities were pursued by only half of the institutions audited and again only two pre-1992 universities were represented here.

6.2.17 Administrative systems

It was no surprise that over 90% of institutions had common standards and internal QA processes for learning and teaching programmes, since subject review procedures require these. However, in only a third of institutions did these standards and processes take account of innovations in delivery such as the use of learning technologies. In some places this picture was changing. At only one institution were computerised student data systems integrated with learning applications, though comments showed that many institutions were actively pursuing systems integration, and that the issue was widely perceived as a major challenge for the next phase of development.

6.2.18 Staff C&IT skills

All but one institution agreed that teaching staff had access to a networked computer on their desktop, though half of these returned a rating of 2 (mostly true) and three auditors claimed that a small number of staff at their institution refused to use computers at all. Translating access into use, however, seemed to be more problematic, with only around 60% agreeing that all or most teaching staff have basic generic C&IT skills. Despite their relative confidence about the level of staff skills, only three auditors were aware of procedures for actually keeping track of them. Two of these cited 'surveys' as opposed to individual appraisal systems, though there were signs that this may be changing in some places. One auditor felt that skills were a particular problem among hourly-paid teaching staff, while another noted the culture gap which made skills appraisal routine for non-academic staff but not so for academics. Despite concerns over general skills, just over 60% had a cohort of experienced learning technology users among their staff.

6.2.19 Staff development for C&IT

Qualitative data suggests that most staff development in this area was workshop-based and according to self-identified need. Staff development was integrated into the roll-out of new applications at around 60% of audited institutions. On the integration of technical with pedagogical skills, just under 60% of institutions addressed this issue with one-off staff development events, and a similar percentage incorporated learning technologies into their new lecturers' programme. These gains seem to have been achieved despite a relatively low level of coordination among the relevant support services (mode response = 4 or 'emergent'). One institution already had a specialist professional development programme in embedding learning technologies while three were in the process of starting up such a programme. Among the other institutions, comments suggested that staff development activity around embedding learning technologies into the curriculum was being *increase[d] and enhance[d]*, and in some cases more formalised.

6.2.20 Student C&IT skills

Student C&IT skills was overall the lowest scoring factor in the study. Less than 15% of the institutions in our study audited student C&IT skills on entry, and none offered continuing review and support. On a more positive note, around a third did expect students to achieve baseline C&IT competence and several of these mentioned the European Computer Driving Licence scheme. One possible explanation for the low level of commitment at institutional level is that student skills are increasingly addressed within programmes of study. While several auditors mentioned central skills initiatives, most indicated that C&IT skills were now the responsibility of departments or schools. On the other hand, less than 20% of audited institutions actually *required* C&IT skills to be addressed in individual programmes and modules. Despite these observations, students at 43% of institutions were making routine use of learning technologies across all programmes of study. No institutions routinely expected students to have home access to a networked computer and responses to this question were extremely negative, based on considerations of equality and widening participation.

6.2.21 Electronic/multimedia resources

The relative strength of UK electronic resources was indicated in returns for this factor, with over 70% of institutions managing their own resources centrally. Where this was not the case, comments suggest that this may have been because resource management was devolved to departments and faculties. Almost 50% actively supported staff in evaluating, selecting and developing their own resources. However, a slightly lower proportion (38%) supported student access to appropriate electronic resources within learning programmes. A number of comments indicated that central services were insufficiently funded to support these activities effectively across the institution, and that by strategy or default they were a matter of departmental responsibility. A large number of auditors reported institutional projects or new support teams dedicated to resource development and support. No institutions were exploiting electronic or multimedia resource development commercially though six (29%) reported that this was 'true in parts' of the institution, generally citing just one department or project.

6.2.22 Networks/collaborations

A large proportion of auditors (86%) came from institutions which received funding from one of the major UK learning technology initiatives. Scottish institutions pointed out that specific SHEFC initiatives should have been included in this indicator: all were in receipt of funding from this source. Externally, between a quarter and a third of institutions were exploiting funding opportunities and national drivers in a strategic fashion. Almost a quarter saw learning technology use as a feature of their institution's external profile, though only one commented on this specifically. Internally, over half of our sample institutions provided opportunities for

staff to share ideas and experiences in the use of learning technologies, including discussion groups, working parties and email lists. The remainder of the indicators varied widely both across and within institutions, suggesting that (as with strategies for reward and recognition in the previous section), most institutions are employing at least one strategy for sharing information about learning technology use, but none are employing all of them. Coordination of strategies may also be an issue. An important factor for Scottish auditors was the SHEFC funded C&IT staff development network, described as '*closely integrated'* and cited as a useful model for coordination of activities across institutions.

6.2.23 Overall analysis by indicators

This factor analysis yielded results too complex to be dealt with in detail here, but a number of strong inferences can be drawn from the data.

- Routine use of LTs across all programmes of study was associated with LTs being incorporated into curriculum planning, e.g. module documentation, and with changes to QA processes to take into account programmes delivered wholly or partly through use of LTs.
- Where departments were actively expected to demonstrate pedagogical research/scholarship of teaching, this was supported by a specialist central research and development unit, as well as targetted support for individual staff looking to integrate learning technologies into their courses.
- There was a strong correlation between sound staff C&IT skills and all-round support for student C&IT skills.
- Institutions which were nationally recognised as centres of LT good practice and innovation had in common: good collaborative networks; targeted support for teaching staff to integrate LTs into their courses; department/service teams with their own local planning to meet strategic aims; specialist learning technology development teams within computing services; a requirement on programmes of study to address student C&IT skills; and a requirement on departments to demonstrate pedagogical research/scholarship of teaching.
- Institutions with a cohort of experienced LT users also had funding which was strategically targetted to reflect current L&T priorities, as well as specialist learning technology publications included in the RAE. There was a positive correlation with the availability of CAA and virtual learning environments across the institution.
- Institutions where students were making routine use of LTs tended also to have good information management (central coordination and dissemination, along with the development of internal and external networks); and continual review of and support for student C&IT skills, both centrally and locally, on demand.

7. Constituent studies: institutional models

7.1 Outline

7.1.1 Development of the audit tool

This part of the audit tool was designed to reveal different institutional models for the deployment of learning technology staff, and for the management of learning technology issues. Auditors were asked to draw or describe the relationships among all the units, committees and institutional posts with responsibilities relating to learning technology use. On a separate matrix they were asked to indicate which person, committee, body or institutional process was responsible for decision making in each of 14 areas, derived from the 14 factors audited (see section 6 above). Decision making was separated into three levels:

- Overall strategy and vision
- Planning and resourcing
- Management and coordination

Auditors were encouraged to bracket several areas together, particularly within the broad categories of institutional culture, infrastructure and expertise, if this was appropriate. They were also asked to leave areas blank if it was unclear who was responsible for a specific area of strategy, planning or management.

7.1.2 Models of institutional management and coordination

Several models of institutional management and coordination exist which are specifically relevant to learning technology use. Hughes *et al* (1997) offer a three-part theory. The **integrated** (top down) approach rests on a strong central unit providing general learning and teaching support alongside support for using learning technologies and production support for courseware. The **parallel** approach has separate units for these different aspects, while the **distributed** (bottom up) approach fosters a range of provision, both centrally located and in faculties, with very loose co-ordination. A similar model (McNaught and Kennedy 1998) includes the university library among the relevant units to be considered. The 1999 UCISA survey found four models of learning technology support provision focused on the specific role of the computing services department. These were: integrated (similar to Hughes *et al*), integral (fully within computing services), collaborative (similar to Hughes' parallel approach) and consultative (responsibility lies outside the computing service).

At a broader level, a number of models of institutional management have been developed to describe the situation in higher education, of which the most influential is probably McNay's (1995) classification of institutions into (a) Collegial, (b) Bureaucratic, (c) Corporation and (d) Enterprise universities. According to McNay, all institutions show elements of each of these models but the classic developmental trajectory (at least in the UK) is from (a) through to (d). We might therefore expect to find greater elements of an enterprise culture (devolved leadership, flexible decision-making processes, focus on small project teams) in institutions which have been most successful in embedding new learning technologies into their learning and teaching practice.

7.2 Key findings

The level of detail given by auditors was extremely variable, as were the precise management structures of their institutions, but this variability was difficult to interpret. More detail might have indicated greater clarity of decision-making structures or simply a greater degree of knowledge (and interest!) on the part of the auditor. No clear patterns emerged from the data such as would allow a classification of different institutional 'models' for strategic planning or coordination.

7.2.1 Common features of institutions

Common features across many or all institutions included the following.

- Devolution of budgets to schools and faculties for most learning and teaching related issues
- Policies and strategies determined centrally but interpreted by local budget holders through their own processes of planning and resource allocation

- A corresponding potential for conflict between central and local priorities at the level of planning and resource allocation
- A particularly noticeable gap between strategies decided at the centre and their implementation in faculties, schools or departments when it came to: learning and teaching strategy; learning and teaching profile; staff use of learning technologies; mechanisms for recognition and reward.
- Clearer responsibility for overall policy and strategy in specific areas (generally under the aegis of identified individuals or committees) than for planning, coordination and management of the same agendas.
- A range of central services with overlapping responsibilities for learning technologies, e.g. educational/academic/learning and teaching development, library/learning resources/learning support, computing /information/technical services, quality assurance, personnel/staff development.
- A similar picture for central committees with overlapping strategic remits for learning technologies and related issues
- However, recent change in the area of learning and teaching management, with the creation of new posts (typically at PVC/DVC/VP level) and committees (typically just below the Academic Board/Senate level) to provide a single strategic vision for learning and teaching.
- New roles for academic staff in departments with specific (full or part time) remits for learning and teaching and/or learning technologies (e.g. teaching fellows, learning and teaching representatives, change agents, secondees etc).
- Ongoing integration of technical networks and systems, which has led to:
- Recent restructuring of central services along new lines, often relating to new technical/administrative arrangements (e.g. merging of computing and library services, merging of student tracking, course administration and MIS)
- Extensive restructuring among learning technology units themselves, with often negative impact on strategic continuity, the momentum for change, staff confidence and retention within the unit, and the ability of academic staff to identify relevant resources
- Responsibility for student C&IT skills entirely devolved to schools/departments and programme teams, though sometimes within an overarching strategy and the provision of central support
- A lack of any central strategy on or support for research and development in learning and teaching

7.2.2 Strategies for development

As discussed previously, institutions which had invested in learning technology development and support tended to have done so across several central services and (to a lesser extent) to have fostered relevant expertise in academic departments as well. In Hughes' terms, universities with high levels of learning technology support appeared to have integrated, parallel and distributed features. It was not therefore possible to distinguish distinct structural models for learning technology deployment and coordination. However, a number of distinct *strategies for development* were apparent, and some institutions had focused strongly on one or another. These strategies included:

- **academic staff secondment**, with a focus on developing academic staff skills (and hence the academic curriculum) through short-term secondments to central units where they receive targeted support to develop their own interests and expertise. The success of this approach depends on these staff returning to their original departments where they act as resources and change agents for others.
- **Coordination/brokerage**, with a specialist learning technologies team acting as brokers, facilitators and coordinators of local activities. The central team may also act as gatekeepers to specific kinds of expertise and support. This is a 'pull' model with the onus on users (typically individual and collaborative development projects) to take advantage of the brokerage service and other forms of dissemination provided by the central team.
- **updating professional expertise**, with a focus on developing the skills of central services staff (e.g. staff development, computer services, learning and teaching development, library, media services, learning skills support). The relationship between central services and departments does not alter significantly, but staff are able to offer new forms of service and expertise for a more technology-based learning environment.
- **materials production**, with central unit(s) providing specialist materials development services (e.g. web-based, multimedia, audio-visual) to academic staff and departments as clients.

