3. Developing staff skills

This handout is likely to be of most use if you are responsible for staff or educational development in the area of learning technologies. You may be working as a manager, team leader, staff developer, trainer, educational developer or learning technology officer, or you may have another role (such as academic or librarian) within which you have taken on responsibility for supporting and developing the skills of other staff.

Needs analysis: an overview

Planning and analysis for learning technology staff development can be thought of in two ways. 'Top down' analysis looks at the needs and resources of the institution, department or subject community in terms of its members' overall expertise. How can the organisation move forward towards its overall goals and objectives? How can staff expertise in learning technologies be enhanced globally, with systems for cascading skills among members and for continuing development and innovation? 'Bottom up' planning on the other hand looks at the needs of individual staff. How can individuals fulfil the demands made by their current roles? How can they develop in ways that are rewarding for them, both personally and professionally?

Some general questions

Looking from the top down, here are some general questions about overall provision for staff development in e-learning. This exercise is taken from the 'staff skills' section of the JCALT-funded Embedding Learning Technologies Institutional Audit Tools, and is therefore biased towards institutional analysis. Most of the statements, however, can be adapted for a department or subject community. For each statement, indicate whether it is 1. untrue; 2. emergent (i.e. likely to become true, or becoming true, as a result of some recent change); 3. partly true (i.e. true in some parts of the organisation or in some cases); 4. largely true (i.e. true in most parts of the organisation or in most cases); or 5. true overall.

Exercise 1 **Provision for staff development of e- learning skills**	*Not true*	*Emerg-ent*	*Partly true*	*Largely true*	*True*
a) All staff have generic ICT skills such as word processing, email and searching the world wide web	1	2	3	4	5
b) All staff have functional access to an online/virtual learning environment	1	2	3	4	5
c) Staff development is integrated into the roll-out of new ICT applications	1	2	3	4	5
d) There are staff/educational development activities which address pedagogical as well as technical skills for ICT use	1	2	3	4	5
e) LT use is integrated into development opportunities for teaching staff (e.g. ILT/SEDA accredited courses)	1	2	3	4	5
f) There is a cohort of experienced LT users who act as mentors, advisers and 'champions' to others	1	2	3	4	5
g) Staff ICT skills are regularly audited and/or monitored (e.g. through appraisal system)	1	2	3	4	5
h) Staff time can be bought out and/or is specifically allocated to engage in LT development projects or LT-related CPD.	1	2	3	4	5
i) There are specialist professional development opportunities in embedding LTs into the curriculum (e.g. EFFECTS)	1	2	3	4	5

Ideally you are aiming to score a '5' on all these measures. In practice, however, you will probably use this exercise to identify specific strengths and weaknesses. The list is designed to be roughly progressive from a through to i, though all institutions and organisations differ. So, for example, in most cases you will want to ensure functional access to ICTs for all staff (a) and (b) before developing a cohort of learning technology experts (f), otherwise these experts will find themselves supporting other staff in very basic activities. Similarly, it makes sense to have some experience in organising workshops that integrate pedagogical with

technical issues (d) before building these into other development opportunities (e) or embarking on a fully accredited programme (i). And measures such as (g) and (h) both provide incentives to staff with a potential interest in taking their expertise further.

Note that pushing forward on one issue can provide motivation and impetus for other, related issues. However, if you rated your organisation poorly on a large number of basic issues – especially access to the technology and fundamental skills – then you should seriously consider addressing these before embarking on ambitious plans for a specialist staff development programme.

Specific needs of your organisation or community

The first exercise looked at issues generic to many organisations and communities. To arrive at a detailed and relevant action plan you will have to consider the specific current agendas and likely future developments determining the expertise that your community will need. Most organisations working in higher education currently have strategies for learning and teaching, for human resources, and for developing ICT networks and systems. In addition there may be specific e-learning, online learning or virtual learning initiatives. The same is true of subject communities, though the issues may be less clearly identified in mission statements and policy documents.

Identify the key documents from your organisation or community. These may be strategy papers, planning documents, directives from funding councils or institutional managers, briefing papers, or articles on current trends and priorities written by key members of the community.

