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The challenge of 'Be-learning' (Blended Learning) in initial teacher education and a smorgasbord of effective practice – part of an ESCalate project

DRAFT COPY

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Government e-learning strategy:

For education leaders – how they might turn a traditional educational institution whether school, college or university, into one that blends the best of old and new.
For teachers – what it would mean for their professional role to mix e-learning with more traditional methods, enabling them to offer more active and creative ways of learning in all subjects, disciplines and skills.

TABLE OF CONTENTS

THE TASK ….

Our brief was as follows:
'Flexible routes into teaching signify a key growth area in recent years. One aspect of such routes is that they are often part time and involve elements of e-learning at a distance. This means that lecturers have to find ways of developing knowledge and establishing and maintaining learning relationships with students. In a discipline traditionally associated with the need for contact due to the socio-cultural nature of education, this brings huge challenges, but also opens up new areas for exploration in investigating and disseminating effective practice.'

AND THE TEAMWORK …

- 'Case studies' interviews of programme leaders, designers and deliverers in four UK countries
- Attended ESCalate VLE conference and meetings with key people working at 'cutting edge'
- Web searches for the latest advice and guidance, resources and research
- Phone discussion to keep up to speed with the work of government departments and agencies (TTA, BECTA, DfES etc)
- Drawn on research findings from SMC projects and research literature
- Held animated fortnightly discussions

The project has been fitted into a short timescale and the existing work commitments of the team and provides a pilot for larger scale development.

Some limitations of the case studies

The choice of case studies was made after consultation with ESCalate. Case studies may be considered an appropriate method:

- Because of the universality and importance of experiential understanding and the compatibility of case studies with that understanding, they can be expected to have an advantage over other enquiry methods (Stake)
- Case studies provide the potential for readers to generalise in a naturalistic way, utilising their 'tacit knowledge' (Simmons)
- 'As readers recognise essential similarities to cases of interest to them, they establish the basis for 'naturalistic generalisation'. Case studies are 'a direct and satisfying way of adding to experience and improving understanding' (Stake)

Approaches which are held to strengthen he validity of findings include:

- Case study enquiry should rely on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result (Yin)
- The demands for typicality and representativeness yield to needs for assurance that the target case is properly described (Stake)

Because of the assurances about anonymity in relation to sensitive data, institutional descriptions are as far as possible avoided in this report. It could be argued that the 'case study' is initial teacher education rather

than a single institution, in relation to which the report seeks to enhance understanding of the role of new technology mediated learning.

Between one and four key people involved in designing and delivering programmes were interviewed in each institution. A semi structured interview guide had been prepared by the project team, and was adapted for interviews with a learning technologist and school based partnership manager. Because there were few interviews, the findings remain very tentative even where similar views were expressed. Where possible, the findings of other research projects were drawn on to confirm or interrogate findings. Some relevant research findings may be accessed on websites. Becta have collated abstracts and a list of further sources of some educational research into the 'use of ICT in initial teacher training' www.becta.org.uk/research. On the same website there is access to a series called 'What the Research Says' – aspects of using Information and communications technology in schools and colleges; lists of other websites for organisations which carry out research in the field of ICT and advice and case studies. The FERL website (http://ferl.becta.org.uk) provides case studies and 'evidence of effective practice'. Other related case studies from the TELRI project are at: http://www.telri.ac.uk

The focus of our case studies was on initial teacher education for primary school work. Whereas e-learning elements in initial teacher education appear widespread, distance learning programmes are not. The Northern Ireland case study had to be a secondary PGCE. It may be useful to draw future case studies from secondary programmes, not least because there would be greater choice of providers across the different countries of the UK. In the spring term 2004:

- Only in England have distance learning programmes for primary ITE been firmly established
- In Scotland there is one pilot 2 year programme entering the second year
- In Wales and in Northern Ireland we investigated blended learning in campus based programmes
- Case studies only investigated views of a few leaders and deliverers of programmes and advisors, although SMC prior research and SOLE project provides some evidence of student perspectives in England
- The case studies did not provide evidence relating to the effectiveness of the practices

DIVERSITY: NEW TECHNOLOGY IN HIGHER EDUCATION

2001 and 2003 KISC and UCSA surveys into use of 'managed' learning environments:

The main survey findings include: (using survey terminology):

- The number of institutions not using a virtual learning environment (VLE) declined between 2001 and 2003 from 19% to 14%
- Those consolidating to one VLE has increased from 30% to 36% but this includes students not using any
- Usage of VLE remains overwhelmingly supplementary to face to face

- Enhanced learning and teaching appears the primary driver rising from 43% to 66%
- Efficiency, the second driver, declined from 31% to 16% - recognition that online learning not a cost saver
- Distance learning was a driver for 25% in 2001 but not at all in 2003

www.ucisa.uk/groups/tlig/vle/VLEsurvey.pdf

VLE characteristic within institutions	Pre 1992 %	Post 1992 %
Used by all subjects	5	24
Used by all departments	18	32
More than 10,000 students registered	5	37
Used by more than 200 staff	32	45
Used by between 500 - 999 modules	11	24
Used by over 1000 modules		13
VLE- student records automatic linkage	16	45
Stated targets of VLE usage specified	13	53
Efficiency cited as important driver	13	24
Usage promoted using project funding	79	58

Figure 1: Institutions and VLEs

Technology mediated learning appears from the survey to be fast growing but in only a quarter of institutions is it used across all subjects; in a third by all departments; in less than half by all staff. Post, compared to pre 1992 institutions use technology more but are less likely to provide funding, for example for learning technologists. (In relation to initial teacher education, interviews for this and related research projects suggest that much more generous funding is available for schools than for higher education, and that this may impact on capability.) The surveys also suggested that the context of the move to technology mediated learning is likely to shape developments within a particular programme. Funding, culture and attitudes may inhibit or facilitate developments.

The diversity revealed by these surveys highlights the importance of understanding the transition to technology mediated learning, and the challenges encountered, as well as the potential benefits of 'cutting edge' developments.

Diverse new technology

Although the terms 'virtual learning environment' (VLE) and 'e-learning' are widely used as a proxy for learning associated in some way with relatively recent or 'new' technology, this does not capture the potential range of hardware, software or types of delivery of new technology. WebCT and Blackboard are commonly called VLEs, but these are only part of the new technology used. Learning programmes may be designed with the use of digital recording, and audio and visual images, with or without commentaries, recorded on CD or DVD; using a wide range of broadband or more restricted access to and downloading from websites; with varied equipment for mobile learning including personal digital assistants, tablet PCs, wi-fi connections; data banks as resources; software; video-conferencing. Many resources may complement Blackboard / WebCT and

impact on the 'learning environment' so that the whole is more appropriately termed a 'new technology mediated environment'. The term 'virtual' may also appear misleading in that in order for learning to take place there has to be real engagement; and is a 'learning environment' where the environment learns?

Finding a satisfactory alternative description is not easy. What we are looking at is a 'new technology mediated environment for learning'. But the interface with different aspects of our brief – initial teacher education; distance learning; part time students may generate varied practice.

The following were part of - or had been considered for - the design of courses across our case studies:

- Blackboard or WebCT (note the development of new designs specifically for use in universities)
- Websites
- Electronic databanks of resources
- PCs
- Broadband
- CDrom and DVD storage of digital video resources
- Interactive whiteboard
- Video streaming
- 'Interactive' software and games
- PDAs, tablet pcs, palmtop computers and other 'mobile learning' devices
- Wireless technology
- Mobile phones
- Video-conferencing
- Interactive games software, relatively ahead of the field in the fields of behaviour in organisations, and in other management related disciplines, potentially have common ground with teacher education.

Such a listing begs questions about the diversity of staff preparedness within and between institutions, departments, courses. This may include awareness of and disposition towards different types of new technology, familiarity with how to use it, readiness to integrate it with the design of learning activities, and select an appropriate approach for the context.

The pace of development of innovative resources and the access to learning possibilities offered is rapid and uneven. Knowing 'where to go to find out' what is happening is important. Use of the internet may be targeted, for example:

- Descriptors and examples of applications are usually easily found using a search engine such as 'google'.
- For definitions and research findings on benefits of use of specific technology for teachers, children, parents and for subjects see the easy-to-use website of the government agency BECTA: www.becta.org.uk/research
- The Teacher training agency and Department for Education and Skills websites both have extensive resources to draw on for different types of new technology and potential uses for learning and have online links and search facilities.