- **small-scale projects**, with specific priorities identified for funding. Resources are either distributed across departments or made available for bidding to undertake specific learning and teaching development projects. These resources may include the support of specialist learning technology staff.
- **cultural initiatives**, with an institution-wide focus on a specific new agenda (such as student centred learning, open and distance learning, the virtual campus). Overall mission, planning, budgeting and coordination tend to be under the aegis of a specific senior member of staff who is closely identified with the initiative.
- **Infrastructure initiatives**, with a major investment in networking, software, hardware, buildings and/or facilities. To ensure effective use of the new facilities, there may be a concerted programme of staff development, targeted development funding and/or the employment of new support staff.

Note that all of these strategies assume the presence of expert learning technologies staff.

7.2.3 Comparative analysis

Most auditors were able to provide diagrams showing committee structures and lines of management, though there were some significant gaps when they were asked to map these onto actual decisions about learning technology development and use, particularly at the lower levels of management, planning and coordination. Rather than comparing structures alone, it was decided to compare features of managerial procedure and practice, as indicated in auditors' comments and descriptions. The five highest and five lowest scoring institutions were used, taking 'staff use of learning technologies' as the most representative overall measure – and noting that this measure was significantly correlated with scores on eight of the other measures. The features noted below were not necessarily common across all of the low scoring or high scoring institutions, but may be indicative of particular areas of weakness or strength. Auditors themselves identified these features as having a significant impact on their institution's ability to make effective use of learning technologies.

7.2.4 Some features of the lowest scoring (five) institutions:

- Departments sometimes had a great deal of autonomy in a highly decentralised structure, with no attempt to address competing central/local priorities at the level of planning and resource allocation.
- Historically learning and teaching tended not to have been a priority (all of these were pre-1992 institutions). Often there was no clear centre for learning and teaching/educational development or this was very recently established.
- Institutions described difficulties in driving strategies through because there was no critical mass of learning technology experts among academic staff or managers. This did not necessarily mean that there was no learning technology research or development activity, but where this did take place it seemed to be in a separate centre without clear links back into departments.
- The learning and teaching strategy was in one case described as uncoordinated, poorly consulted upon, too sketchy, and developed too late in the day.
- Key management and coordination functions with respect to learning technologies were often delegated to new posts or committees, whose incumbents had yet to 'prove' themselves within the institutional culture (and in some cases were not yet even in post).
- In one case there was a lack of communication between schools, faculties and central services, causing problems for accountability and dissemination of good practice.
- There were fewer identified staff with specific responsibilities for learning technologies and their structural location sometimes seemed to isolate them from other learning and teaching staff (e.g. in information services, computing services, the registry).
- These auditors tended to draw complex committee structures with several committees potentially having influence over policy decisions. One may hypothesise that this would militate against flexible management, effective coordination and responsiveness to new agendas.
- One institution commented that staff development was accorded a low status and was poorly integrated into the decision making structure.

7.2.5 Some features of the highest scoring (five) institutions

Institutions which scored highly tended to identify the processes by which the levels of strategic planning were linked and implemented, rather than simply to indicate who was responsible at each level. It may be the

nature of these processes, rather than any structural features, which determines the degree of institutional success in embedding learning technologies. Among the highest scoring institutions:

- Gaps between central strategy and local implementation had been bridged through the development of faculty (or school) learning and teaching teams or committees, which included academics and academic managers (HoDs) alongside learning support professionals and/or representatives of central services (e.g. library, computing services and learning support).
- Some of these teams or committees had a local planning and accountability function, for example in relation to the institution's learning and teaching strategy, while others focused on service provision. In both cases they offered links between central policy and provision, and local priorities and needs.
- Links were also provided by individual 'brokers' (typically members of academic staff) who acted in one direction as advocates, change agents and gateways to the various support services on behalf of their department, and in the other direction as representatives of their department's specific needs in the strategic planning process. These systems were (becoming) formalised across the institution.
- Specific new initiatives were undertaken in response to new agendas such as the e-university, open and distance learning, lifelong learning or the use of managed learning environments. In one institution, rolling institution-wide projects were funded on the basis of current strategic priorities and staff were recruited or seconded to these within a single budgetary structure, under the direct control of the relevant deputy vice-chancellor.
- These initiatives tended to be headed up by senior staff with academic and institutional credibility (several institutions noted this fact as important).
- Decision making tended to be integrated across different levels of the institution, rather than strategic decisions being taken centrally and implemented locally. For example, Directors of Central Services might have a role in supporting local planning and implementation, or departmental learning and teaching representatives might have input to infrastructure developments and resource priorities.
- Central services were expected to respond strategically to needs identified by schools and departments.
- Internal communication was actively prioritised, along with building external networks and partnerships.
- The majority of learning technology specialist staff were located centrally alongside other learning and teaching services, but links were also built with faculties/departments through specific projects; secondment of academic staff; or allocation of learning technology staff to specific departments for some portion of their time.
- The central learning technology unit (or equivalent) had a clear coordinating role across the institution with respect to learning technology development, support and use.
- Learning and teaching champions were identified in departments as well as in central service teams. Individuals were given opportunities to pursue their own development agendas e.g. through project funding and secondments.
- Educational research opportunities were identified, supported and coordinated across the university. Just one of these institutions had a nationally recognised centre of excellence in learning and teaching development, but a comprehensive range of strategies ensured this expertise was shared at the level of individual and departmental practice.
- Staff expertise was shared by a number of means such seminars, annual conferences or awaydays, mailing lists and internal newsletters.
- Explicit links were established between pedagogic experts and technical support staff e.g. in central service teams and local learning centres.
- Staff with responsibility for developing the staff and student desktop, standard applications and network infrastructure worked closely with staff responsible for staff and student C&IT skills.
- There were mechanisms for departments, schools and/or individuals to identify their own staff development needs in relation to technology use.
- External funding opportunities were identified centrally and projects were centrally coordinated to ensure a fit with institutional strategic priorities
- Policy and vision tended to be informed by user groups of *interested* staff as well as committees of *representative* staff. Major projects and infrastructure initiatives (e.g. the implementation of a new managed learning environment) had spawned ad hoc new user groups, implying a relatively flexible structure for decision making and consultation.

7.3 Discussion

Looking at the range of features identified, it does seem possible to argue that lower-scoring institutions had more collegial features (discipline based departments with considerable autonomy) while higher-scoring institutions had more enterprise features (especially flexible decision making, focus on small project teams, building internal and external networks, and emphasis on developing expertise) (McNay 1995, paraphrased in Ramsden 1998). However, this is clearly an issue which requires further investigation before it will be possible to make wholesale recommendations about the kinds of institutional structure which best facilitate integration of learning technologies. Given the historical diversity of UK HEIs, it is quite possible that greater institutional use of learning technologies is associated with features of the 'enterprise university' without any direct causal relationship between the two.

8. Constituent studies: Individual case studies

8.1 Outline

The output from the role analysis questionnaire and the audit results informed the development of the survey questions which were piloted at two of the institutions involved in the study. The survey was administered to 18 individuals from four representative institutions, selected to ensure coverage of all the roles identified in the role analysis. Seventeen were returned. These returns, together with focus group data, were used to design a prompt sheet for semi-structured interviews which enriched the data. A copy of the questionnaire and prompt sheet is included in appendix #.

As will be seen, the sampling technique was non-random and not intended for statistical analysis. However, baseline data was summarised and is presented below. The enriched data was coded for key themes, of which 27 were identified.

8.2 Key findings

8.2.1 Description of sample

The sample included 8 men and 9 women. The ratio of pre-1992 to post-1992 institutions was also 8:9. The average age of respondents was 38.2, with the sample skewed towards the younger end of the age range, which covered ages 29 to 57. Subjects came from a range of educational and professional backgrounds and had an extensive repertoire of personal and professional skills.

8.2.2 Three models of learning technology career progression

Among the case study sample, three models of career progression emerged:

- '**Established professionals'** were on permanent contracts and had secure positions in the institutional infrastructure. Typically these were managerial positions, though they were rarely responsible for more than three staff. Established professionals had moved across into a learning technologies role from an allied field such as academic teaching, academic librarianship, academic management or educational development. Their professional identity was derived from their 'original' profession, within which learning technologies had become a personal interest or was simply regarded as 'the way things are going' for the profession as a whole. Professional development tended to take the form of one-off 'up-date' courses on specific managerial or technical subjects. Established professionals with a learning technology focus were likely to be working at a strategic level or in a facilitative role across different parts of the institution, and had usually been at the same institution for at least six years.
- '**New specialists'** were generally younger and on fixed-term or rolling contracts, or on permanent contracts but working on a succession of short-term projects. Their posts were often supported by external funding. They tended to be highly multiskilled and peripatetic, but with learning technologies as the core of their professional identity. They had typically have been in their current post less than two years and at their current institution less than four years. They tended not to have staff reporting to them, though some were moving up into managerial roles with respect to other learning technology specialists, and many of them had project managerial responsibilities. They were concerned with issues of security, legitimacy and professional identity, and were most likely to (want to) address these through further educational study (e.g. a PhD or masters in a learning technology related subject). Although they were unlikely to have a clear role in the institutional management structure, they were almost as likely as the established professionals to be working at a strategic level in terms of building links across the institution. All were involved in delivering some form of staff development via workshops, accredited programmes and training courses or less formal modes of skill transfer.
- **'Learning professionals in transition'** were staff in non-academic roles, particularly technical, library and learning support roles, who were taking on more responsibility for supporting (staff and student) access to learning technologies. Unlike the established professionals they tended to be in the early part of their careers, without managerial or strategic responsibilities. Unlike new specialists they did not regard learning technologies as the defining focus of their professional identity but as a significant area of attention. They were likely to have a client services orientation though they also described their role as

'cascading skills' to others in the institution, both through formal training responsibilities and through an informal approach to the ongoing development of colleagues.