Exercise 2: identifying specific staff development needs	
What learning and teaching issues or agendas are crucial for the organisation at the present time? *Try to phrase these in terms of concrete objectives for the organisation. You may want to focus on learning technology/ e-learning related issues.*	*Examples: improving student retention; enhancing workplace skills; developing an integrated managed learning environment*
How do these agendas translate into skills and expertise? *Use the phrase: to fulfil these objectives, staff must be able to… Remember that you are thinking about the overall expertise of the organisation. Not all staff will necessarily need the same skills*	*Examples: staff must be able to… identify and support students with coursework problems; support students effectively during work placements; facilitate student learning through asynchronous online discussion*
What new technologies are available or are soon coming on stream?	*Examples*: *a managed learning environment linked to local schools, colleges and libraries; QuestionMark Perception server;*
What skills will staff need to make effective use of these for student learning? *Again use the phrase: staff must*	*Examples: Staff must be able to… locate and evaluate online learning resources; design effective multiple choice tests with formative feedback*

be able to… and remember that you are thinking about overall expertise. Don't focus on technical skills but on how technologies will be put to work towards key learning objectives.	
What opportunities already exist for staff to develop these skills? *Consider formal and informal development opportunities such as workshops, courses, peer mentoring, web-based information, internal publications etc*	*Examples: LT unit runs lunchtime workshops on specific technologies; multimedia development team works alongside academic staff on materials production; e-learning representatives in each faculty…*
What are the likely barriers to staff developing these skills? *Consider issues such as time, motivation, reward structures, support from other staff…*	*Examples: there are not enough staff developers with skills in this area; staff development funds tend to be allocated to attend research conferences…*

As an individual, or group of colleagues, with expertise in learning technologies, you may well find that you can answer many of these questions from your own desk. Information which can help you include previous surveys, attendance and feedback from staff development events, institutional policies, minutes of committees and so on. You will need to access current resources such as:

- Staff development programme (including courses from computing services or equivalent)
- Handbook or course schedule for initial lecturer accreditation (ILT/SEDA) programme
- Programme of professional development courses available from educational/L&T development
- Contacts directory of the learning technologies/learning support unit (i.e. list of staff with a particular interest in LT/L&T)
- Details of attendance and feedback from recent LT events
- Any internal audits of learning technology use (staff, students)
- Details of any secondments/funding available to support LT development
- Internal policy statements and reports relating to LT/L&T
- Mission statement/remit of central services, units or teams which support learning and teaching, ICT or learning technologies
- Minutes of recent committee meetings directly related to learning technologies
- Any internal learning and teaching publications (e.g. newsletter, web site)

Identifying stakeholders

In order to do the 'bottom up' part of your planning and analysis you need to identify key stakeholders in learning technology development and use. As you identify these people you might consider how to canvas their point of view for any development plans you have. It is worth also thinking about what issues are important to them, and how you could encourage them to support your plans.

Not all of these groups will necessarily be relevant to your own needs analysis. Some can be discounted. In some cases, however, you may want to consider further subdivisions of each group to uncover differential needs. Full and part time members of staff; teaching staff at different points in their career; staff with different subject specialisms; staff based at different campuses: all of these may need different e-learning skills.

For each group of stakeholders, identify their potential interest in staff development for e-learning. In practice this means considering the potential **benefits** of undertaking staff development (especially in terms of

saving time and effort in their existing role), and the potential **costs** (again, especially in terms of time). What particular interests does this group have that you might be able to tap into when planning staff development and trying to get them involved?

For complete answers to these questions you will need to consult representative members of each group as part of a formal training needs analysis, as below.