- The internet offers easy (though not always free) access to a vast range of resources to enrich learning across diverse subjects. An example is the FILTER project (Focusing Images for Learning and Teaching – an Enriched Resource) – a website which links to databases such as the Visual Arts Data Service; ARTWORLD; Virtual Norfolk; the British Universities Film and Video Council; and a description of 'metadata initiatives' as well as major agencies: http://www.filter.ac.uk/resources/
- Some websites specialise in specific types of technology. For example for video- streaming there is www.ClickandGoVideo.ac.uk .
- JISC offers data collections, for example Education Media Online which offers free to subscribers 300 hours of non-fiction films and videos across many subjects including the performing arts and music and healthhttp://jisc.ac.uk/coll_emol.html.

Diverse delivery of new technology mediated learning

The surveys above indicate that new technology mediated learning is regarded primarily as a means of enhancing the quality of teaching and learning. However it is not clear how widespread is the recognition of the role of the appropriate pedagogy and the preparedness of staff to use it in the design and delivery of courses. (Education specialists have a potentially valuable facilitating role.)

For most staff in higher education, the first approach to using a 'virtual learning environment' has been called 'shovelling' in information and notes, for access by students and others. Where suitably structured, easily accessed information may provide benefits, such as saving search time; prompt feedback; shared knowledge.

But the research literature and experiences of technology mediated learning suggest that distinctive pedagogic approaches are required if the potential to enhance teaching and learning is to be realised; and if challenges which may be associated with the use of new technology and distance learning are to be overcome. There are variants of the view:

- Distinctive pedagogical approaches are required for effective use of new technology (Salmon's stages).
- Techniques for successful technology mediated learning coincide with constructivist / social constructivist learning (Pilkington).

In relation to professional education, it has been argued that an experiential, collaborative, interactive, highly structured, tutor moderated, monitored and evaluated, peer assessed learning is preferable for (Sharp), or considered appropriate to, professional preparation to teach (Case studies). Our case studies show diverse planning and delivery of learning activities. But there appears nevertheless to be a consensus about the necessity of constructivist/ social constructivist approaches for new technology mediated learning in ITE.

The recent SOLE report found that - in general - 'The learning models from the case studies supported a constructivist/ social constructivist approach to

learning'. However a diversity of practice was accommodated within the pedagogy: 'There were 'notable differences in terms of the structure of the tasks and the context within which the task was to be undertaken… and difference of tutor input and tutor support'. http://sole.ilrt.bris.ac.uk/

The implication is that if technology mediated learning for ITE is to be successful, staff should be familiar with using the appropriate pedagogy as well as confident in embedding the new technology in yeaching.

TEACHER EDUCATION

Resonance with other education programmes

Figure 2: Resonance with other education programmes

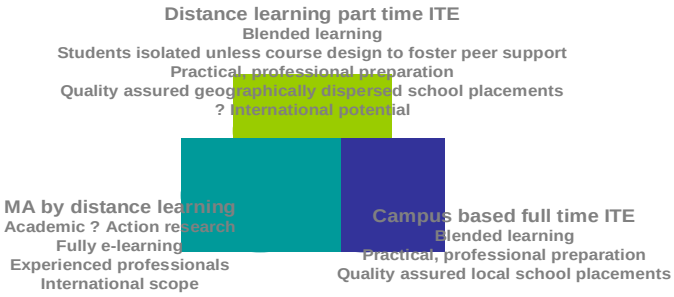


Chart 2 shows some differences between types of programme. International MA programmes have been very successfully developed but have distinctive characteristics. In initial teacher education, quality assured school placements are likely to be especially challenging for dispersed, small and isolated primary schools hosting single students. This may in part explain why primary distance learning flexible modular QTS / PGCE have lagged behind secondary equivalents.

The policy context

Initial teacher education

The government's e-learning strategy and consultation documentation can be found on the DfES website: www.dfes.gov.uk/elearningstrategy The 'vision' is to empower learners; be creative and innovative; offer flexibility; achieve better value; generate a professional workforce and fulfilled citizens.

The SOLE project points to specific features of the policy context:

- At the beginning of 2000/2001 seventeen initial teacher education providers started a new postgraduate route to Qualified Teacher Status – the flexible postgraduate training to meet their individual needs and circumstances.
- 'The changing patterns of structure for PGCE courses at UK universities away from campus-based courses and towards school-based programmes of study have been major drivers for Education Departments to focus on

new models of communication and learning and in particular on the role that VLEs can play.

- ‘The requirements for tutor - student and peer to peer dialogue and support, together with the need to study more independently than previously make e-learning an essential element of most Education Departments programme planning and design.’
- ‘In 2002 new ICT testing is being introduced as part of the QTS (Teacher Training Agency, 2002) requirements which mean ITT providers need to ensure that students have the required level of transferable ICT skills to use in their teaching. LTSN Education needs to support university departments and academics to use VLE's both as effective tools and as exemplars to help students model good practice and this requires sound evidence to build this support.

http://sole.ilrt.bris.ac.uk

Distance learning

New technology, especially where facilitated by broadband, offers particular new opportunities through distance learning. Although the emphasis of policies vary in detail across the four countries of the UK, there is commonality in the commitment to promote parity of access for all individuals to initial teacher training. This includes catering for those who are unable to undertake existing campus based, full time courses because of

- Geographically distance from programmes
- Lifestyles demanding flexible part time preparation

One programme leader emphasised the success of flexible distance learning not just in attracting a different type of entrant but in meeting local demand for teachers:

‘(Distance learning) has definitely allowed students to take up initial teacher education while still being based in the home environment and that’s been important for them. People who have not been able to participate in initial teacher education just because of where they live…... Family life and other commitments make that totally impossible for them… The rationale was that the Highland Council had identified a need for more teachers particularly in the rural areas where it is difficult to attract people. There are a lot of graduates to tap into.’(Case study Scotland)

From national and regional perspectives distance learning provision is likely to fit with other aims:

- Adjusting the supply of teachers to meet expected future demand as forecast from demographic trends and other variables.
- Reducing shortages associated with particular locations, eg inner cities, some remote areas; subjects, types of school etc.
- Improve the quality of newly qualified teachers by attracting qualifiers who are considered to be ‘high quality’.

There are thus potential gains from introducing e-learning into faculties of Education - both in terms of the national agenda and the particular demands of the discipline.

Links between distance learning and initial teacher education programmes

In the UK as a whole:

- Programmes are for graduates based in higher education with school placements including flexible modular Qualified Teacher Status (QTS) and PGCE
- There are close links to technology mediated and other learning on campus based full time undergraduate courses
- The programmes draw on experience in designing and delivering technology mediated masters degree programmes which recruit globally

In England:

In addition there are some distinctive programmes leading to QTS status in England but not elsewhere in the UK. For some, technology mediated learning resources are coming on-stream. They include:

- School based initial teacher education (eg national SCITT; 'Interactive Classroom Explorer')
- Graduate Teaching Programme (eg Ultralab commissioned for project)
- Modular Foundation Degrees undertaken by teaching assistants
- Useful web sites for new technology mediated learning in higher education and teacher education:

For initial teacher education, distance learning is small but growing

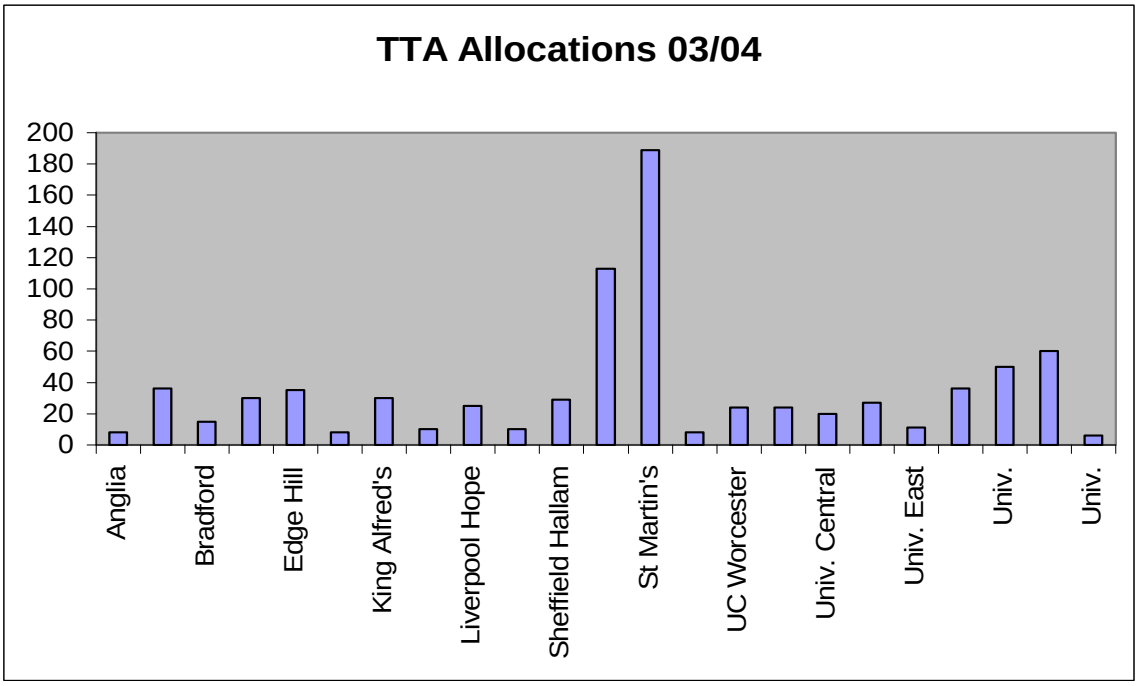


Figure 3: Primary flexible modular distance learning locations

Websites for staff in higher education and teacher education

The ESCalate (Education Subject Centre Advancing Learning and Teaching in Education) website provides access to presentations from the 2004 VLE conference (in events and past events) and to research findings from the

small grants projects, links to events and the other LTSN sites and many other useful links.
http://www.escalate.ac.uk

The Association for Information Technology in Teacher Education (ITTE) supports 'teacher training establishments in Britain and disseminates information regarding ICT in education'. It aims to help colleagues network, promotes continuing professional development, and actively represents members' views and interests on new and current issues and research at a national level. It is run by 'enthusiastic volunteers' from membership. ITTE publishes 2 newsletters a year; a journal 'Technology, Pedagogy and Education' three times annually; conferences and regional meetings. Short versions of presentations for the annual ITTE conference (most recent July 2004) are on the website. ITTE has a national profile and is continuing to develop as an international force. The association claims it is unique in having a central and complete overview of all aspects of ICT in education from an initial teacher education perspective. Links can be found at:
http://www.itte.org.uk

NAACE (National Association of Advisors for Computers in Education. NAACE claims to be a key influential professional association for those working in ICT in Education and provides a range of advice on advancing education through the appropriate use of ICT, professional development and implementing national strategies. It was formed in 2004 from a merger with Microcomputers in Primary Education and the Computer Education Group. Subscription site at: http://www.naace.org/

Association for ICT in Education (ACITT) is aimed at teachers of ICT aged 4-18 but is also useful for tutors in higher education. Resources include lesson plans and assessment sheets and there are forums for discussion of ideas and thoughts and an annual conference. Subscription site at:
http://www.acitt.digitalbrain.com/acitt/index.htm

The Joint Information Systems Committee (JISC), established by the Higher Education Funding Councils for England, gives support in teaching, learning, research and administration. They offer training opportunities through workshops and on-line self-taught tutorials. There are online catalogues so that relevant and high quality internet resources can be quickly located.
http://www.Jisc.ac.uk

The Higher Education Academy (formerly Institute for Learning and Teaching in Higher Education), in addition to the accreditation function, organises regional forums and special interest conferences which are usually free of charge.
http://www.ilt.ac.uk/default.asp

EuroPACE is a European network of universities and other educational organisations working in the field of distance and continuing education and training. Members of EuroPACE have a shared vision to create a "Virtual University for Europe" and work together to provide access to online

distance learning courses. Currently students of affiliated universities have access to courses covering topics such as Chaos Theory, Computer Vision, ICT, Artificial Intelligence and European Literature. Most of the courses are delivered using Web-technology, ISDN-videoconferencing, interactive satellite TV and CD-ROM resources. The EuroPACE website provides information about the organisation's courses, research projects and conferences, as well as access to a resource catalogue which lists EuroP ACE publications on the use of ICT for education and training. There is also a section about membership and an application form which can be downloaded as a PDF file or MS Word document.
http://www.europace.be/

A very useful website both for seeking advice on any aspect of technology mediated learning and for links to related sites is provided by the collaborative learning site at Sheffield:
http://www.shef.ac.uk/collaborate/ from where there is access to sections on collaborative e-learning; getting started: issues and examples; learning and teaching online; learning technology; subject resources; research and publications; conferences and events. There is also a discussion list to share ideas and concerns. A full and useful list of electronic journals can be accessed.

Another guide 'Tips for Online Learning' is provided by Wolverhampton university:
http://www.wlv.ac.uk/celt/oltips/index.html

The 24 Learning and Teaching Support Networks (LTSN) provide subject oriented resources information and advice. Higher education case studies are linked to:
http://www.lstn.ac.uk
http://www.lstn.ac.uk/genericcentre/
http://www.economics.lstn.a.cuk/

'Connect', the 'Learning and Teaching Portal' being built and piloted by the generic LTSN will provide 'the first set of services designed to foster and promote good practice in learning and teaching in further and higher education in the UK' through web based 'gateway information'. There will be access to a funding opportunities database; an organisation database; a resources search facility to draw down directly materials and resources for teaching and learning; a discussion forum with online tools and services; a searchable database of more than 1000 national teaching and learning related projects. The first phase is at www.connect.ac.uk

The e-Learning Centre provides online a comprehensive and easily navigated 'Guide to e-Learning'. It covers e-learning in the workplace as well as higher and further education. The e-learning 'solutions' covered range from 'simple informational solutions' such as 'creating online documents' through a comprehensive list of everything that might be needed including 'online tutorials', 'streaming media and presentations', 'games and simulations'

'blogging'. Each topic contains examples, how to create resources, costs and time, and other resources. It is at:
http://www.e-learningcentre.co.uk/guidetoelearning/contents.htm

An electronic list of many useful research papers presented at the Networked Learning Conference 2004 may be found at
http://www.shef.ac.uk/nlc2004/conference_programme/paper_titles/index.htm

The fourth Annual National VLE Conference in 2004, with the theme 'Innovative and creative ideas for improving the student experience', has some useful summaries of keynote presentations etc. For example Andy Ramsden's presentation on the use of Blackboard links to sections – eg how to deter plagiarism. It is at:
http://www.ltss.bris.ac.uk/events/vle-conf/vleday04/programme.htm

An example of how pedagogic models can underpin learning resources is COSE at:
http://www.staffs.ac.uk/COSE/cose10/welcome10html

M.Paulsen provides an 'Online Report on Pedagogical Techniques for Computer Mediation' (1995) is at:
http://home.nettskolen.nki.no/~morten/cmcped/litrev.html

For an institution level approach, N.Pollock and J.Cornford report on a two year research project which investigating the way in which UK universities are attempting to build new technologies into higher education. 'Theory and Practice of the Virtual University' (2000) is at:
http://www.ariadne.ac.uk/issue24/virtual-uniersities/

J.Dempster and F.Deepwell report on a study for the LSTN generic centre to draw out lessons learned from a number of national projects over 1998 – 2002 that had shown success in embedding new practices into institutional teaching and learning. These were generic or interdisciplinary, technology related educational development projects working at institutional and multi-institutional levels. It is to be found on the website of ALT (Association of Learning Technologists) as a chapter entitled 'Experiences of National Projects in Embedding Learning Technology into Institutional Practices in UK Higher Education' in the ALT book 'From Enthusiasm to Establishment' edited by J.Seal and G.Conole.