8.2.3 Correlating career progression models with learning technology roles

Five members of the sample were 'established professionals', all carrying out roles 9a (team manager) or 10 (academic innovator), though in a couple of cases alongside roles 1 (educational developer) or 6 (librarian/resources professional). If roles 9a and 10 are taken as paradigmatic of the established professionals, there are likely to be around 9000 such individuals in UK HE – that is academics and academic managers who are working to embed learning technologies into their professional activities and into the everyday practices of their institutions.

Two members of the sample could be described as 'learning professionals in transition'. They were carrying out roles 5 (IT skills professional) and 7 (technical support professional). However, there were particular difficulties in identifying case study subjects who were working in learning professional roles, particularly in libraries where two section managers completed the questionnaire themselves rather than nominating suitable staff from within their team. It could reasonably be hypothesised that staff in roles 5, 6 and 7 are 'learning professionals in transition', corresponding to a population of around 4,500 individuals across UK HE. By the very nature of this role, however, the numbers are rising as learning technologies become an increasingly significant aspect of the learning environment.

Eight of our sample were 'new specialists', carrying out roles 1 (educational developer), 2 (educational researcher), 3 (technical researcher/developer) or 4 (materials developer), or the more generic roles 8 (learning technologist) or 9b (project manager). This study confirmed the finding of the role analysis that the boundaries between these roles are very unclear, with most individuals carrying out more than one set of activities. The new specialists represent the core learning technologies expertise in UK HE. There are likely to be a little under 2000 of them working in the sector as a whole.

8.2.4 Current skills: interpersonal/communicative

Interpersonal skills were described as the most important skillset by the majority of subjects. Responses included (brackets indicate the role(s) of subjects who made this response): *general communication skills* (all roles); *negotiating skills* and *diplomacy* (2, 3, 8, 9a, 9b); *liaison, 'building bridges', networking, making and maintaining contacts* (2, 4, 9b). Another set of skills suggested a client focus: *listening, identifying needs, facilitation, having a 'customer care' attitude* (1, 5, 7, 8, 9a), particularly in relation to academics. Several subjects mentioned electronic communication skills specifically, and the ability to maintain good working relationships at a distance.

8.2.5 Current skills: management

The majority of entries in this section came from the 'managers', but roles 1 (educational developer) and 8 (learning technologist) were also well represented. People working in these roles were particularly like to mention 'strategic' skills such as '*working with organisational structures of institution'* and '*being aware of university's strategic plan*'. People working in role 2 (educational researcher) and 3 (technical developer) also made use of management skills in their work. Again, specific mention was made of the need to develop new modes of management for computer-mediated team working.

8.2.6 Current skills: project management

When it came to project management as opposed to more traditional management, almost every subject required some relevant skills in their current role. A wide range of skills was cited, from bidding and developing project proposals through coordinating activities to final reporting. There was a strong focus on multi-professional working with academics and other specialists, though from the evidence of this sample the role of coordination seems to fall particularly on the learning technology specialist, whether or not defined as a 'project manager'. Subjects in project management or educational development roles differed from the rest only in that they required a more strategic awareness of external funding drivers and opportunities. Among learning technology staff the boundaries of management seemed impossibly blurred: 'managers' were usually responsible for small teams (in one case a team consisting only of himself), while the manager of one project was frequently a team-worker on another. Shared managerial responsibility may be a defining feature of work in this area, along with inter-institutional collaboration.

8.2.7 Current skills: technical

Subjects in roles 2 (educational researcher), 4 (materials developer), 5 (C&IT skills professional), 8 (learning technologist) and 9b (team manager) were most likely to cite technical skills. These mainly involved generic technologies: videoconferencing, data conferencing, file transfer protocols, databases, spreadsheets, word processing, presentation technologies, web browsers, web authoring tools and email software, general PC skills and html. Specific online learning environments and CMC applications were also mentioned. C&IT skills professionals needed rigorous technical skills for training others, but most subjects only needed to keep '*ahead of the game'* in order to '*support others'*, '*understand the needs of staff/students*' or gain '*an overview of what the technology can achieve'*. More technical (programming) skills were confined to roles 3 (technical developer), 4 (materials developer) and 7 (technical support). These included Visual Basic, CGI scripting, programming, web page authoring and design. Predominantly, however, subjects did not cite any specific technical skills but rather the ability to pick up new skills rapidly on the job and maintain an awareness of current developments, particularly as they related to learning and teaching.

8.2.8 Current skills: information management

Project managers, team managers, educational developers and researchers in particular cited information management skills as necessary to their current role, particularly 'new age' information skills based around the use of the internet and electronic resources:

> *nearly all my interpersonal skills happen in the electronic arena with email, working with distributed teams. So they're kind of like new age interpersonal skills*

Skills such as '*finding, evaluating, organising'* information and '*researching, collating, evaluating, synthesising, analysing and presenting'* information clearly have overlaps with academic skills (see 7.2.10 below).

8.2.9 Current skills: pedagogical

Almost all subjects had some experience of teaching or training in higher education. Current roles involved traditional and 'new' pedagogical skills such as online tutoring, training in 'internet information skills' and web-based instructional design. The discourse of 'learner support' rather than 'teaching' worked to flatten the differences across the sample, with one lecturer on a traditional teaching contract describing herself as '*not even a guide at the side [so much as] in there with [my students]'* while a member of technical support staff saw her role very much as '*imparting information*' in traditional didactic mode. One materials developer described complex strategies for '*cascading skills'* to less experienced members of his team but did not see this as a particularly unique skill: '*I think everyone's got a bit of teacher in them'*. A specific skillset cited by a majority of new specialists was '*the blend of pedagogical know how and technological awareness'*. Only one (a materials developer) described this skillset using the term *educational design*; the rest apparently intended something more like *technically informed educational development*.

8.2.10 Current skills: academic

Many subjects felt that their roles existed on the margins of academic work (see below). However, a surprising number of them engaged in core academic tasks such as: *carrying out research, writing papers and articles for books and journals, bidding for research funds, giving conference papers* and *undertaking evaluation and data analysis*. This was particularly true for educational researchers but educational developers, learning technologists and project managers also featured strongly in this list. Two learning technologists had acquired or used subject specific expertise in their role of supporting academic staff in departments.

8.2.11 Personal attributes of learning technology specialists

Most of the 'other' skills cited were actually personal attributes and these fell into three groups. First were a group of risk-takers or change-agents who cited the attributes of *self-motivation, energy, enthusiasm, creativity, developmental focus* and *vision*. These tended to be educational developers, researchers and project managers (all 'new specialists'). A second group could be categorised as strategists, who saw themselves as possessing *diplomacy*, *strategic thinking, problem solving abilities, overview of political and strategic developments* and *ability to see around political issues*: these people were often general learning technologists and team managers. Finally, a third group focused on service and care, emphasising their attributes of *patience, empathy, support, guidance, willingness to help*, and *attention to detail*. These subjects were (perhaps unsurprisingly) most likely to be found in a learning professional role.

8.2.12 Skills gaps

The most significant need expressed by participants was for 'time' to undertake professional development, particularly for the exploration of new technologies (both to find out '*how it works'* and to '*gain a vision of what it can achieve [in learning and teaching]*'). Two comments, both from new specialists, are typical of many:

> *I was told when I turned up here that I had a half day a week personal development time, which kind of gets spread out to five minutes here and there. There's an on going learning role not fixed on one thing all the time.*
>
> *There's no time.. Every time I go to a conference I think this is the stuff I'd really like to get my teeth into, but you get back into the office and...it's just constant firefighting.*

New specialists were also keen for time to undertake a higher academic qualification (usually in learning technologies specifically) and for general academic opportunities:

> *for the educational roles, you do need formal qualifications and you need support to develop... update and inform your scholarship, and your teaching skills too*
>
> *[The development opportunity I would like to have had is] Time for my own research and to pursue a PhD*

Other skills cited in response to this question were project management and financial planning, including expertise in writing bids to different funding bodies.

8.2.13 Skills for the future

Subjects were asked how they saw their roles developing and what skills they would need to carry them out effectively in the future. All saw themselves as needing to keep up to date with emerging technologies, '*both awareness of what is available and also how it can used effectively for learning'.* Managers felt they needed to keep abreast of the technologies that their team were using in order to provide effective leadership. New specialists were likely to be looking for a formal qualification in, or greater awareness of, learning and teaching to satisfy the demands of personal interest as well as professional credibility. Academic research and evaluation skills and academic communication skills followed close behind. A significant number of subjects cited a need for financial and (business) management skills in anticipation of their projects working more closely with the commercial sector, while there was a widespread expectation among educational developers, researchers and project managers that they would need to develop skills in bidding for external funds. A significant number of subjects cited time management as a priority, but this seemed to be another version of the ubiquitous complaint that there was not enough time available to do the work required (*'something... to help me juggle 20 balls in the air at once', 'constant firefighting' ' doing the work of four people [on my own]*').

8.2.14 Modes of professional development: formal

The vast majority of formal staff development opportunities which were cited in our study had been taken up by managers. These opportunities tended to focus on personnel, management and communication issues, though there were also introductory courses in software (such as that identified in 7.2.5). The 'established professionals' were also disproportionately represented among subjects who had taken up long-term professional accreditation courses, including Master's awards in education, membership of professional bodies (ILT, SEDA, the Library association) and long-term management training. Learning professional staff had done a smaller number of technical short courses. New specialists had taken up very few formal staff development opportunities of any kind.

8.2.15 Modes of professional development: self-directed

Particularly among the new specialists, and particularly in the acquisition of technical skills, self-directed learning was the norm. This was described as '*dabbling', 'getting stuck in', 'experimentation'* and *'trying things out',* and tended to involve '*tenacity'* along with a number of resources including manuals (paper and online), help menus, commercial software sites, other members of the same team, online hints and tips (e.g. bulletin boards), online examples of good practice, discussion lists and informal networks. Subjects recognised that they had an aptitude, mind-set or existing expertise which allowed them to pick up technical skills extremely quickly, though several emphasised that this was facilitated by working with a team.