Exercise 3: identifying stakeholder interests

Who	Benefits	Costs	Interests
Academic staff: those with LT experience and expertise, and those without:			
Students, especially those who have used LTs as a compulsory element of study			
LT support staff			
LT project workers			
Educational developers and researchers			
Staff developers and trainers			
Learning support staff including librarians/resource managers			
Technical development staff			
Computing/information services staff			
Members of L&T committee(s)			
Members of C&IT committee(s)			
Heads of academic departments			
Heads of services e.g. Administration, MIS, Personnel			

Carrying out a formal needs analysis

Assuming that you have done a top-down analysis and identified stakeholders you will also want to carry out a more formal training needs analysis which takes into account the perspective of individuals. The form this takes will depend on your specific institutional and organisational needs. Subject centres, for example, are likely to have done an extensive needs analysis of their constituency, which will have covered skills and staff development. Needs are constantly changing, however, and you should aim to anticipate possible future

needs as well as current e-learning applications. The work you have done in identifying current trends, priorities and issues for the organisation will help you to pinpoint future training needs that may not yet have been translated into job descriptions or specific demands on members of staff.

The research carried out by the EFFECTS project in developing the Embedding Learning Technologies award found that technical skills are only a very small part of the total skillset needed to support e-learning effectively. When assessing staff needs in this area, then, you should consider not only the ability to use a particular item of hardware or software, but also their:

- pedagogical skills: overall repertoire of skills in teaching and the support of learning, especially the capacity to be innovative, try new techniques, and respond to student feedback
- communication skills: capacity to work well with students and colleagues, especially in curriculum development teams, and to promote change
- information skills: the ability to keep abreast of multiple information sources, including online resources, in a rapidly changing area of work
- project management skills: the ability to plan, see through and evaluate small-scale developments such as introducing a new technology in an undergraduate programme

Questions you can ask of your stakeholders are likely to be very similar to those asked in exercise two, but you will probably want to introduce more detail to avoid vague responses. This time you will get a wide range of answers from a number of very different perspectives.

Exercise four: asking questions of stakeholders
You will almost certainly want to create your own set of questions for this purpose, depending on the objectives and issues identified in exercise two. The following list suggests things that you might want to include. A sample survey with notes is included which you are welcome to customise if it meets any of your own organisational needs.

Issues to consider:
Explore current e-learning practice – try to ask about what staff actually do with students rather than whether they can use the applications (see sample questionnaire).
Explore what skills they think they need currently and, if appropriate, in the next few years.
Explore why staff have developed e-learning and e-tutoring skills, if they have done so (i.e. what are the rewards and incentives).
Explore what opportunities they have had to develop their skills. What opportunities would they value most? Find out who has supported them.
Explore what they see as barriers to developing e-learning and e-tutoring skills (if any).

If and when you decide to collect data on e-learning skills, it makes sense to try and do this alongside the institution's normal data gathering activities, to minimise the inconvenience to participants and to ensure the data collection exercise is taken seriously.

If you decide to carry out a **survey**, encourage staff to participate by making distribution and return as quick and simple as possible. You may decide to use a representative sample of staff rather than the entire population of the institution, but it is unwise to rely only on contacts of the Learning Technology unit for obvious reasons. A sample questionnaire is given below. You will of course need to customise this to your own needs, for example by including only those learning technologies in widespread use at your university, and by filling in the details of support services. Note however that this is only one of a large number of surveys of this kind that have been successfully carried out in UK Higher and Further Education. More examples can be found on the EFFECTS/ELT web site. Here you will also find details of a local LT practitioners' network which you can join to share ideas and information about institutional analysis.

An alternative or supplementary approach to a questionnaire is to carry out a **focus group** with a number of staff from different departments and services. This will reveal the different perceptions held by people from different parts of the institution, and will give access to hands-on information from a wide range of sources. It can also help to develop a consensus around the idea of learning technology development. For a focus group you will probably want to circulate a number of questions beforehand to help people come prepared with their own ideas and information.

Once you have completed the needs analysis, you are in a position to decide (a) how best to support the learning technology champions and (b) how best to support the remainder of staff who will need to update their skills as new learning technologies become available.

Matching skills to roles

A survey of staff working in learning technologies, carried out in 2000 with funding from the JISC, found that there were 11 distinct roles involved in the development, use, support and management of learning technologies in HE institutions. The following table shows these roles with a list of activities or responsibilities typically associated with each. Note that many staff were found to be carrying out more than one of these roles at the same time. In other words, although the roles can be distinguished from one another as far as functions and activities go, they may not correspond to divisions of labour among actual members of staff. The first row shows activities found to be common across many or all roles involving learning technology work.