RESOURCES FOR INITIAL TEACHER EDUCATION PROVIDERS AND STUDENT TEACHERS

A wide range of online and downloadable resources for use by student teachers on school placement (and for teachers) and as coursework materials in initial teacher education cover are available from government agencies or their subcontractors. The main ways into these are through the Teacher Training Agency Corporate website; and the websites of the

Department for Education and Skills and BECTA. A few examples are given here:

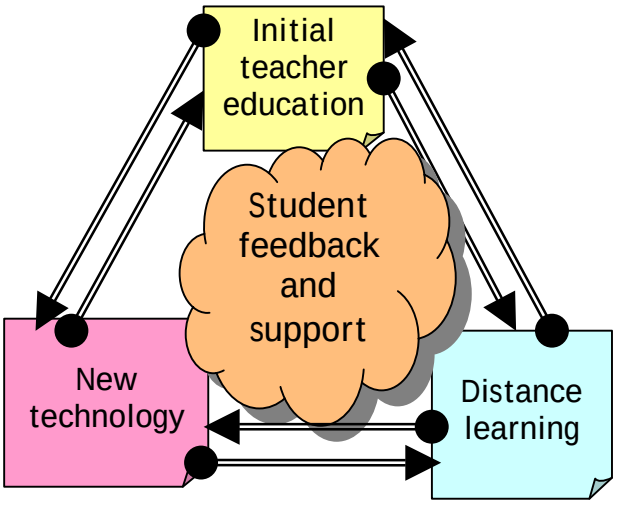
Useful links for student teachers to such sites as TeacherNet and the Teacher Support Line and Just for Teachers is at
http://www.tta.gov.uk/drb/resources_for_trainees/
Through the TTA there is access to networks such as the Professional Resource Network for 'behaviour' at:
http://www.behaviour4learning.ac.uk/
The TTA provides free downloadable 'key publications' for providers of initial teacher education and student teachers at
http://www.tta.gov.uk/php/read.php?sectionid=1&articleid=881
TeacherNet links to a wide range of primary school resources at Key stages 1 and 2; government strategies; online teaching resources; target setting; over 2000 lesson plans.
http://www.teachernet.gov.uk/teachingandlearning/primary/
http://www.teachernet.gov.uk/teachingandlearning/resourcematerials/Resources/
Curriculumonline, from the DfES, provides free online and downloadable multimedia resources to support various subjects and needs and shows how ICT can support a range of lessons including practical subjects such as art, music, design and technology and other resources and is at
http://www.curriculumonline.gov.uk/default.htm?cookie%5Ftest=1
Interactive digital resources are provided at
http://www.filmeducation.org/
An example of a specialist site containing very high quality learning resources is
http://www.accessart.org.uk
e-learning credits can be spent at
http://www.atschool.co.uk
There are many other sources of free resources such as channel 4 at
http://channel4.com/learning/

WHAT SHAPES THE STUDENT EXPERIENCE?

Several elements of programmes potentially impinge broadly on the student experience including professional initial teacher education; new technology mediated learning; distance learning; part time participation. Various strands may interact, reinforcing or countering each. The impact on the personal student experience of teacher education is likely to be complex.

Student characteristics may also differ between programmes and cohorts – as well as between individuals - and this may lead to varying experiences, even if other factors are similar.

Figure 4: Interacting territories and the student experience



We will first consider whether the type of student who chooses such a course has characteristics which may affect the success of the programme and the scope to accommodate this in design. We will then look at the three 'territories', ITE; new technology mediated learning environments; and distance learning.

Student characteristics

Student characteristics are potentially important because they underpin student 'demand' for courses, and the qualifications to which they lead – and for the way programmes are delivered. If a learning environment provides a supply of activities and services which is designed around this demand, there may be positive outcomes for such targets as retention, recruitment and attainment.

Student characteristics are extraneous to the course and many are 'givens', which the learning environment has to 'work around'. These include prior experience, for example of management, professional roles; children; financial imperative to work part time; family commitments; maturity; personality; preferences; commitment to successful completion of the course. Some profiles are likely to be associated with potential success as a student teacher - what is deemed to be a 'good calibre' student. How far a learning environment 'fits' with student characteristics may be associated with recruitment and retention. An example of 'sorting' by student characteristic is provided by a case study - an observed and moderated 'needs analysis week' in school, for those accepted for a flexible modular PGCE / QTS course. The student is allocated to one of four routes on the programme, according to the assessment of the preparedness of each to teach.

Other characteristics may be seen as malleable and the learning environment may be designed to influence them. One example is the skills, equipment, and internet capacity students bring to the course. IT skills self assessment was part of case study teacher education programmes, and these provided specific examples of how a lack of equipment, internet access and technical support could be remedied for distance learners. Another example of such characteristics is the expectations of students of contact with, and support from their tutors. Examples from the case studies showed how student expectations, in an e-learning context, could be monitored and managed, and how learning activities could be designed to generate peer interaction and support which freed up tutor time for focused intervention.

A number of studies have suggested that student motivation to learn is raised in various ways by the use of a VLE. The SOLE project found case study evidence that 'students are generally motivated towards using online learning resources and find access to materials that are provided by a VLE motivating'. The use of WebCT appeared to increase motivation towards modules or the course oriented through personal interest or personal goals, rather than to be better than others or gain credit.
http://sole.irlt.bris.ac.uk The case studies revealed some concern that tutors who believed that not using new technology mediated learning, or using it sparingly, was preferable were under pressure as a consequence of student demand to conform, and their views were not being respected.

If programmes are to be shaped according to 'demand', student characteristics must be identifiable and predictable over different cohorts. Both conditions are difficult to satisfy. Even if the profile of general characteristics is known and there are minimal variations between cohorts, characteristics vary within as well as between cohorts. Catering for diversity of student characteristics poses a different set of challenges for course designers. Case study evidence suggests that some set out to cater for every possible anticipated student need in carefully structured distance learning materials through which students are guided (for example a music course for distance learning). Others focused on giving students a choice of approach. A simple example is offering a resource on CD or online. Some diversity is especially challenging to designers, for example how to cater for the very different individual valuation of communication face to face, by phone or e-mail.

The case studies provided limited evidence of some tension between:

- Very carefully designed - usually very 'high tech' - software, very expensive to develop, but catering for diverse levels, specialisms, and student 'learning' approaches.
- 'Cottage industry' designs, designed around the local context and student characteristics, and usually 'lower tech', evolved from practitioner expertise.

Some tutors suggested that the more carefully structured the design, the more new tutors would have to 'fit in', thus losing their autonomy. The project interviews and observations suggested that the different viewpoints may be reflected in varying interests between professional groups, with a bearing on grant funding.

It is not easy to assess why a particular approach appears to work well, for example judging by the proportion of high grades, low grades, qualifying professionals. These might be explained by random variations; or because of student characteristics, the programme they undertake, the design of learning activities – or the interaction between a number of factors – or some 'residual' factor. Even if it were possible to obtain appropriate data to undertake large scale randomised trials, the validity of findings in a particular context would remain open to doubt. There is no simple approach to defining 'good practice'.

Part time flexible modular (distance learning) student characteristics

Perceptions of programme tutors and school staff, from case studies and other research at St Martin's College suggest that students who have chosen this route may have characteristics which differ from students on the campus based undergraduate and postgraduate programmes.

- Mature with work experience
- Highly committed
- Motivated to use the new technology
- Frantic lifestyles with financial and family responsibilities
- Very demanding of staff in HE and schools
- Strongly value peer support for reassurance and feedback
- Considered especially 'high' calibre by placement schools

An exemplar of the view that the course attracts good recruits is expressed by a programme leader from a relatively new course:

'We have every reason to believe it (the distance learning course) is successful, because we have the evidence that the students are performing as well as if not better than on the full time programme'

There is some evidence that the view is endorsed by schools which are especially willing to offer placements to distance learning students, despite the extra demands which mentors suggest are made on schools by such students. (ESCalate funded project, St Martin's College, 2002). Given the concerns expressed by schools about the cost of supporting less capable students, a good reputation for distance learning students could ease a shortage of school placements.

If claims are made on the basis of such evidence, for certain student characteristics in relation to a particular courses, are these claims trustworthy – can they be triangulated, validated? For example, as illustrated above, course tutors from two case studies express the opinion that mature distance learning student teachers tend to be 'high calibre'. If schools have experienced 'good quality' students from a particular course they tend to be favourably inclined to offer school placements for the programme. However for a small school placements may be thinly spread or irregular and impressions may depend on experience of one or two students. The findings may be seen as mutually reinforcing. For example, distance learning students are also mature students who may be considered 'good students' because of life experience, although negative attributes have also been perceived. The course may have high opportunity cost because students come from paid employment or value bringing up their own children. This implies that students will only be persuaded to enrol if they are highly committed to becoming qualified. This fits with reports that such students are very 'committed'. However, there may be variations across other distance learning courses for initial teacher education which do not fit these limited findings. To the extent that such characteristics can be distinguished locally, there is potential for new technology mediated learning to be designed to build on and around them.