> *new applications you pick up just by having a go, using your existing mind-set which tells you what it's likely to do*

[In my team] we have the aptitude to absorb new programmes really fast. We also learn from each other really fast and we'll ask each other. We don't use manuals. We'll start off with the tutorials usually, online, or ask each other 'can we cut through this?' because we don't have time. We have time-saving ways of learning programmes.

8.2.16 Modes of professional development: collaborative

Subjects who reported regular attendance at conferences, meetings and briefing events were the educational developers and researchers, materials developers, librarians, general learning technologists and project managers. For many of these new specialists, conferences provided an essential forum for exchange of ideas and expertise: one materials developer described them as '*really useful, a real must-see for learning technologists... you start getting the big picture of things*'. Subjects with technical responsibilities were more likely to attend demonstrations and exhibitions, or not to report any face-to-face development opportunities. Less formal modes of communal learning included a *'think tank (well actually we meet down the pub and chuck some ideas around, but that has resulted in... putting in bids'*), peer discussion, skills-sharing sessions, email discussion lists, co-mentoring and collaborative problem solving in multi-role development teams. One developer/researcher commented:

'*There aren't standard courses available. So what you do is, its learning on the job, contact with others working in the field. There are no manuals, there are no courses, so the most important is communication with others'*.

8.2.17 The lack of specialist development opportunities in learning technologies

Only one subject had received any specialist professional development in learning technologies, that is integrating pedagogical and technical aspects of professional practice. This was a professional development programme in Embedding Learning Technologies undertaken by a materials developer at his own institution. A second subject (a team manager) was undertaking a postgraduate diploma in educational development which was structured around '*a series of little projects [negotiated] with the scheme leader'* and was therefore '*tailor[ed] to fit in with my own development needs'*. Other than this, no specialist development opportunities seemed to be available. However, the majority of subjects including all the 'new specialists' were involved in *delivering* development opportunities in learning technologies to other (usually academic) staff.

8.2.18 Academic qualifications

Learning technology specialists are generally well qualified. Most (9 of the 17) of the respondents hold a postgraduate qualification, three of them doctorates and six masters degrees. The remaining 7 hold first degrees, although four of these also have a PGCE qualification (classed here as a 'professional' qualification – see below). New specialists in particular are concerned with the status of their roles *viz a viz* mainstream academic work, and with the legitimacy (or otherwise!) of learning technology as a profession or an academic discipline.

8.2.19 Professional qualifications

Five of the sample currently hold a PGCE: these subjects work in the roles of technical support, learning technologist, team manager (2) and project manager. In terms of the membership of professional bodies there is considerable diversity among the other staff with 18 different organisations represented. Note however that established professionals are far more likely to belong to professional organisations than new specialists, who are in turn more likely to have professional affiliations than support staff in transition.

ALA	2
ALT	3
AMNI	1
ASA	1
BCS	1
BERA	1
BPS	2
British and Irish assoc. of law	1

librarians	
BSA	1
EERA	1
ILT	3
ITD	1
Library association	1
MRIN	1
NATFHE	1
NUJ	1
SEDA	2
UK evaluation society	1

8.2.20 Advantages of working with learning technologies

The main advantages of working with learning technologies were: the excitement of working in an emergent field; intrinsic rewards of helping students to learn more effectively; the rewards of working in an academic environment; intellectual and creative fulfilment; autonomy; challenge; access to new technologies; scope for lifelong learning and personal development; the rapid pace of change.

8.2.21 Disadvantages of working with learning technologies

The main disadvantages were: lack of time; overwork and juggling of multiple tasks; lack of job security and financial reward; perceived 'ignorance' of strategic decision makers; lack of status and recognition within the academic community; uncertainty of career progression; the rapid pace of change.

8.2.22 Commitment

Subjects typically placed a high value on working in the academic community, but were well aware that their skills could command much higher salaries in other sectors. Some experienced this as a source of conflict, concisely expressed as the choice between '*an interesting or a financially rewarding job'*. Most subjects showed a high degree of personal commitment to learning technologies and several gave personal accounts of how they had been empowered by them as learners. Some, however, felt that it was wrong to focus on 'learning technologies' as a specialism, arguing that it was simply a matter of incorporating new tools into existing professional practices (e.g. librarianship, learning support, educational development, teaching and assessment).

8.2.23 Student learning focus

Although the survey and interview did not aim to explore subject's professional values, a strong focus on student learning emerged. Staff across all the roles showed a deep awareness of current issues in pedagogical theory and in learning and teaching practice, and were generally forthcoming about the need for a more student-centred approach.

8.2.24 Adaptive behaviour

In their career histories as well as in their personal practice, subjects showed a relish for and ability to adapt to changing circumstances. Technical and pedagogical change in particular were seen as sources of opportunity and job satisfaction, and most regarded themselves as innovators in these areas. Strategic organisational change was also perceived as positive in the main, though this was less the case where it threatened individuals' posts, job security or (especially) the future of their projects.

8.2.25 Multicompetence (generalisation versus specialisation)

Most subjects felt that their own roles were demanding a wider range of skills all the time. Some lamented their own lack of '*delegation'* skills, but most simply felt that they were under-supported, particularly when it came to the more '*mundane'* tasks of project management. One manager and two new specialists expressed

the view that they were carrying out the work of an entire team on their own. Alongside this finding, however, was an apparently contradictory belief that more *specialist* skills were required as the technologies themselves became more complex and more strategically/systemically significant. One learning technology generalist reconciled these findings as follows:

> *The way that roles in educational technology fit together have changed, in that side by side with people doing my kind of [generalist] role there are people doing roles that are much more specialised... As learning technology is becoming more professionalised... its becoming broader but perhaps in a sense more specialised [as it] brings in different elements [which need to retain their own specialist focus].*

Again, new specialists regarded their range of skills as opening doors to a wide selection of potential careers, though established professionals were more likely to see themselves as updating their expertise in response to new environmental demands.

8.2.26 Academic legitimacy

This was particularly an issue for educational developers, researchers and general learning technologists, who were likely to see further educational qualifications as one answer, or opportunities to publish original research. Several felt that learning technology needed to establish itself as a separate discipline or sub-discipline if their work were to achieve credibility. Others felt that the demands of a support role simply left too little time for research, ironically echoing the lament of lecturers who find themselves caught between the requirements of teaching and the RAE:

> *you kind of want to do research and produce papers and so on but at the same time you're not in an academic post, you're in a support role... [in the post I have just left], if anything was more dispensable it felt that it was the research and publication rather than the day to day running of workshops and so on.*

Other subjects, particularly the materials developers and learning professionals, drew a clearer line between their role and the role of academic staff:

> *this post is a support post and not an academic one... it's important not to get mixed up in the academic side of things. Our place is not research. They supply us with the content, we put it into place.*
>
> *essentially I'm not academic, but I don't feel that I get looked down n or anything like that*

8.2.27 Support versus development

A related issue was a concern among some new specialists to describe their work as development rather than support. This was felt to be essential if academic staff were to value the pedagogical insights of learning technology specialists and treat them as collaborators in the enterprise of embedding learning technologies into the curriculum.

> *They're seeing us more as technical support rather than coming from a background of knowing the pedagogical issues behind it... Academics do have a lot to learn from people like us.*

The concern was less marked among established professionals and learning professionals in transition, two of whom articulated a clear customer service approach to their role in the institution. However, almost all subjects were concerned with the development of individuals, whether students or academics.

8.2.28 Cross-institutional and peripatetic working

Some new specialists relished working across different areas of their institution. The educational developers, for example, had membership of three and four institutional working parties respectively and regarded their role as necessarily '*nomadic'*. Project managers also tended to work across institutional structures. Other subjects, particularly technical developers and technical support professionals, felt themselves '*alone'* in their working practices, '*a square peg in a round hole', 'abandoned*', even that they had '*no professional identity'*. There was consensus that senior managers tended not to understand the peripatetic role and its contribution to institutional change; also frustration at a perceived lack of coordination at a senior level. Educational researchers, general learning technologists and technical support professionals tended not to be members of institutional bodies and seem to have been more susceptible to feelings of marginalisation.

8.2.29 Information overload

Despite the vast range of '*new age information skills'* demonstrated by subjects in the sample, information overload was seen as a threat to job satisfaction, particularly in relation to project working which entailed constant asynchronous communication and the juggling of multiple roles.

8.2.30 Networking and communities

On the other hand, several subjects commented warmly on the ‘learning technology community’ as a source of continuity, job satisfaction and support. This relates to the very positive comments about conferences, workshops and ‘peer learning’ expressed in 7.2.16.

8.2.31 Uncertainty versus opportunity

Contracts of the staff in our survey appear to be mostly temporary, at 65% (or 11 of the 17 subjects) with the ‘established professionals’ occupying five of the six more secure positions. Within the temporary classification, however, there appear to be varying degrees of certainty as regards re-employment. Progression was also clearer for the established professionals, though because this tended to be within institutional hierarchies the route upwards could become blocked, leaving little or no room for advancement. New specialists, on the other hand, had no clear lines of progression and regarded this in equal measure as an opportunity (often expressed in terms of the marketability of skills) and a threat.

9. Constituent studies: Senior manager and stakeholder interviews

Researcher and Principal author, Lynne Gornall

9.1 Outline

In March 2000, JISC and the project Steering Group approved a supplementary proposal to the main project. This was to provide a more detailed picture of the institutional context for 'learning technologies' work, and to be undertaken by Lynne Gornall of the University of Glamorgan, drawing on previous work on 'new professionals' in HE (Gornall 1999a). The additional study identifies and consults key stakeholders - HE decision-makers and representatives of HE bodies – to enrich the analysis and understanding of learning technology (LT) roles in the project's report. The proposal was for 12 interviews across 3 HEIs and external bodies to include:

- Heads of Personnel or Human Resources
- Staff Development Managers
- Heads of Teaching and Learning
- Senior staff of professional or representative bodies

Identification of informants was via the JCALT project Working Group, and in a few instances, from other interviewees. A question-set was developed from previous questionnaire work and outputs from related projects. Most interviews were conducted face–to–face, with the interviewer travelling to site and running the session in the manager's office or nearby meeting room. In a few cases, the interview took place by *videoconferencing*, a research innovation in this context.