Role	Typical job titles	Typical activities
ALL (activities common across LT roles)		▪ Actively seek to keep abreast of developments in LTs ▪ Work effectively in multi-role project teams to achieve specific objectives ▪ Work with other units/depts in the institution having related interests & objectives ▪ Work with other institutions & organisations having related interests & objectives ▪ Act as consultant, mentor, advisor or change agent for other staff ▪ Advise & assist with introduction of new technology into L&T programmes ▪ Increase colleagues' awareness of best practice in LTs ▪ Facilitate exchange of ideas & experience in technology-based L&T ▪ Identify needs & opportunities for development/ deployment of LTs ▪ Contribute to the development of LT policies & procedures as appropriate ▪ Use ICT/LT competently & appropriately to support own professional practice ▪ Undertake continuing personal & professional development in LTs
Manager (teams)	Head of… Director of… Manager Head of Department	Specific activities depend on nature of team e.g. library, computing, educational development, academic department, whole institution etc. ▪ Form local strategy/policy related to L&T, ICT development, LTs ▪ Secure funding for LT related developments ▪ Co-ordinate LT related meetings/ working groups in department/ team/institution ▪ Liase & collaborate with other units in the institution having related interests & objectives ▪ Identify & overcome barriers to development/use of LTs ▪ Identify opportunities for development/ deployment of LTs ▪ Establish procedures/protocols for evaluating the impact of strategies/policies
Manager (projects)	Project manager Project director	Specific activities depend on nature of project e.g. technical development, curriculum development, staff development, institutional change… ▪ Manage resources for LT projects ▪ Manage teams of LT researchers & developers ▪ Manage project workplans, schedules and costings ▪ Secure funding ▪ Co-ordinate meetings and activities ▪ Identify & overcome barriers to project objectives ▪ Identify opportunities for the project ▪ Establish procedures/protocols for evaluating the impact of the project ▪ Work with other organisations & institutions to further project objectives ▪ Work with LT organisations external to the project/institution (e.g. ALT, SEDA, TLTP, FDTL, UCISA)
Educational researcher	Researcher (RF, RA etc) Lecturer (etc) in Education/ Educational Technology/Open and Distance Learning (etc)	This role is not intended to include all educational researchers e.g. schools-based, but those whose area of research is related to LT or L&T in HE ▪ Undertake original research related to LT development & use ▪ Contribute to learning-technology related journals, books & web sites ▪ Contribute to exchange of ideas & experience in technology-based L&T (institutionally, nationally & internationally) ▪ Collate & disseminate LT-related knowledge & expertise (institutionally, nationally & internationally) ▪ Evaluate the outcomes of integrating LTs into the curriculum ▪ Work as member of LT research/development project team

Technical developer/ researcher	Web developer Database developer LT developer Learning technologist Researcher (RF, RA etc)	▪ Design/develop technology-based learning environments ▪ Design/develop technology-based applications for use in L&T ▪ Evaluate technology-based learning environments & applications for use in L&T ▪ Contribute to learning-technology related journals, books & web sites ▪ Contribute to exchange of ideas & experience in technology-based L&T (institutionally, nationally & internationally) ▪ Work as member of LT research/development project team
Resource/materials developer	Web developer Web/MM designer LT developer AV producer Production assistant	▪ Design/develop technology-based learning materials ▪ Adapt & customise technology-based learning materials to meet particular course needs ▪ Adapt/develop content for technology-based learning materials or environments ▪ Adapt existing programmes & modules to incorporate use of LTs ▪ Work as member of LT development/support team
Academic (learning and teaching)	Lecturer, senior lecturer (etc) Teaching fellow (Other specific roles e.g. LT coordinator for department/faculty)	▪ Review good practice in LT use and adapt to own L&T context ▪ Analyse existing programmes & modules wrt LT use ▪ Adapt & update learning programmes to incorporate effective use of LTs ▪ Develop new modules, courses, activities and materials based around effective use of LTs ▪ Provide content for technology-based learning materials or learning environments ▪ Deliver, support & assess student learning by means of LTs ▪ Evaluate learning outcomes for students ▪ Work as member of research/development team
Learning technologist (general)	LT officer LT/web development officer LT/web support officer LT adviser	▪ Support staff in adapting their practice to incorporate LTs (e.g. through consultation, mentoring) ▪ Advise & assist with introduction of new technology into L&T programmes ▪ Facilitate access to LT expertise & services ▪ Increase awareness of best practice (e.g. through workshops, publications, web pages, discussion lists) ▪ Facilitate exchange of ideas & experience in technology-based L&T ▪ Evaluate the outcomes of integrating LTs into the curriculum ▪ Identify needs & opportunities for development/ deployment of LTs ▪ Actively promote collaboration (within & beyond institution) ▪ Contribute to integrated support strategy for LTs ▪ Work as member of LT development/support team
Educational developer	Development officer Educational/academic developer L&T development adviser	▪ Support staff in adapting their practice to incorporate LTs (e.g. through consultation, mentoring) ▪ Increase awareness of best practice (e.g. through workshops, publications, web pages, discussion lists) ▪ Facilitate exchange of ideas & experience in technology-based L&T ▪ Evaluate the outcomes of integrating LTs into the curriculum ▪ Identify needs & opportunities for development/ deployment of LTs ▪ Actively promote collaboration (within & beyond institution) ▪ Work as member of LT development/support team