A different kind of argument for not ignoring limited or tentative evidence about student characteristics is that this is a high risk strategy: the potential costs may be prohibitive. For example if a course is not designed to accommodate lifestyles and preferences, relatively more problems may be encountered, such as adverse effects on retention, reputation, recruitment, Ofsted inspections, and a reluctance of schools to offer placements. New technology mediated learning offers increased scope for catering to lifestyles, for example through the flexibility of asynchronous online peer learning activities. The most important question may be seen as: Can the programme afford the risk of not taking student characteristics into account?

The investment cost of setting up courses which cater effectively for diverse preferences and individualised learning are said to be substantially greater for new technology mediated than for traditional learning activities. However the more diverse the capacity, the more likely are the learning activities to be transferable across programmes with very different types of student, reducing unit costs through economies of scale, in addition to over time.

Addressing policy concerns

Policy makers are concerned about student teacher capability. Whether our findings would be confirmed more widely, and if so what are the possible causes, the perceived calibre of these students deserves further investigation. We note that student characteristics in the UK might not apply to international programmes of teacher education by distance learning.

Distance learning programmes appear successful in widening access. Students overwhelmingly say that without the part time distant learning programme they could not have gained the teaching qualification. (Kynch, 2002). Such provision may be an effective means of 'tapping into' demand from potentially capable teachers and a relatively stable future workforce.

Students for whom distance and e- learning may be challenging

Some student attributes indicate potential challenges for distance learning programmes. One case study interviewee described students who were said to enrol to meet colleagues or for social reasons (this related to a master's course which tended to recruit high ranking professionals):
'A few of them think they are not getting value for money if they don't see a person'(Case study)

Some differences between national cultures, with implications for distance learning, were suggested across different parts of the UK. In England, it was said that ITE undergraduate students are accustomed to being 'spoon fed' for exam results in school. Consequently:

'To be left on their own would almost be a frightening experience for them. They need that contact to give them security…They felt that teaching and learning was done face to face'(Case study)

This accords with the strong demand for more one-to-one sessions with tutors which was reported from a large scale survey of final year undergraduates (Kynch, 2001).

The SOLE project found that:

- Students clearly saw the tutor as vital in their learning process and as providing an important source of support.
- Students valued the possibility of face-to-face help; endorsed their need for a tutor and the VLE as an extension to tutor access possibilities.

The project also indicates the value of appropriate course design for student engagement: 'highly structured activities that link clearly to students' professional practice and strong tutor support impacts on the extent to which students engage in online collaboration'.
http://sole.irlt.bris.ac.uk

By contrast, students on the undergraduate route in Scotland were said to want more independent learning:
'The students were saying 'we don't get enough time for private study … all this face to face, and here we are able to use these materials in a different way'

A culture of peer collaboration, fostered by schools, may be one factor facilitating peer communication among distance learners. Peer communication may be used by students as a partial substitute for approaches to tutors, as in the following example:

'these ones talk (on the VLE) about different teaching strategies and ways of approaching the course. They are talking about websites that they've found and exchanging all sorts of information …….I think maybe the way they are coming through their A-level subjects, I think they get more opportunity to discuss things whenever they are at school. They are more confident to begin with and I think it just continues on through their course'. (Case study, Northern Ireland)

Such examples suggest that the culture of students appears integral to how the technology is used by student teachers. Awareness of local profiles of student characteristics, where this is stable, may help select the design of new technology mediated learning activities.

The evidence suggests that there may be critical 'flashpoints' for the student experience of distance learning programmes for initial teacher education, around which design is especially important. Certain aspects of their experience were emphasised in 50 interviews of students on one programme in England and some of the case study interviews with staff:

- Anxieties are intense at the beginning of a course and extra support may be appropriate but later be reduced (from students and staff)

- Initial bonding activities face to face are viewed as essential for fostering subsequent peer group support (from staff)
- Peer group assurance, presence and support may remain critical for survival at key points such as first placement (from students and staff)
- Individually tailored feedback is essential, especially at the start of an unfamiliar activity, but so is the benchmarking of 'standards' (from students)
- Basic conflicts remain between lifestyle demands, for example of job and full time school placement (from students and staff)
- Technical difficulties of access to resources (from students, not staff)
- Reticence to engage in some contexts and roles (from students and staff)

(Case studies, and Kynch 2001)

Technical challenges for students

Access to appropriate equipment is a precondition for distance learning courses, and students who cannot acquire it are barred. The Scotland case study offered one solution:

'Half of those taken on for the programme did not have computers at home. They need a computer to participate. The Highland Council provided them with computers with internet access'

Interviews with distance learning students on an English ITE programme suggested that there were substantially more computer related problems, which could and did cause interruptions to coursework, than staff were aware of. There was a cluster around sending and receiving e-mail attachments; but many other specific difficulties which students had to deal with in isolation. In the case study in Scotland, however:

'Technical issues are addressed through the partnership agreement whereby the sponsoring authority provide the technical support. … There is not much point for us .. having to rush up to somebody in Skye because their computer doesn't work. Far better that they can go to a local centre and get what assistance is required. That has worked very well I would say. There are some blips where your computer doesn't work and has to be taken away and that causes you some angst but on the whole it has worked very well.'

Some parts of the technology appeared to be used relatively less than others. This seemed to be the case for discussion boards, although there were notable exceptions. Variations may reflect levels of technical familiarity, but are more likely to be ascribed to cultural factors, or course design:

'I think a lot of students are unwilling to put themselves out there. To put their ideas in writing for anyone else to see. There is probably peer pressure. It is not so cool to appear so enthusiastic. Probably a lot of peer pressure puts students off. I think they don't always trust their own opinions, their own ideas. So they don't want to share that either. And I think a lot of it is to do with it being such a pressured course. There are so

many other things to do. When they try to study every subject in the curriculum at the same time, then it is harder for them to have a genuine interest in that subject at the same time'

Effectiveness of course design: campus based learner experiences

There is widespread research relating to new technology mediated learning, but little of it focusing on initial teacher education. The SOLE project is an exception. It reported on two case studies 'to explore student online learning experiences, using a holistic approach drawing on both qualitative and quantitative methods of data gathering'. The purpose is 'to draw out the effectiveness of VLEs in supporting different subject areas, different national agendas (such as widening participation) and student learning in general'. The full report may be found at: http://sole.irlt.bris.ac.uk

K.Moore and L.Aspden reviewing feedback at Sheffield Hallam University which was 'ported by the e-learning@shu project' ('Update' April 2001) assess a 'blended' approach in which design factors are emphasised. They report that 'using the VLE raises students' awareness of the need or opportunity for self directed learning'. They suggest that students do not know what a 'database' is, so the interface with the VLE – what it can do for them – plays a central role. They claim that 'effective provision of online resources allows students to exploit time to their best advantage. Students appear to be planning their on-campus time more effectively and using it as an opportunity for face-to-face interaction with their peers'. It is suggested that how the VLE is be used within courses is more important than ICT skills.

THE CHALLENGE OF TEACHER EDUCATION

There appear to be strongly held views, which emerged both from the team and prior research and case studies, that teacher education is in several ways 'different' from other courses and that there are implications for distance and technology mediated learning.

Features of primary ITE courses with implications for distance and technology mediated learning (student and staff interviews)

- Intensive and very hard work for students relative to other courses (view of students and staff)
- Knowledge of a wide range of subjects has to be acquired for primary teaching (views of students)
- Practical nature of much learning (views of students and staff)
- Holistic preparation for a complex interactive communications based profession (views of staff)
- Involves modelling 'teaching styles' and appreciating different 'learning styles'(views of staff)

- Emotionally and personally demanding on school placement (views of students and school mentors)
- Confidence building on school placement is critical (views of students and staff)

(Case studies, Kynch 2001, Roberts 2002)

Is technology mediated learning appropriate? Some doubts expressed by very experienced staff

Some experienced tutors of initial teacher education considered that the nature of some areas of learning – especially the 'expressive arts' and practical subjects, such as physical education – which are inherently unsuited to mediation by technology:

'In the context of the primary curriculum there are definitely particular subjects that are at a disadvantage if your main source of learning is through the VLE – those are the practical subjects – design technology, music, art, design, PE in particular. It is extremely difficult to set up – there is such a journey of learning that students need to go on in relation to those subjects which is also about building up their own self-confidence and knocking down barriers of fear and all sorts of attitudes towards participation in those subjects for themselves which they then, having worked through, they can take into the classroom as a teacher in a more positive way '
(Case study, England)

Arguments that face to face activities are more appropriate were provided by staff and students. Examples include:

'I think that is where the quality of learning happens. Everybody can plan to do good sessions and everyone can plan to do things on multi-media. The real skill is in interacting with the people in front of you and making sure the learning really meets their needs'

'The on-line environment "…is quite a cumbersome mode of trying to communicate. There is a human element. ..email messages can appear to be curt, quite dismissive, because there is no intimation in the written message. It is the body language and all the rest of it that makes a tutorial effective'

'Initially the real fear is that social learning and the amount of contact time you have on a programme is irreplaceable. You do so much hard work as a tutor in terms of – you think – helping students to construct their own philosophy of teaching, getting across key principles of pedagogy etc. You are the only one who can get across that particular point in the unique way you do. So that was the anxiety'(of wholly e-learning course) 'sometimes you can get confusion, and anxieties appearing and eventually you have to pick up the phone and say 'look this is what I meant'

The team noted that there were Masters degree courses which are very successful and entirely online. The distinctiveness of initial teacher education is therefore an issue.