In fact, twenty-one interviews were conducted between May and August 2000, spanning four HEIs and 3 external groups. The HEIs represented an opportunistic sample but exemplified institutions with diverse missions and histories – two 'old' two 'new' HEIs (10 and 8 interviews respectively), in different parts of the UK and funded by three separate Councils - HEFCE, SHEFC and HEFCW. Senior staff in HE representative bodies – UCISA's Chair of Teaching, Learning & Information Group (TLIG), AUT's Senior Research Officer, Natfhe's Head of Institutions, comprised a further data set of three interviews.

In setting up the interview sessions, a question-set and survey sheets were emailed to recipients, thus interviewees were broadly aware in advance of the project themes and discussion topics to be considered. Interviewees were briefed on the data collection and recording process and asked to sign *a data advice sheet*, an initiative designed to offer a 'good practice' agreement in the uses of material gathered from the interview. Because these discussions sometimes covered sensitive areas of organisational practice or individual position in the HEI, interviewees were offered confidentiality and anonymity in the reports.

9.2 Key Findings

9.2.1 The Stakeholders

It was clear from the HE managers' interviews that, like those of the learning technologists/new professionals they were associated with*, their positions were shifting, in a process of change and sometimes tentative*.

9.2.2 Managers' own roles

The following quotes include an example taken from *each* of the HEIs visited:

- I'm not in a permanent role, so watch this space; things have changed a lot in two years

- The structure – what date is it today? Tomorrow it changes

- We've got a new [senior manager] arriving shortly so things may change

- We're being reviewed at the moment, so [named feature] may return/be added...or not

- *I've only been appointed to this role for a year; things changed a lot from two years ago [example of change] and then changed again after the (last) RAE*

What's more, the role and location of *Staff Development and Training* was in particular flux, and *under active restructuring in all four HEIs visited.*

This finding, together with the data from the other HE managers, gave a clear but rather surprising message, of *a similarity of outlook, perspective and planning of managers in like role – the Personnel Heads, the Teaching & Learning Managers, the Staff Development people.* This was noticeable and in a way quite remarkable, given the grosser differences of organisational culture, history and regional setting of the four HEIs. Here, three 'types', or rather role positions, are suggested, which typify much of the material gathered in this study.

9.2.3 The Counsellor/Adviser

In many ways, Personnel Heads are standing back from the active recruitment process. Their role appears to be evolving into one of a 'wise counsel' to other managers, on best practice, legal compliance, strategic development and so on. Most interviewed, whilst highly aware of the changing nature of HE and its HR repercussions, reflected that their institutions had not really considered how future needs for LT/LD skills would be met (or included in strategy), but they readily took this idea on board in interviews. Personnel was presented as a service, with mentoring and advice to senior staff on recruitment matters, gradings, disciplinary processes etc, and on the other hand, working strategically with higher management. In a pragmatic sense, this avoided the danger of accusations of 'interference' in teaching/academic departmental processes, and simplified involvements at the administrative end, often saving scarce staff time (eg from involvement in interviewing etc). The former 'guarantor' role provided at the advertising, shortlisting and interview stages of Personnel staff now seems to have shifted to the role of protection from litigation and guarantor of process quality at the macro (strategic and corporate) level. Thus, in a detailed sense, the Personnel Heads were generally little aware of the detail of the specific contracts, pay, job descriptions and role distributions of LT/LD staff – their promotion prospects or career development - in their institutions. They did however have clear views about role change, and the balance between teaching, learning support, research and administration, and on what they saw as the drivers, constraints and barriers around these in their HEI. This is a key group of people, and we will propose further additional research around these HE management roles.

9.2.4 The Agent/Animateur

Staff Development and Training managers and leaders act as agents in two senses – (i) passively, as brokers, contracting and outsourcing training services (the agency role); (ii) in other cases, they are more proactive – active agents or animateurs, of cultural change and HR development within the institution. They need to network and interface with many other related service providers, and like the Personnel people, actively attempt to be 'needs' rather than 'provider' led. There was much change around this role in the four HEIs studied. – the role seems to have become a sub-management one in some, and yet, the staff interviewed (in Staff Development/Training, IT Training or Information Services Training/Support) were very articulate in identifying challenges, barriers and opportunities for change. Their rather ambivalent structural role – undergoing change(s) in every one of the four HEIs (and very significantly in three) – meant that their knowledge of change management might not always be fully capitalised on or integrated into the strategic planning of the institution. From the point of view of Learning Technology/Development staffing and career development, this leaves a rather crucial gap and deserves further investigation.

9.2.5 The Cautious Intrapreneur

The role of the T&L manager in the HEIs sampled can be characterised as Intrapreneurial – enterprising within an organisation or business – taking risks, exploiting opportunities, seeking niches, working with the talent, spotting and supporting it. On the other hand, in the macro environment of the organisation, they have to conform to strategic and mission driven expectations, budgets and human resource constraints which are often conventional, traditional, and some way behind their entrpreneurial vision. The T&L professionals have to be careful, cover their back, whilst facilitating change. If we think of change as essentially disruptive this tactic becomes understandable. And a low(ish) profile is a good way to be effective and get things done. They were clearly 'doers' and were cited by colleagues as people who delivered, though perhaps had constraints around mainstreaming and dissemination. So too, the role requires adaptability and the ability to alter direction depending on opportunities, which cannot always be predicted or planned for. They have to do this whilst retaining a sense of their own purpose and vision. Like business entrepreneurs, the T&L managers must often operate with small teams; unlike their external counterparts, they do need to contract with others (eg in teaching, IT, SD or other departments) in order to deliver. The cross-border work is often sensitive territory, hence perhaps the modest profile. This, and the long term nature of gaining outcomes, can make it difficult for T&L managers to claim or receive credit. Essentially, their style is a kind of alchemy –

producing small nuggets out of thin but 'found' resources. The nature of this as a creative process seemed to provide some satisfaction, although the staff interviewed were very motivated by the possibility of external, objective change, the result of their careful but measured risk-taking, alliances and 'controlled' innovations.

9.2.6 Perspectives from representative and professional bodies

Senior officers at both NATFHE and AUT were well-informed about the kinds of changes, challenges and opportunities characteristic of UK HE at this point, and broadly sympathetic to many of the processes and objectives of these changes. Tom Wilson (NATFHE), for example, spoke about the "convergence' which was growing, between 'academic' and 'academic-related' posts in both the 'old' and 'new' university sectors", whereby similar jobs would start to have similar titles, and was also optimistic that arrangements for any new Pay Councils could be worked out, including where particular sorts of posts were attached. The Association's areas of concern were often about 'equality' or 'parity' issues, so for example, it was recognised that "*innovators are often part-time and marginalised, they may be younger, and probably work in more than one institution*". They may not have pigeonholes or be tracked for staff development. In terms of career development, "*pay for these groups is an issue*". Tom Wilson also pointed out the correlation between part-time working, pay discrimination and gender which NATFHE research has highlighted. The Association is actively in support of the recommendations of the recent Bett Report, which are seen as a key way of redressing some of these kinds of systemic flaws in the current HE system. On the impact of learning technologies on existing teaching staff, this should lead, it was argued, to some well-structured training in new ways of delivering expert content, but even more, to *"a move towards interactive rather than passive student learning opportunities*". NATFHE sees the expertise in knowledge of resources and applications of technologies as residing in new (LT) experts, who would work alongside and with lecturers (who do a different job). This is seen as part of a positive movement of change, reflecting collegial teamwork but with a wider and more diverse concept of the team, and incorporating 'hybrid' roles for individuals, which are also part of this change. A close knowledge of the institutions meant that Tom Wilson was easily able to give examples of good practice or where innovations have worked well. In this interview, the stance was very pro- the Bett Report, and that its recommendations needed implementing.

Both NATFHE and AUT reported concerns over trends such as the annually increasing proportions of staff on fixed term contracts, and its contribution to an overall "casualisation" of the HE workforce. Of course, there are also differences in employment types and conditions between the 'two' HE sectors of pre and post 1992 universities. Staff, for example, in the 'old' sector, which AUT most closely represents, on 'academic-related' types of contract, would probably in the 'new' sector be classed as 'academics', a term which is itself not so much in favour today. These differences have led to somewhat "*different professional cultures*" between the HE sectors, according to Stephen Court of AUT, who also spoke about the growing development of 'team-based work' in HE, involving staff from different employment groups actively working together to support student learning. So again, there was an active recognition of some of the movement of and for change within the sector, and enthusiasm for tracking and writing about this. The Bett Report however was seen here as a disappointment, and a reversal of some of the achievements of Dearing (NCIHE 1997), in reinforcing differences between 'academic-related' and 'academic' employment interests, rather than trying to combine them. Stephen Court also thought that, given the growing areas of expertise in 'learning technologies' and other 'academic-related' work, recruitment of these staff was probably at the national and even international level rather than locally, as for other 'support' staff, again positively eroding differences between former occupational categories. AUT however, like NATFHE, are also realistic, and point out that "*not everyone wants to be or become 'an academic'*", so whilst there may be some crossover in role, this might not lead to fundamental transition for most people in their employment type.

Whilst in interview, NATFHE emphasised part-time working issues, AUT focused on fixed term contractual issues (and analogies were discussed between LT posts/contracts and Researchers' conditions of employment), both organisations were highly concerned about (and undertaking research on), both of these employment issues. Interestingly, AUT has also been active in putting the case for greater inclusivity in Institute for Learning and Teaching (ILT) membership, and in the HEIs, has promoted the notion of 'team based accreditation', whereby the team is the unit to which accreditation is awarded, not the individual who, alone, may be unable to fulfil all the criteria. There is also a problem, AUT identify, of recognition as academic work, of the work of academic-related staff.

One further issue common to both organisations was a concern about the methods and categories used to 'count' HE staff, which mean that sources of reliable data on numbers of people in particular HE job sectors are not readily available outside a few defined categories (eg academic clinical and non-clinical staff). AUT in particular, has had a running correspondence on this issue. For LT types of staff (rather than post), the issue is roughly '*they may teach, but are they part of the (teaching) recruitment strategy'*? A very pertinent issue indeed, which raises the distinction between the job done and perceptions of these posts. Clearly, there is scope for a good deal more collaborative and cross-sector work on these areas.