ICT skills professional	IT training officer IT support officer Student adviser Helpdesk adviser	▪ Assist & support students in developing general ICT skills ▪ Assist & support students in developing ICT skills for a specific subject area or learning activity ▪ Assist & support staff in developing general ICT skills ▪ Assist & support staff in developing skills in the use of a specific LT ▪ Develop students' 'new literacy' skills (e.g. online information retrieval & evaluation) ▪ Develop staff 'new literacy' skills (e.g. online information retrieval and evaluation)
Learning skills professional	Learning skills adviser Learning development officer Student adviser	▪ Develop students' 'new literacy' skills (e.g. online information retrieval & evaluation) ▪ Facilitate & support student access to LT expertise, services & resources ▪ Facilitate & support student access to electronic resources ▪ Work as member of learning support team
Librarian/ resources professional	Librarian Electronic librarian Learning resources adviser	▪ Facilitate & support student access to electronic resources ▪ Support, update & maintain electronic learning materials ▪ Facilitate student access to LT expertise & services ▪ Develop students' 'new literacy skills' e.g. online information retrieval & evaluation) ▪ Work as member of learning support team
Technical support professional	IT professional Network professional Helpdesk adviser	▪ Provide technical support for hardware & networks used in L&T ▪ Provide technical support for software & systems used in L&T

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Planning staff development

For many staff, learning technology work will represent a small part of their overall responsibilities. For these staff, an overview of learning technology use at the institution is important, along with targeted support for any changes necessary in their own professional practice.

General awareness raising might include some or all of the following:

- lunchtime workshops at which members of staff working with e-learners present aspects of their work
- an institutional event or showcase of learning technology projects and initiatives
- institutional publications, newsletters, web pages etc devoted to e-learning activities
- a database of learning technology or e-learning expertise
-

Targetted support is best assessed by role, as part of the overall appraisal of staff development needs. Librarians, for example, may well find that they are helping students access multimedia resources alongside paper-based texts and will need additional skills for this role. Technical support staff will have to cope with new problems in labs and open access areas. There may well be new induction programmes to help students make best use of ICT facilities in their course of study, and both learning skills and ICT skills staff will need retraining. Administrators may well face new workloads as managed learning systems come on stream.

In addition to role-specific staff development, it is assumed that all new infrastructure developments and technology investments are accompanied by appropriate staff training as part of their roll-out. While different staff may well have different needs, it is a good idea to make training sessions open to all staff everyone gets an overview of how the new system will be used. This allows for exchanges of views and information and means no-one feels like a cog in the machine.

With systems that have a specific learning application, however, it is important that staff development opportunities are also available that focus on specifically on the systems affordances for learning and not on its technical capabilities. These sessions are likely to be of primary interest to learning and teaching staff, though other members of staff may want to attend. Ideally there should be input from e-learning enthusiasts among the academic staff who have experience of using the technologies for student learning, as well as by members of the specialist e-learning or learning technologies team.