The research literature on the development of distance education of health professionals, notably nursing, suggests that there are close parallels with teacher education. Doubts about replacing face to face learning were, interestingly, expressed by a learning technologist:

'I think that the online environment can give them more of an opportunity to learn reflectively and in particular the use of asynchronous discussion. I am not sure that it yields advantages over face to face for this kind of course'

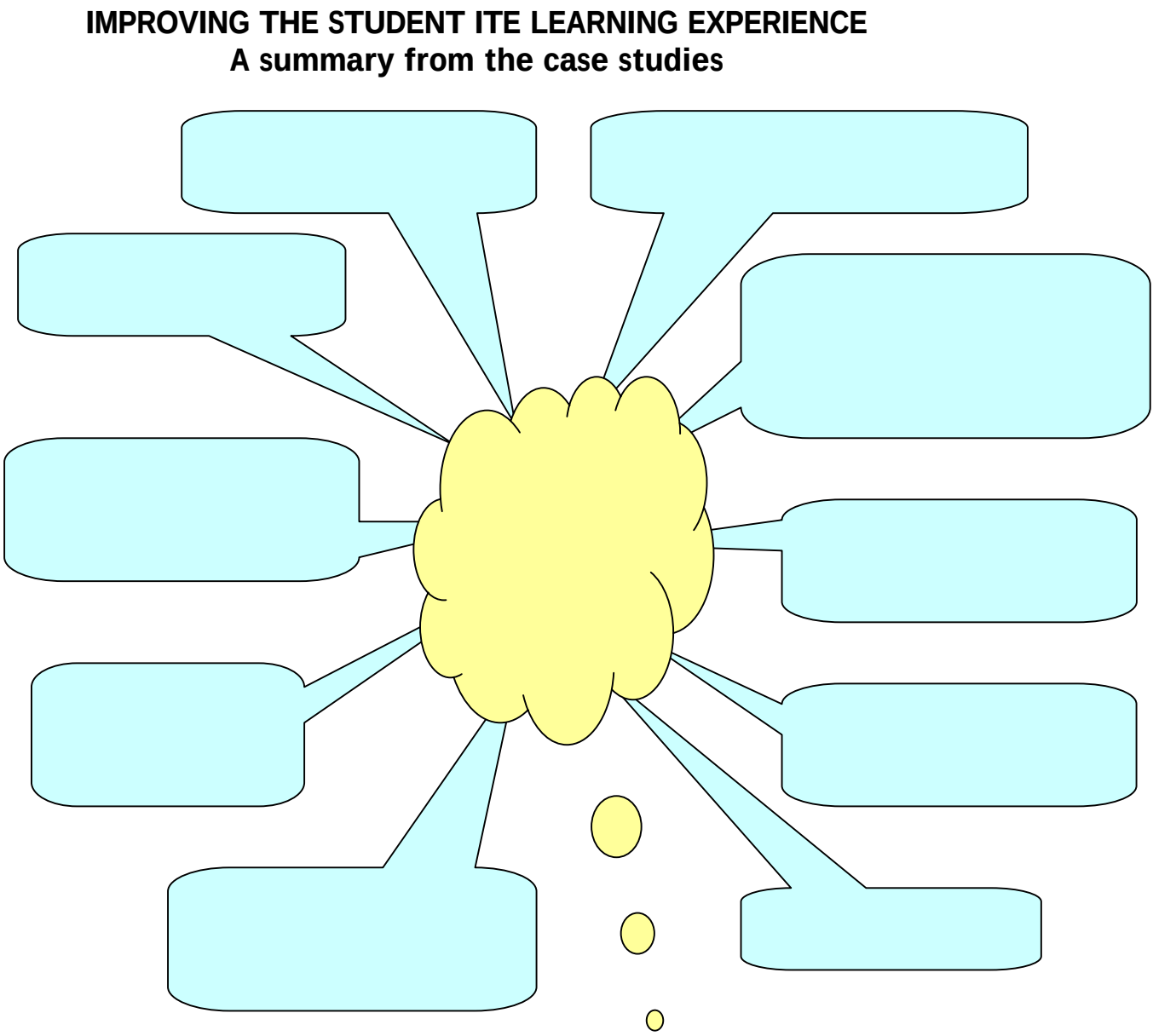


Figure 5: Improving the student learning experience through new technology

Informal peer assurance and support

There is an increasing research literature investigating the role of peer support. Practitioners may take the view that people opt for distance learning because they prefer working alone. Our research has shown that the distance learning students on one initial teacher education course had opted for it because of the fit with caring responsibilities and paid work, and isolation - in the absence of an informal peer group - was widely felt. One case study leader suggested that peers provided
'reassurance and support to keep going …. sometimes it is a struggle to keep going, and not to feel isolated'

In a crisis peer support may be critical. This is possible online. Colin Harrison provided a striking example:

'Michelle Selinger – now at CISCO systems – did research looking at online chat of PGCE students – at the OU. She gave a paper which recorded the conversation of a bloke who logged on at 6pm and said 'I'm sorry guys I'm going to pack it in, I've had the most horrible experience I've ever had in my life and I' m not going to be a teacher ..' Somebody said 'I'm really sorry to hear that, all I can say is that I have felt like you and I am still hanging in there'. Then somebody said, 'Tell us what your lesson plan was, and tell us about the group'. So he did that. And somebody said 'You don't need to feel too bad about that, because a) given what you have told us everything that happened was predictable b) you can do something about it because I made the same mistakes when I started out and things did change. And gradually over time about 8pm somebody said 'tell us what classes you have tomorrow, Let us help you plan some lessons'. Around midnight he put a posting that made hard bitten teacher trainers have a lump in their throats - a message 'guys I want to thank you all out of the bottom of my heart. I am going to teach those lessons tomorrow. Goodnight'' (Interview)
But this raises the question of under what conditions would such support be generated? In all the case studies, peer group formation – usually with those living geographically closest – was encouraged at the outset by initial face to face days or weeks for all new recruits. Interactive activities and social events enabled groups to form and almost all continued to support each other, sometimes meeting face to face but also phoning each other and communicating electronically.

'We set it up so that in the initial stages they can come to (the university) for 3 weeks – 3 days here and then they can go back. The reason for doing that was that we wanted them to feel like a coherent group …… I do believe that bringing them together as a group has helped diminish the feelings of isolation. They are a very strong group. They support each other. They use collaboration in the truest from through webCT, by telephone, they use all the methods available to them. That has been a tremendous thing'
(Case study)

'*We have increased the amount of time in the induction stage and made the focus in the induction days more social – quite explicit in the second day the learning activities are about them learning to work together rather than about content. We facilitate by making sure everybody has the opportunity to get in contact with each other by email. We allow them to request that they have their own discussion groups within the main group within blackboard'*
(Case study)

Induction exercises online were cited for an undergraduate programme:

'I got half of them to find a quotation which interested them on acquisition of language and post that on the discussion board. And the other half of the group were asked to respond to a quotation that interested them that one of the other students had picked'

Initially, it seems, distance learning ITE students need much support from programme staff, but demands then reduce:

'In the initial stages they (students) needed a lot of support. They needed a lot of reassurance because their confidence was lacking. They didn't know what they were supposed to be meant to be doing. They didn't know if they were doing it correctly. And so what we decided was that we would have a dedicated member of staff who would monitor their progress, they would be the person they would contact if they had any problems, and she was used to a very large extent early on. There was a constant communication between her and the students 'Are we doing this right, are we doing that right'. What has happened and what I hoped would happen is that very quickly, after their first time in school - because that is the first benchmark, 'how am I doing in terms of my preparation for going into school' - once they got the reassurance that they were performing very well, they didn't use the remote tutor very much. They were able to have the confidence to go and do the work on their own, without constantly having to see 'am I doing this right' and all the rest of it. So I think they need a lot of support in the beginning. But I think if it works you can withdraw the support reasonably early and that is what we have managed to do'
(Case study)

Feelings of isolation from peers, after initial relationships are established, are reduced by course design - constructing interactive activities. For example students may have to work with 'study buddies':

'We encourage them to have a study buddy – not necessarily someone close to them but somebody they can work well with. It tends to be 2's and 3's, not just pairs but triangulations of students. There are activities built in the online learning environment where they are specifically required to contact and have discussions with the study buddy. And they can do that by e-mail, through the chat rooms of the online learning environment or pick up the telephone'

Peer activities as a professional preparation

Tasks within and between groups, which may be compulsory and include peer assessment.