9.2.7 Organisational context

There is evidence that the area of learning technologies and development is becoming part of the institutional superstructure in old and new universities, in that managers for these units not only liase laterally but are being integrated into institutional hierarchies (senior management teams) and represented on key boards or committees. However, the type of institution is a key factor in identifying the specifics of change around learning technologies practice. For those familiar with the HE sector, these were generally in highly predictable areas. For example, the 'old university' culture was research focused, so the challenge of how to value teaching was an issue; moreover, in such institutions, change was rarely effective from the 'top down', so influence had to take place at committee level and to work rather slowly through the system. The 'new university' ethos by contrast emphasised the student experience and the expansion and diversification of entrants which had stimulated a need to provide flexible learning resources. Here, a combination of institutional strategy and active individuals catalysed by a proactive teaching and learning unit seemed to be the way to create change. Often, this was underpinned by 'top down' strategic policies, although these were not always being operationalised in any simplistic way.

9.2.8 Proactive collaborative working

What was remarkable was *a common set of themes about people working together* in a proactive way, across organisational units and groups, and with management support. The evidence for the effectiveness for such co-operation would have to be gathered as part of a separate study; however it could not have been predicted from notes about the teaching and learning/learning technologies teams themselves, which are small and fractional (not all full-time or entirely in one unit) and comprise individuals on a mix of contract types.

9.2.9 Active Providers

It was clear that there were very active partnerships in place, both for strategic developments and in relation to particular projects or initiatives, between staff and teams from the managers' groups in question – between staff developers and personnel/HR, between T&L and staff development, and between personnel heads and T&L managers. These often included staff from related staff development and training teams in Information Services or Information Technology units/departments. Examples of this were the provision of web training, new lecturer induction programmes, reports on staffing strategies, key competencies policies, student learning joint initiatives and so on.

We can see that this *joined up support* provision, or as one manager called it, 'co-operation without territoriality', took place within a facilitating organisational and managerial framework. In other words, it was organised co-operation. What was interesting was that enthusiasm and operational flexibility did not seem to be inhibited by organisational or unit boundaries, thus was as active in a 'combined services' context as in a 'separate services' context so long as there was high level support.

9.2.10 Links across boundaries

By contrast, the links across teaching and support boundaries were much more *ad hoc* and individualistic. There was evidence of plenty of activity – projects, initiatives, groups – but it was conspicuously at the micro level. And again, this is not to deny its impact or significance: some of the initiatives would be far reaching in the longer term. However, the word 'enthusiasts' cropped up constantly when managers talked about links with teaching departments in the context of learning technologies and educational innovation. This suggests that the kind of joined up and semi-formalised co-operation that is evident in the work across service departments is still not a consistent feature of teaching department with support group working in HE. Many managers were concerned about this – '*the people in the key roles are aware of the issues'* - and discussion about how to extend and develop this kind of working in a more strategic and embedded way was a theme of every such interview. Of course, the current research brief did not include interviews with teaching department managers or 'academic' leaders, thus we have here only part of the story.

9.2.11 Role of teaching staff

Teaching departments and staff were seen as very much under pressure, fairly defensive of their area, and people who had to be courted. Managers recognised that teaching colleagues did not have the space and scope to 'stand back' and look at students' needs or the wider learning experience. They were also seen as driven by a number of very specific pressures – QAA and RAE in particular, but also the annual efficiency savings – which left little 'breathing space' for other innovation. Moreover, the *incentives* to innovate outside

of Quality Assessment and Research Assessment were not thought to be sufficiently motivating or well developed at the institutional level.

9.2.12 Occupational issues for LT Staff

There was a great deal of consensus on 'who' the LT people were, their skills and the kind of profile that might be needed. In most cases, small numbers of people, mainly centrally based, were cited as LT staff, with 'individual enthusiasts' in teaching departments named rather than role categories. In the four HEIs studied, the 'learning technologists' comprised a mix of people with 'home grown skills and talents' who had developed in role, together with staff newly recruited to the institution with a specific brief. The centrally based LT staff were regarded as quite difficult to recruit and retain.

9.2.13 Skills

Interviewees were questioned about (i) the LT skills which would be needed by HEIs in the future (3-5 years) and (ii) the current development of LT staff and their skills in the HEI now.

Stakeholder views on the skills needed by Learning Technologies staff held a great deal of consistency. Interestingly, all agreed that 'technical and technological' skills *per se* were not what were required; much more important were:

- communication skills – listening, interpreting, feeding back ideas, not didactic
- interpersonal skills – gaining others' respect, a team player (not going it alone), able to move people on without telling them, able to see things through to operation
- application skills – the ability to identify, develop and adapt resources (use, not create)
- *educational focus – understanding students' learning, the educational process and outcomes*

Clearly some of the above required an appreciation of the availability and capabilities of software and technologies, *but no-one thought specific computing or technological skills were of prime importance, and there was a sense in which these were in oversupply compared to the other competencies*, especially the understanding of the learning process. One interviewee put it that the 'people' and 'technology' skills needed to be '*in balance'*. One or two mentioned that previous experience in 'teaching' of some kind might be valuable. Several mentioned that the Learning Technology people did have a problem in keeping their own IT and software skills up to date (and because this is *not* a focus, it can be hard to prioritise or argue for). The CSED JCALT project (CSED 2000) have recently written and reported on several of these areas.

9.2.14 Contracts

It was perhaps surprising to find that Personnel heads and others in HE management were sceptical of the value of fixed and temporary contract posts in the organisation, but most felt that this was more of a risk (of instability, of losing good staff, or failing to attract them) than a positive aspect of '*flexible management'*. The Personnel heads were actively interested and concerned about this issue, although there were no specific plans to change things, and not much perception that these contracts affected LT staff in particular. Some interviewees did express frustration at the relative reliance on external funding to resource staff for innovative work, with its attendant employment contract issues.

9.2.15 Recognition and Reward Incentives

For teaching staff, a variety of rewards and promotions were quoted. Very few involved direct salary increases, although some involved access to new resources. Secondments were frequently cited as examples of recognition and reward, along with teaching fellowships, professorships and special roles (LT co-ordinator, involvement in Faculty level work, and so on).

Most of the interviewees from all posts could cite an example of people being successful in accessing these 'recognised' posts. Moreover, most could also think of an example of a member of the non-teaching or support staff who has achieved a new status or post (reward or promotion). However, there was also a strong consensus that barriers and constraints to the full operation of the reward and promotion structures for LT and T&L innovation were preventing more uptake to them. Clearly, however, these structures (the named posts, their purpose, and the channels for applying) are currently in place, and there was no real difference between the two traditional and the two modern universities in this respect, perhaps a surprising finding.

The factors that are preventing full operation of the system relate to –

- for teaching staff, conflicting pressures in particular regarding research productivity

- for support staff, uncertain criteria to quality and perhaps need for a dedicated system
- for all staff, the fact that achievements in innovation are not always tracked and given credit for.

9.2.16 Payscales

One issue on which HE managers and staff from professional bodies were vocal was pay scales*. The sector managers and the professional bodies were in agreement about scales and grades of posts in HE, where it was argued that there should be a single scale, that the distinction between 'academic' and 'support' (and between these and 'academic related' scales in the pre 1992 university sector) jobs and salaries should be removed and the scales harmonised.*

9.2.17 Progression Issues

In terms of *career progression*, it was recognised that in practice, most LT staff would have to move jobs (institutions) in order to progress. In 'support' roles, there was quite a lot of scope for people to develop and change their role 'in post', although the channels for *promotion for support staff* were often less well defined that for academic staff. One manager cited the promotion of an IT support technician to a lecturing post as a good example of career progression, but clearly this involved quite a shift across boundaries (see Gornall 1999a) and greater earnings potential (because of the longer scale), indicating perhaps that there is a career ceiling for non-teaching staff in this area. There may also be a glass 'wall' – one interviewee raised the question of 'equal collaboration', and wondered whether staff not directly involved in teaching students could be admitted as equal partners in development initiatives and included in public recognition such as publications.

9.2.18 Succession Planning

LT succession planning was not really a priority issue for most of the HR managers, although it was an active source of concern to the T&L managers. Personnel managers saw future LT competencies as acquired by

- use of the internal staff cohort which has been involved to date in projects, T&L programmes (including those for 'new lecturers') and so on
- staff development of existing staff in related roles (technicians, resources, projects and so on).
- use of own graduates (who increasingly are involved in cross-disciplinary work)
- more new recruits (usually cited as lecturers with LT skills or LT specialists rather than other 'traditional' support grades)

9.2.19 Career Planning

In this context then it is not hard to see why, in response to the questions about responsibility for career progression of LT staff, that most interviewees found this question 'intriguing', but whose responses were decidedly vague! Institutions have generally not developed awareness about the professional development needs of LT staff or the organisation's HR responsibilities in this area. The focus of attention currently paid by HE managers to the structures that people are in (or can be moved to!), may be at the expense of thought given to the issues of employment dynamics – ie career progression, recruitment and retention, and succession planning.

Managers interviewed were generally very positive about the potential of national initiatives such as the Institute for Learning and Teaching (ILT), as a means of benchmarking learning and teaching achievements and for the opportunities of drawing in 'support or development' staff - staff on contracts other than conventional 'academic' and teaching ones. This may in time come to support the missing CPD areas mentioned above. However, it should be noted that staff involved in the Focus Groups for this study were much less convinced of the effectiveness and significance of this route.

9.2.20 Policy issues: drivers of change

Interviewees' analyses of the factors driving changes leading to LT posts in HE had a high degree of consistency, and some of these are noted below. There was also a consensus in the stakeholders' overall characterisation of the current status of organisational change and employment in the sector at the present time:

- global international for the HE market is a current driver of change in T&L
- Quality Assurance of teaching, with emphases on student learning and teaching methods (innovation) has been a very positive driver of change [much consensus on this]
- the speed of external change drives and enables internal change
- increases in student numbers means that [teaching] staff have to innovate or teach (and repeat) more
- new kinds of learners in HE (eg 'access' initiatives) have stimulated internal change
- the shift to student centred learning is creating the dynamic for change
- changes in senior management [esp. a PVC with a specific brief for T&L] has been a driver
- the [T&L unit] staff themselves act as drivers of change

9.2.21 Policy issues: inhibitors of Change

Quite a large number of factors which inhibit T&L innovation or acted as 'negative' drivers were mentioned in the interviews:

- the RAE and focus of HE on research productivity and publications was cited by many interviewees are working against wider T&L innovation, it valuing and the mainstreaming of previous initiatives
- time was cited as a huge barrier, especially for teaching staff, who have no 'space'
- there is too much change and workloads are high
- turnover of LT staff who get jobs elsewhere or whose [temporary] contracts end
- T&L and development teams get structured, moved and split up (expertise dispersed)
- T&L innovation is insufficiently rewarded
- partial initiatives (inadequately resourced?) have not fully delivered and failures are noted
- innovation is too dependent on individuals working in departments in isolation
- staff development teams are stretched and are providing generic and corporate training not specialist support
- there may be a time lag in seeing results of projects and lessons have been lost or missed
- the impact of many pilot initiatives is small and narrowly focused
- there is a lack of critical mass of people/numbers too small to move things on significantly
- teaching departments may not have time to take over the embedding of pilot projects by central services
- lack of support, co-ordination or liaison between centre and teaching departments
- academic middle managers may have vested interests against change which prioritises support services roles
- teaching staff may fear that their specialist work may become part of the central resources of the institution, and a loss of control
- money is a barrier – staff time (including recruitment of new staff, permanent posts, 'proper' full-time secondments) and costs of development – more resources are needed to fund learning technologies innovation.