Designing a specialist programme in e-learning

Increasingly, alongside one-off workshops focusing on specific technologies or e-learning issues, institutions are providing structured programmes for staff who want to specialise in e-learning. Many of these are accredited at Masters level, typically as one module within a postgraduate qualification in learning and teaching. The EFFECTS project was funded under the Technologies in Learning and Teaching Programme to develop a range of such programmes and to investigate their effectiveness. The aim was not only to support staff in developing their expertise, but also to recognise with a formal qualification the range of skills that are required to embed e-learning opportunities into the curriculum.

Programmes developed under the EFFECTS project banner are now recognised by the Staff and Educational Development Association as offering a professional development award in Embedding Learning Technologies. These programmes require participants to demonstrate the following seven learning outcomes. While not all institutions will want to develop a structured programme, or seek recognition for their participants, these outcomes have been shown to offer an effective development process for all staff undertaking curriculum development in e-learning.

1. conduct a review of ICT for learning and teaching (research/reflection)

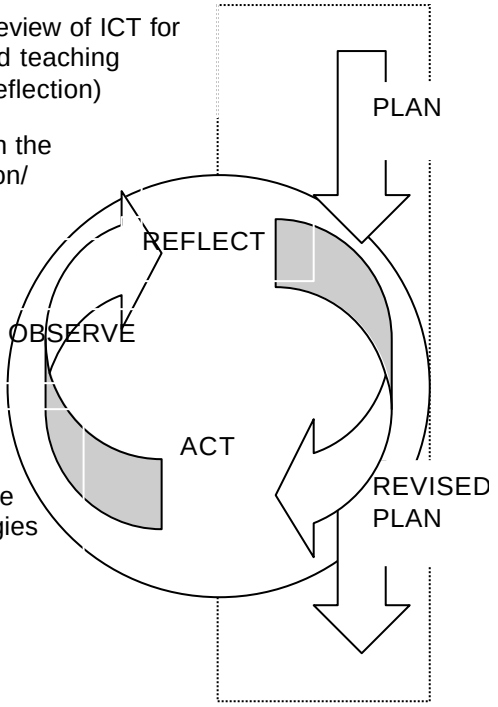
2. analyse the needs of your students, staff and course, and select appropriate ICT (analysis)

3. develop an implementation and evaluation plan (planning)

4. work with colleagues to implement your plan, supporting students in the use of the new technologies as appropriate (implementation)

5. evaluate the effectiveness of your interventions (evaluation)

6. reflect and report on the experience (reflection/ dissemination)



(beyond scope of programme) ongoing analysis and planning leading to further innovations

7. (overall) reflect on your own continued professional development and plan accordingly

The underlying action learning cycle is based on McTaggart et al (1992).

For further information about the EFFECTS continuation project and the SEDA Embedding Learning Technologies award, or about any of the information in this briefing, contact the author helen.beetham@bristol.ac.uk

Learning technology use: a sample survey for staff

[You can use or customise this questionnaire as you wish. Please note that for distribution purposes it will need to be laid out with space for written answers. You will need to add details of your own institutional support services to the notes and references page.]

Thank you for your time in completing this questionnaire. [Give details here of why the survey is being carried out and what will be done with the results.] You should also have received a reference sheet with a glossary and further information about some of the technologies mentioned.

For questions 1 to 15:
a) Please indicate how extensively you make use of this technology in your current work by ticking an appropriate response.
b) Please indicate how useful you think this technology is *or could be* in your work, regardless of your current actual use.
c) Please record any factors which would encourage you to use this technology, or enable you to use it more effectively than at present.