'The first half is lesson plans. They work together to produce complete lessons as a group. So they have to decide what content these lessons have, how the lessons are to be constructed, and how to ensure that each lesson makes sense in terms of what goes on in other lessons. They will then get feedback from another group altogether who will look at and give comment on these lesson plans and ideas, maybe highlight things which are impossible to achieve. They work together to change what they are doing before they submit for the final assessment'
(Case study)

Peer group activities which are structured, collaborative, interactive are said to be appropriate to prepare students for the communication based profession of teaching:

'There are 3 assignments which you have to pass. One of them is about collaboration and working together as a planning exercise. One part is doing the planning. The other part of the assignment is reviewing the collaborative process and seeing how it worked, how it didn't work, why it didn't work. How do you make it work? What are the components you need to put in place for it to be successful? They have to analyse the whole experience. So in order to do that they have to engage in that process. That was interesting for us because we do exactly the same assignment on campus but of course collaboration is much easier on campus – you just have to arrange to meet the people you are working with and all the rest of it. We set it up in a way so you are not working with people you already know. Because it is similar to working in a school situation. You have got to work with people you don't necessarily know or like. But you have to put into place strategies'
(Case study)

The richly varied potential use of the blended environment was described in one case study:

'There are ways of breaking down tasks they might have done more as a group. So instead of having a group meeting we introduce peer interviews, where one peer interviews another. A drama simulation where there was quite a lot of good work anyway. Where the whole process requiring a lot of group work, we've take time to organise before people got back to each other. The main area they have to discuss with each other is the asynchronous discussion area. Whereas if they are working with a partner they can cut through time difficulties. By just phoning each other, introducing a more immediate communication. It means that they can use chat very easily, we felt we wanted to break it down a bit, to have them using different kinds of communication. Having quite a bit of partner

telephone work too, to have a different way of motivating each other. So the particular example was a press interview which took the place of a related group activity. They had to telephone their study partner – one would be a reporter and they would have a kind of role play. The other would remain in the role they were given for their group. Then they would change over. The reporter would write up a news night and they would take that to the group and that would take the simulation forward again'

Technology mediated feedback

Self assessment online may provide feedback which is embedded in a course:

'I've created self assessment quizzes - multi-choice. When they have done their input and done some study of their own they can quiz their own knowledge. It tells them what they have got wrong and why. And it helps them monitor their own learning'

Enriching learning through enhanced access to a range of resources.

Some subjects are enriched by access to large databanks on which students may draw. These are subject specific, for example electronic archives of artworks; Shakespeare productions by different companies. If case studies are typical of provision elsewhere, 'home grown' multi-media resources such as video-clips of drama and music and PE, and of students teaching, appear to be widely used, increasingly within blackboard or WebCT or using CD or DVD. The web provides the richest source of materials:

'We direct them to suitable websites. Websites they can use in the classroom. Websites they can use for themselves. To develop their knowledge'

Enhanced analysis of skills and allocation of time

The technology enables individual access to analysis in a depth and detail beyond the scope of books. One example is PE skills:

'The DVD is a demonstration of the skills with teaching points and with some suggested progressions and ways in which it could be applied to lessons. It is not how to teach PE but just these are the skills you may wish to draw on … there are plenty of books that show in still photographs progressions and skills. But it is not the same as seeing the skill in its actual dynamics. We have put the little clips together so you can see them in slow motion as well as normal speed. Sequencing of skills – for example an overarm throw is traditionally a very difficult skill for some pupils to learn. You can actually see the sequence of the foot being planted, the body turning, the elbow and then the arm. In fast motion that can be a very difficult thing to watch and understand first time through'
(Case study)

This is especially valuable for students who personally lack confidence in PE:

'We are not interested in the practical abilities of our students here. If they are going to be a good teacher of PE, the ability to observe, to analyse, to offer the correct feedback are the essential skills. It is not about being able to run faster, throw further than anyone else. This doesn't necessarily make you a good PE teacher'

The resource enables such students to teach PE effectively:

'If students aren't confident in demonstrating a skill in a PE lesson on school placement they can just put in the DVD and because it is DVD and not an old fashioned video you can get straight to the skill you wanted and it is a way of demonstrating skills to children in a PE classroom'

For many subjects in the primary programme, little time is available. Such resources enable face to face time to be dedicated to where it is most effective:

'We felt that time for PE was very restricted. We needed to find a way of doing some of the subject knowledge input away from the lecture time when we needed to talk more in terms of the principles and ways of learning and organising learning and that sort of thing One route was to use video as a way of presenting information to the students in a real way…….in lectures we might go through a games lesson ...but really emphasising the way in which we have approached the lesson rather than the skills themselves. And the students want everything – they want all the information from the lecture, from different levels, whereas we may not have time to go back and emphasise all the teaching points for the specific skills whereas this particular resource will allow us to concentrate on our principles rather than have to go into specific detail about all the skills we are using
(Case study)

This example came from a campus based full time undergraduate course but addresses the same issues as are faced on a distance blended learning programme.

Enhanced reflection and preparedness for face to face sessions

The case studies suggests that technology mediated learning may provide stimulation to or a conduit for increased reflection and preparedness for face to face sessions.

'If it is carefully managed the VLE can set up preparatory activities, stimulate that kind of thinking which you can pick up in a face to face session if some preparatory work has been done'

'drama have an online activity whereby they set up a role play situation, and the students start to think about that online. And then they take that further in face to face sessions. So there's a lot to be done online which will help to enhance and add to activities face to face'

'It has real potential – moving towards the VLE being a way in which you construct knowledge - which goes on face to face in a normal programme where there is a discussion around an issue. If you construct it properly, through a VLE … it can go much, much further because students start to pull on literature research and theory in a way they don't do in conversation… Somehow once people put things down, on paper or on the screen, they seem to be more prepared to base it in theory. But it is very hard to do that, to set it up in a way that will work'

Discussion provides opportunities for reflection and exploration of views:

'They really enjoy regularly meeting up in the synchronous chat area. My colleague sets activities – reading activities and focused questions - in advance so they come to the session with a lot of preparation'

Case study interviews also suggested that placing lecture notes and other tutor resources online encourages interaction in face to face sessions because students do not need to take notes. Students who learn more slowly have time to consolidate learning**.**

'From observation – students don't hide behind their pen and paper and sit and scribble when you talk. Instead they have to have eye contact because you can say 'you don't need to write this down, it's on blackboard'. So there is no hiding - in that sense they have to engage a bit more. That's not learning but it will enhance their learning because they don't have to worry about keeping notes'

Accurate information for students

The accuracy of information students received appears to be improved through postings or using a calendar facility about activities, events, policies etc. This may be especially appreciated by mature students managing complex lives.

'it ensures that they only get one response. It is a bit like Chinese whispers. If I tell them something – by the time it has got to the 24th person it doesn't bear any resemblance to what I have actually said. So it is a useful tool for making sure they get the standard response which is the correct response'

Enhanced response to students

Email in particular has increased the ease of access by students to tutors.