Interestingly, 'technology' itself was generally *not* seen as a barrier or inhibitor, unless this was a focus, that is, without the 'balancing' factors of an interest in learning, in sharing information/skills and applying it in the educational context.

9.2.22 Change Management

For most of the stakeholders interviewed, change was seen as a 'stepwise' transition, of building on small teams of centrally-based T&L people, or on national policy initiatives, of building on the achievements of teaching enthusiasts and disseminating these, and growing a constituency. Organisational recognition would

follow, in particular from academics acceptance, and this would in turn lead to support for additional appointments and resources.

In a very real sense then, stakeholders clearly saw and addressed the 'learning technologies roles' issue as one centrally about *human resources and cultural change* within the organisation. One manager spoke of a 'new learning paradigm' in the shift from teaching centred to learner centred working, and agreed that this was also the biggest source of change and challenge in their own role. Another manager articulated a vision of a 'learning organisation', operationalised and being put into practice in the institution at that time, and about the conflicts, tensions and disruption some staff were experiencing.

Some positive suggestions, about staff awaydays and focussed events – fora which brought people together – were made, but there were undoubted anxieties about how to balance putting student learning needs first with institutional imperatives about research, commercialisation and so on. There were also divided feelings about 'centre/department' structures: strong trends towards devolution of staffing to academic units meant that teaching departments are increasingly interested in employing their own LT people. There is a feeling that these might be isolated and some of the benefits of teambased working and across units, be lost. So in a way, there is a paradox here, that for mainstreaming and embedding to be really effected, activity needs to be close to the learning and teaching process itself. On the other hand, this may result in diverse initiatives whose benefit is not grasped by the wider institution, and the individuals not part of the overall strategic framework. In career development terms, most interviewees felt that their academic manager peers were less aware of the professional development needs of LT staff that they were themselves!

9.3 Recommendations

9.3.1 For institutional managers:

- 'Time is of the essence' - full-time teaching staff secondments, with a complete separation from the department and immersion in the LT culture, are *a prerequisite* for significant cross-institutional change.
- Teaching and non-teaching staff must be integrated into all aspects of the educational process of the HEI including access to reward systems and participation in key cultural events eg degree congregations.
- Multi-service cross-disciplinary teams are effective at delivering change in learning and teaching practices. They should be judged according to their ability to deliver outcomes, rather than the ease with which they fit on the organisational chart!
- Human Resource managers should work together to explore a consistent framework for job gradings, contracts, job descriptions and salary levels across the institution.
- Staff development and training are essential activities, particularly in times of external pressure and institutional change. These individuals should be protected as far as possible to get on with their job at critical times such as restructuring.
- Teaching and learning managers need regular access to and communication with senior management teams: this is essential if strategic and operational activities are to be knit together.
- Internal learning and teaching projects should be funded with the aim to develop a critical mass of innovators, particularly *groups* of people embedded into teaching departments rather than isolated enthusiasts.
- Managers need regular updating on C&IT skills, issues and strategic priorities.
- There are a range of staff development issues which must be addressed for the line managers of LT staff. In particular they must understand the career development concerns of these 'hybrid' people, their 'special needs' and their capacity to work effectively across institutional boundaries.

9.3.2 For the JISC

- The JISC should use appropriate consultation opportunities to argue for a single salary spine for all staff working in UK HE, based on the findings of this study.
- The JISC should work with the ALT, SCOTCIT, EFFECTS project and other relevant organisations to devise an accreditation framework for professional development for all learning technology specialists working in UK HE.

- The JISC should work with the ILT, SEDA, UCoSDA and other relevant organisations to ensure that appropriate statements about learning technology expertise are included in all professional development frameworks for academic staff working in UK HE.
- The JISC should work with the CVCP, UCISA, ALT and other relevant organisations to ensure that appropriate professional development opportunities are made available for institutional managers with responsibilities for learning technologies and for learning technology related staff.
- The JISC should use appropriate consultation opportunities to argue for improved data recording methods for HE which recognise changing staff roles and categories
- The JISC should develop and provide resources to promote the concept of the 'learning team' (project-based groups working across service boundaries and especially across central service/academic department boundaries in the spirit of 'cooperation without territoriality')
- The JISC should collate findings from FDTL and TLTP projects, its own JTAP and JCALT projects, and other relevant studies to develop a clearer picture of the student experience of learning in a technology-rich environment for the benefit of UK HE as a whole.

10. Focus group findings

10.1 Outline methodology

Three focus groups were held following the initial report in September 2000. Two of these were held in October 2000 in Bristol and Glasgow/London (by videoconference) and a third in January 2001 in Bristol. Institutional auditors were invited to attend along with members of the Steering Committee and the organisations they represented. Eighteen individuals attending in all.

The focus groups were invited to comment on:

- the audit process itself
- the draft findings
- the draft recommendations

Focus group sessions were chaired by the Research Coordinator who provided a number of verbal prompts based on issues identified in the course of the study. Several of these prompts were not considered relevant by the focus groups: those which elicited significant contributions are reproduced in the headings below. Focus group discussions were audio taped and transcribed, then summarised under the relevant headings. No attempt has been made to distinguish contributions from individuals or from the three focus groups.

10.2 Comments on process

10.2.1 Ease/accuracy of the data collection process

Auditors found the data collection process took longer than they had anticipated but commented that the supporting notes were very clear ('*when in doubt read the instructions*!'). Most had distributed the survey to key stakeholders and submitted a summary of the results. Participants were usually staff involved with learning technologies, though in one case all heads of school had been surveyed and in a couple of others the bias had been towards institutional decision makers. Not surprisingly, perhaps, auditors expressed various degrees of confidence in the actual data. The most confident had made use of existing institutional research such as the findings of staff surveys and believed their responses to be representative. Most of the rest felt that they had given a reasonably accurate picture of their central service teams but that there were problems with accurate data collection in departments, where the situation was described as '*complex and diverse'*, '*impossible to do any kind of definitive survey'*, even hostile to '*anything which comes from the Centre'*.

10.2.2 What the process revealed about the issues under study

Many auditors agreed that the process revealed how little was known about learning technology related activities taking place in different parts of their institutions, and how poorly information was coordinated at the centre. Other issues raised here included:

- Distrust of initiatives and surveys 'from the centre' of the institution
- *'An issue of credibility [over] who's asking the questions'*
- Heads of Department whose '*views are different from or who don't even know who is doing things in their department'*
- Heads of Department and service team managers who were inclined to 'exaggerate' the level of progress in learning technology adoption in their own area.

10.2.3 Impact of the process at audited institutions

The impact was universally reported to be positive, sometimes strongly so ('*a major impact').* A common response was that the audit had '*helped to clarify people's thinking'*, for example about the range of activities involved in effective use of learning technologies, or about the kinds of decision that need to be taken. Two auditors noted that the audit had helped the learning technologies unit become better integrated into, and more proactive within, the institution, while others found that it had helped bring people together in new ways, raise issues on relevant committees, or introduce new ideas for promoting change. The impact

seemed to have been enhanced by the audit coming at the same time as the finalisation of learning and teaching strategies, which had led to an increased focus on institutional accountability.

10.2.4 Mapping learning technology roles

Auditors found that the given roles made intuitive sense, and they agreed that a very broad range of people needed to be included in the survey besides those who identified themselves unproblematically as 'learning technologists'. It was even suggested that the net could have been cast wider to include administrative and manual staff with responsibilities such as entering student data onto learning systems, or maintaining technical facilities in teaching spaces. One problem with this approach, however, was that it tended to overstate the number of 'support' staff relative to academic staff working in this area (apparently almost one-to-one, though of course many of the non-academic staff surveyed did not have a support role at all, and many others worked only part of the time with learning technologies).

Some auditors reported no difficulty '*putting people into boxes'* while others encountered problems with the fact that '*many are carrying out multiple roles'* and '*all on such different kinds of scales and posts'*.

> *Staff are not so much driven by their role as by the task. They adapt as they go along and fulfil a whole range of different roles. We find ourselves forming multidisciplinary project groups in an ad hoc way, partly because the whole thing is emerging. Staff tend to do whatever comes up.*

The educational developer role emerged as crucial, with several auditors feeling that it was not distinct (in practice or in the audit process) from the role of learning technologist.

10.3 Comments on draft findings

10.3.1 Current trends in learning technology roles

There was a sense that 'learning technologists', i.e. individuals carrying out a very wide range of activities relating to learning technologies, remained a rare species. Some auditors actually felt that the role, if it existed at all, was in the process of becoming obsolete as learning technologies became more ubiquitous and existing roles adapted to support them ('*people with a learning technology role within a different role'*). Some anticipated greater specialisation along technology lines*: 'a continuing growth in the number of technologists supporting particular software'.* However, most believed that:

> *there is always going to be a need for a core group who are competent in all these things, who can communicate with all the different specialisms of learning technology.*

The focus of learning technology work had certainly shifted from materials and applications development to educational and curriculum development, a finding borne out by the blurring of boundaries between learning technologist and educational developer as reported in 10.4.2 above.