1. Using **email** for one-to-one communication with students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

2. Using email to **group mail** students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

3. Using email to send **file attachments** to students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

4. Using the **world wide web** to find teaching resources and references for students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

5. Encouraging/requiring students to find information for themselves on the **world wide web**
a) do regularly do sometimes have tried at least once never do
b) very useful quite useful not very useful not at all useful
c) I would do this (more effectively) if…

6. **Digitising** lecture notes, handouts or bibliographies for students to access online
a) do regularly do sometimes have tried at least once never do
b) very useful quite useful not very useful not at all useful
c) I would do this (more effectively) if…

7. Building your own **web pages** for students to access online
a) do regularly do sometimes have tried at least once never do
b) very useful quite useful not very useful not at all useful
c) I would do this (more effectively) if…

8. Using an insitutional **virtual (or managed) learning environment** to manage student groups
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

9. Using **computer conferencing** to communicate with students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

10. Using **video conferencing** to communicate with students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

11. Using **presentation technologies** to deliver lectures or seminars
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…

12. Using electronic resources to enhance student learning (please answer all that you feel are relevant to your area of work):
digital images
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
digital sound files
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
digital video/animation
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
databases or datasets
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use digital resources (more effectively) if…
If you have used specific resources or developed resources for use with students, please give details:

13. Using **computer assisted learning** packages with students
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use these (more effectively) if…
If you have used specific resources or developed resources for use with students, please give details:

14. Using **computer-based models or simulations** to help students acquire subject-specific skills
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use these (more effectively) if…
If you have used specific resources or developed resources for use with students, please give details:

15. Using **computer assisted assessment** to manage student tests or examinations
a) use regularly use sometimes have tried at least once do not use
b) very useful quite useful not very useful not at all useful
c) I would use this (more effectively) if…
If you have used specific resources (e.g. question banks) or developed resources for use with students, please give details:

16. Please tell us about any other form of **information and communication technology** (ICT) you have used in your work with students, how useful you found it, and what problems you encountered.

17. Have any **support staff** have helped you to use any of these technologies? Yes/No
If yes, please give details (i.e. who helped you and how):
What (other) kinds of support would you like/would you have liked?

18. Have you undertaken any training or **staff development** to help you make better use of communication or information technology. Yes/No
If yes, please give details of courses/events:
What (other) kinds of training would you like/would you have liked?

19. Please tell us how you think information and communication technology could be most useful in enhancing the quality of the student learning experience.

20. Please tell us what you feel are the most significant factor(s) overall discouraging more effective use of communication and information technology with students.

Notes, definitions and further resources

1. **Email** is a form of computer-based communication which enables text messages to be exchanged one to one. Further information about using email can be found at:

2. **Group mail** allows a single email message to be sent to multiple recipients by creating a distribution list of recipients using your email package. Further information can be found at:

3. **File attachments** are files which are sent from your computer to another person's computer as part of an email message. A file attachment can be created using any computer-based software (e.g. word processor, spreadsheet, graphics package) but it can only be read by the other person if they have the same (or similar and compatible) software installed. Further information can be found at:

4, 5 and 7. The **world wide web** is the global network of computer-based information which can be accessed using a web browser such as Netscape Navigator or Microsoft Internet Explorer. (Note, however, that some web-based multimedia files require the user to have special 'plug-ins' which enhance the capability of their browser). Many learning and teaching resources are available on the world wide web. Further information and support in using the world wide web is available from:

6. **Digitising** of text files can be done using Optical Character Recognition software or by asking someone to type up a hard copy using a word processor. However, it is far more usual nowadays for files to be created in digital format in the first place, for example using Microsoft Word. Adobe Acrobat is often used to convert digital text files into a format which is easily read by web browsers. Further information can be found at:

8. A **virtual (or managed) learning environment** (VLE/MLE) is software that is available across your faculty or institution to help you manage student learning online. It is likely to include facilities for organising students into groups, sending them notices, putting notes and exercises online, and possibly also for computer conferencing and computer assisted assessment (see below). Popular VLEs include Blackboard, WebCT and Lotus Learning Space. Many institutions now have a customised MLE that has been created in-house.

9. **Computer conferencing** is a means of exchanging text messages with a large number of people at one time. Rather than sending messages to one another's mail boxes, as with emails and distribution lists, messages are sent to a central server where they remain for users to access whenever they wish. This allows messages to be organised into specific discussion threads or topics. It also means that – with the help of passwords and other security features – the conference can be much more secure than normal email. Further information about using computer conferencing is available from:

10. **Video conferencing**, unlike computer conferencing, is done in 'real time'. Participants at two or more sites can see one another through the use of video cameras and television or computer screens, and can hear one another through the use of microphones and speakers (these may be integrated into the video system). Further information about using video conferencing is available from:

11. The most commonly used computer-based **presentation technology** is MicrosSoft PowerPoint, which is used to enhance lecture delivery, but other options include electronic whiteboards and multimedia resources which can be projected from a lap-top or PC onto an overhead screen. Further information about these is available from:

12. **Multimedia resources** are computer files containing digital information of various kinds. A wide range of multimedia resources are available from:
digital images come in a range of formats and may be digitised from existing photographs or artwork, or originated using a digital camera, a computer graphics package or a CAD (computer aided design) tool
digital sound files similarly may be digitised from analogue originals or originated/manipulated using computer-based composition software
digital video is a sequence of digital images giving the impression of movement: they may be digitised from existing film/audio material, may originate from a digital camera, or may be created using a computer animation or modelling tool
databases are powerful tools for storing and analysing data, which may be quantitative or qualitative. They are used to help students acquire subject-relevant skills in data collection, entry and analysis.
datasets are specific sets of data (for example census statistics, experimental results) which are supplied for research purposes and/or for students to learn the techniques of data analysis. Many datasets are freely available to UK HE, particularly in subjects such as social studies and geographical science which require students to have experience in applying these skills.

models are (usually visual) representations of data which illustrate complex systems or relationships; often the data input can be manipulated by users, allowing them to experiment and explore the results
simulations are computer-based representations of some aspect of the real world which can be explored – for example 'virtual' laboratory experiments and field trips. Simulations will typically involve a number of different elements from the list above, and a well-structured simulation with a specific learning purpose might fall into the category of CAL (see below).
hypertexts are web-based structures, usually including text and images (but also other file types) in which files are connected by means of hyperlinks.

13. **Computer assisted learning (CAL)** packages are designed to support students in learning about a specific topic area, concept or skill. Typically they will include learning resources (often presented in multimedia), learning activities and some form of assessment feedback so students can monitor their progress. A well-designed CAL package will have clear learning outcomes and will offer a complete 'closed box' solution for achieving them – unlike most of the other technologies featured here, which rely on the tutor to supply the learning outcomes, activities and context. You can browse a selection of CAL packages at:

14. **Computer-based tools** are used for creating and editing information resources (text files, web pages, databases) and for manipulating or analysing data. These tools may be generic such as word processors and spreadsheets, or they may be specific to one discipline or activity such as graphic design tools, compilers for computer programming languages, and geographical information systems. For help on using computer based tools for your subject area contact:

15. **Computer assisted assessment (CAA)** is any form of assessment – formative or summative – which is delivered or analysed by computer. Typically this will be carried out using a dedicated software package such as QuestionMark Perception. However it might involve (for example) the assessment of contributions to a computer conference, of online learning portfolios, or of student hypertext productions. For information on using CAA please contact:

16. I**nformation and communication technology (ICT)** is taken to mean any computer-based technology (software and/or hardware) which supports communication or which enables information resources to be stored, retrieved, analysed and/or manipulated. ICT is not necessarily designed to support learning, though many kinds of ICT can and are being used for this purpose.

17. **Support staff** who may help with the use of learning technologies include:

18. **Staff development** is provided by:

19. Ways in which ICT has been used to support student learning include:
- To provide access to learning for students studying at a distance
- To replace lectures with more student-centred activities
- To provide support materials students can access flexibly, outside of scheduled study sessions
- To help students gain transferable skills in the use of ICT
- To meet a wider range of learning needs by offering resources in multiple media
- To simulate or model aspects of the real world which students can manipulate
- To make the learning experience more exciting and motivational
- To make the teaching experience more interesting and professionally rewarding
- To save (staff) time on routine tasks
- To support communication among students and tutors
- To provide remedial materials for students with specific learning needs

20. Barriers to use might include: poor network speeds; student access to networked computers; lack of appropriate training; need convincing that it could work!