Learning technologies themselves were evolving away from stand-alone applications and CAL packages, towards generic learning environments, web-based environments and conferencing technologies. What had once been considered innovative was becoming relatively mainstream, and there were tensions over how these applications were 'handed over' from development teams to central support services. The most pressing agenda for learning technology staff was integration of systems – technical, political, administrative and human:

> *It's not about integrating through computing, or through information services or through academic departments, it's about integrating through all of them, and that makes it very difficult.*

10.3.2 Skills required by learning technology staff

Participants agreed that many of the relevant skills were tacit, difficult to formalise, and almost certainly self-taught or acquired on the job. They focused on skills such as supporting, advising, promoting, teaching, mentoring, facilitation, educational design, communication and the capacity to work well in a multidisciplinary team, '*orchestrating new learning environments as well as providing useable interfaces for learning'*. Technical development and production skills were mentioned, but generally to point up the fact that they were constantly being lost from HE to the commercial sector where they could command much higher salaries. Like the case study subjects, focus group participants may have regarded technical competence as too obvious to warrant direct attention. Strategically as well as personally it was felt that learning technology staff might need to develop educational research skills (to enhance '*academic legitimacy*')

10.3.3 Roles and identities

Many of the focus group discussions circled around the theme of leaky boundaries, particularly the boundary between academic and non-academic roles. There were examples of staff passing through – in both directions –along a learning technologies route. However, there were conflicting strategies for the (agreed) objective of raising credibility, validation and legitimacy for learning technology work. The 'going native' strategy involved learning technology staff in developing a culture of scholarship, research, peer review and publication, much like any other academic community. The 'equal but different' strategy involved arguing for recognition to be accorded to the work of learning technology professionals while retaining a distinctively non-research focus on development, learning and teaching, and support. There was a suggestion that the 'right' strategy might depend on institutional location, with the professional/political role being perceived as more powerful at 'new' universities and the academic/researcher role at 'old' universities. Auditors who were working as learning technologists confessed to feeling torn between the academic culture of research and publication, the professional culture of service provision, a commitment to student learning, and the 'political' culture of promoting organisational change.

10.3.4 Career and professional development

Following on from the points above, one focus group argued strongly in favour of:

> *common development for academics and learning technologists… [so that] someone coming into a university with technical, design and communication skills could be supported to acquire the scholarship skills in the same way that academics are supported to acquire skills in communicating with the technology*.

A related issue was the need for development opportunities for teams as well as individuals. Appropriate modes of development included *action learning*, *problem based learning* and *action research*. Professionalisation was generally regarded as a positive strategy, for example through the ILT, ALT, EFFECTS and other mutual recognition groups. Because of the tendency for individuals to move across 'leaky' professional boundaries, however, professional accreditation would need to be flexible and tailored to the individual. Again there were calls for the learning technology community to recognise itself as a community of academic practice and develop appropriate forums for scholarly as well as professional development. One participant suggested that '*we need to reconceptualise the notion of study leave'* to include professional development time as well as opportunities for academics to prepare publications.

Participants emphasised the need for real financial recognition and career structure if institutions were to keep their learning technology staff. Within this, time and resources should be set aside for professional development, recognising that value would be added to this investment by the many ways in which learning technology staff were involved in cascading skills to others.

10.3.5 Central support versus support in departments

> *Learning technology application has got to be devolved to the schools. They've got to take ownership of it, and all our work is predicated on that, on us providing consultancy and advice and first time support. Then the schools actually have ownership of all the projects*.

This was a view echoed by a number of other participants. With the move towards embedding learning technologies into the curriculum it was recognised that academic departments had become the natural locus of support and development, and many institutions had successful local projects to report. At the same time there was a danger of duplicating effort if these local initiatives were not taking place 'under the umbrella of a systematic and reliable approach which must be centralised as academic programmes are'.

A surprising additional finding of the focus groups was that – almost without exception – the location and affiliation of learning technology units was in transition. In some places the unit was the site of 'turf wars' between factions of management, and while this was sometimes seen as a sign of the unit's political importance it was universally regarded as having a negative impact on staff.

10.3.6 High quality resources versus quick and dirty development

Participants noted that simple, useable applications allowed academics to enhance their everyday classroom practice with minimal investment of support staff time. This was countered by the argument that, particularly with shared or commercial resources, high production values were essential. One focus group suggested that UK HE needed to pool expertise in this area, as few institutions can afford high quality production teams in the full range of media currently being used.

10.3.7 Multi-role project teams

> *The need will be for teams of staff who are able to put stuff together in combination of live performance, virtual tutorial, discussion group, film production, more and more specialist niches of teams, only some of whom are academic specialists.*

This participant expected the number and status of traditional academic staff to decline as teams of this kind took on more of the work of curriculum development. There was no doubt among other participants that learning technology staff were at the forefront of multi-role team working in their institutions. However, a number of negative points were made:

- Job security and progression tends to come from strong hierarchical links rather than cross-departmental ones, penalising staff who work in a peripatetic role
- Team members are tied up with their own organisational structures and cultures which can impede progress. '*Problems arise not because individuals lack the skills but because "we're not allowed to do that"*.'
- Multi-role team working involves extra time and new interpersonal skills, which are rarely recognised
- Project outcomes are rarely recognised, rewarded and appraised in the same way as working 'within role'. It was suggested that in appraising staff: *The question should not be "what is your title?" but rather "what value do you bring, in as wide a sense as possible, to the learning of our students'".*
- Individuals need a permanent 'home' and colleagues with similar roles to their own, as well as the energy and buzz of project working.
- Multi-role teams are seen as a real threat to the status, identity and autonomy of mainstream academic staff.

10.3.8 Coordination of learning technologies

When it came to management and coordination, '*one of the things that became apparent… was how fragmented all of the process was, and in a lot of areas there was direct conflict'*. Another participant had found that '*there is good policy and strategy but there is very little planning'* and a third that '*the structure there seems to be is not enabling: it's stopping things from happening*'. The picture varied across institutions but there seemed to be a common trend for senior management to be relatively supportive at the level of policy, only for policy objectives to somehow miss being translated into effective action plans and budget allocations. It was well known that the next layer of management – e.g. deans of faculty and service heads – had their own competing priorities – e.g. research outputs or cost savings. Participants felt there was a need for coordination and accountability across all layers of management but acknowledged that this could compromise their own preferred *modus operandi*: working '*from the ground up'*, bypassing institutional structures where these were unhelpful, and supporting initiatives with local impetus and ownership.

10.3.9 Funding for learning technologies

Participants confirmed that while it was relatively '*easy to get ideas accepted'* it was extremely hard to secure funding, particularly as learning groups rarely had access to significant budgets of their own. Also '*there is funding for innovation but quite often it may devolve to departments or faculties to manage. And therefore people in the centre can lose sight of what is happening.*' Funding for small local projects was felt to be very effective thanks to the spread of impact across departments, but it was equally important for the learning technology team to have some say over how this funding was allocated and followed up.

10.4 Recommendations

In this section, focus groups were more inclined to make their own recommendations than to comment on those put forward by the research team! Accordingly, many of the following have been included in the overall recommendations of the study.

Institutional change

10.4.1 Because of the systemic nature of the change involved, many decisions about learning technologies need to be taken centrally. However, they are usually put into practice locally in departments, and this is the point at which outcomes need to be demonstrated. This is also the point at which any problems with central systems or policies becomes visible. There is an urgent need for institutions to close the loop

between central policy and local action planning/resource allocation, with effective communication and accountability in both directions.

10.4.2 Embedding learning technologies requires central brokerage, coordination and knowledge management rather than central control. Systems need to be integrated but in a way which allows maximum flexibility for individuals, departments and teams to translate new practices effectively into their own contexts. Loose accountability procedures focusing on outcomes rather than processes can support ongoing innovation.

10.4.3 Departments and faculties must be involved in and take ownership of the process of change. Encouraging a shared agenda without top-down intervention means promoting arrangements such as secondments, cross-department mentoring, information-sharing forums, internal publications and discussion lists, networks of departmental representatives, teaching fellowships, internal partnerships and collaborations.

10.4.4 Institutions should put in place mechanisms for ensuring that the experience of learners, and of staff working directly to improve student learning, are taken into account in all decisions regarding technical infrastructure, central administrative systems, facilities and learning spaces.

10.4.5 Accommodating the undoubted benefits of multi-role project working with the demands of coordination, accountability and support of individuals will require the exploration of new management structures such as shared management, matrix management, and project-based management.

10.4.6 Funding should be released to the 23 audit institutions to allow them to complete the process again, offering a longitudinal picture of institutional change.

Career and professional development

10.4.7 Enhancing the academic legitimacy of learning technology work requires that research in this area be recognised through the RAE. Barriers to this process should be addressed at the national level, so that subject panels have the expertise and commitment to assess pedagogical research in the disciplines. Barriers should also be addressed at the local level, particularly with the building of more effective links between academic departments of education and learning technology development units.

10.4.8 Learning technology staff should be encouraged to seek ILT membership, which should be open to all categories of staff involved with learning and teaching on the principle of equal recognition for work of equal value.

10.4.9 Learning technology staff with a development and research remit should be working towards academic status and should be supported to do so (e.g. with time off for academic study, research, publication and conferences). There should also be a national forum for learning technologists to debate the educational theories, models and paradigms which are being applied in their area of work, and to develop new ones.

10.4.10 HEFCE needs to develop a strategy for career/professional development of learning and teaching staff and should put forward seed-core funding to carry this out.

10.4.11 Mechanisms for rewarding learning and teaching innovation among academic staff – whether local or national – should be extended to include all categories of staff involved with student learning.

Further studies/projects

10.4.12 The JISC should work to encourage partnerships across institutions among educational research units (e.g. in academic departments of education), learning technology research and development units, and units focused on practitioner support and educational development. Few institutions have all three of these, and even fewer are working effectively on all three fronts.

10.4.13 None of the institutions in the present study was a specialist distance/open learning university and further study is indicated on the specific developments taking place in this area.

10.4.14 A study should be carried out into how money from the Teaching Quality Enhancement Fund is actually being used to support learning technology development.

10.4.15 Special funding could be used to reward entrepreneurialism among individuals and institutions, particularly in the areas of knowledge exploitation and developing the learning organisation.

Development for senior managers

10.4.16 Development for senior managers is regarded as a priority for the sector.

10.4.17 The JISC is recommended to consult with senior managers themselves and with educational developers as to what kinds of development are appropriate and effective. It is suggested that this should involve more peer-learning to give ownership to the managers themselves and give them an opportunity to share expertise and ideas at an appropriate level.

10.4.18 Managers need to understand how to exploit the potential of the technology for the core business of the institution and how to manage the process of integration and change, rather than being briefed on specific technical applications. They need to have realistic expectations both of the technology and of the people using it, and an understanding of the investment that will be involved – particularly in terms of staff time.