'Because I have been involved with distance learning on the masters course before I was doing this programme, I am fully aware of the difficulties that can develop when you end up just with a one to one situation. But it still happens, I have to say. If you haven't replied to an email in two hours, they will email again'

This may be seen as desirable but substitutes could be sought to the one to one situation:

'I have had more and more students contacting me from school placements this year. Which in a way is a good thing. But I would rather they were using for example the multi-media discussion books. And try to use peer support rather than only me. Maybe that is the next stage'

Careful design and communications could filter the flows according to priorities:

'One of the problems we had initially was to do with feedback where the students felt they should have had feedback to everything online. It was not our expectation that we would give feedback to every individual and every activity. So there was a difference in expectations and that had to be clarified. How feedback would be given, when it would be given, that took up a lot of my time in the first instance'

'It is best to set up expectations at the start 'this is the way I'll be responding. If there is any difficulty in the meantime, do contact' – not set up the situation where it is just you and the student, on a one to one basis all the time'

Structuring activities could create substitutes for direct demands on tutors:

'We can't give one to one feedback all the time. If they have any concerns certainly to contact the tutor directly. But the sort of things we get them to do is to have activities with their working groups. Individuals from the groups will give a submission online. So then you are replying to 4 or 5 groups instead of 24 individual students. Things like that can help. And the number of responses that are posted. We try to get students to respond to each as well. And the tutor give an overall response. 'There are some ideas. Here are the bits which you might like to think about''

Tutors who feel obliged to respond could be making false assumptions about the needs behind student contact:

'one thing I have tried to do this year is to step away from the students discussions on BB when they are asking 'what are we supposed to do about this' or 'has anyone done 5b I'm a bit confused about it'. (This came up at Nottingham.) Previously I was jumping in and saying 'what you need to do is this'. Whereas now I am leaving me. If it really is important they are going to email me or the tutor. What they are doing is social glue. They are trying to make sure they are doing the same as other people'

A different programme leader explained how the technology was layered for different kinds of communications:

'Because they are scattered all over the country they depend on phone calls and email and then they have a central area where they can just go in and have a general chat. It's like having a cup of coffee together. They would see it more in that format. They have three areas. We have a coffee room and that is where there is general chit-chat. The second area is "Student Teacher - Get me Out of Here!" and that is for all their issues like classroom management problems and asking for resources and things like that. That is supposed to be school-based type discussions. It tends to slip into conversations in the coffee room, so the coffee room tends to be the area where they all go and then issues like that just come up in conversation so they deal with them in there. The final folder is for the Intel discussions. They are doing the Intel Teaching to the Future programme. While they are out on placement then they are building up the evidence for that. That is just another area for them to discuss some of the modules and put it in as their online communication and the equivalent of a virtual teacher centre where they are maybe not asking questions to the wider teaching community but it is their own smaller teaching community'

She also described how the type and direction of communications were structured:

'To keep the contact flowing we would tend to use the virtual learning environment where I have set up a discussion group area for them. We used it as just a discussion area in the first placement and then now they are out on their second placement they are actually using it for teaching purposes as well. So they have their discussion area early in the course which is their private area and then they have the other one which is just as a separate course that they are using with the pupils. Then they can talk about that experience as well … In the first one I go in to the folder which is called "Tutor's Office" and that is where they post messages for me. They would tell me if there was a change in their timetable or if they were having difficulties or whatever or if it was something general… They don't want to put something that may be a bit private about a school in there so they would email me. In a way my role in the first one is just to check the Tutor's Office although every now and again at the beginning of their placement I will go in and read their messages even though I have said to them, "It's your personal space."'

Traditional courses also may have challenges with the volume of queries from students:

When you see them every day as a programme leader you can be inundated with queries that drive you round the bend. Students have invented things and somebody has needed to ask you something that is completely untrue, that kind of thing'

It was suggested that there were counterbalancing considerations in a distance learning situation:

'One of the advantages is that the fact that the students are not here and it filters out a lot of inessential communication and query making'

The use of time may be switched from reactive towards proactive support:

'Because you are more accessible as a tutor, they email you in advance, it is more proactive than reactive. (On a traditional course) you might be spending time with a student afterwards because they haven't done it properly the first time due to a misunderstanding, you don't have to do so much of that. You can be proactive helping them to get things right in the first place'

Building back personal relationships

The view was also expressed that the technology mediated communications can build back personal relationships which have faded in impersonal large scale campus based programmes**:**

'The number of people who get on board the team grows each year because the word is getting around that alright it is a pain sometimes, you have one student who sends you 5 emails a day, but actually if you can work out how to balance the workload it is good, because it is individualised, it is about leading individual students through their programme and that kind of thing'

Blackboard and WebCT have enabled tracking of student activity by tutors which flags up when support may be timely:

'If they haven't been online for a couple of weeks and there are a few things they should have completed in that time then we can pick up a phone and say 'Is there something happening?' We used those facilities to track the students. And if they weren't on target for clearing different areas of the curriculum that we do at different times then the tutor would contact them just to see what had happened'

This support appears to become less necessary after the initial phase:

'That was very time consuming. But now we have cut back from that, we do not have to do this quite as much because the students are familiar with how to manage their workload'

Although access to tutors is much easier, mediation by new technology may encourage more effective use of scarce tutor time. Course design may lead to substitution of tutor input by structured peer activity, support, feedback and assessment. Guidance may be used to influence student expectations, and this may be enforced by rules which reroute queries**.**

Choice of resources

Technology mediated learning can offer students a choice of alternative resources for the same activity, to suit individual preferences or personal context: for example large data files can be obtained online where there is a broadband connection but on DVD where there is not.

PARTNER SCHOOLS

Distance learning for teacher education has long been established successfully for secondary initial teacher education by the Open University. Only recently have new attempts been made to reintroduce it for primary education. The main difference lies in several interrelated factors:

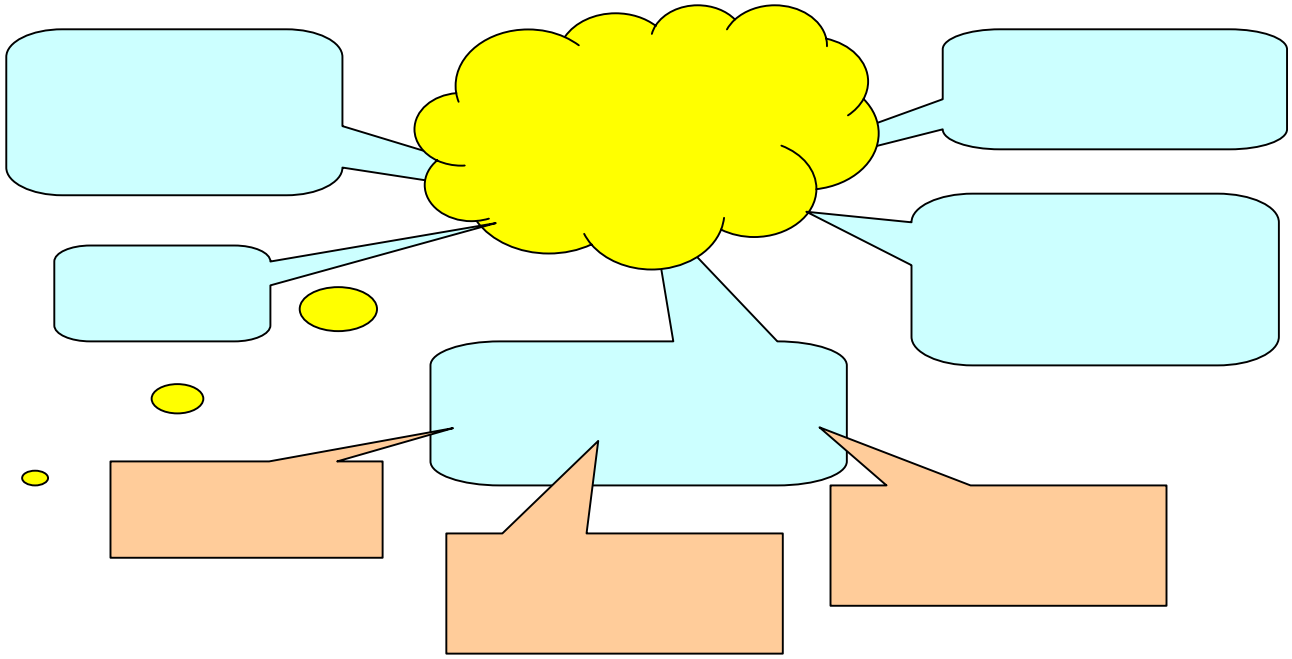
- The responsibility lodged with higher education for the quality of school placements
- The particular difficulty of maintaining consistency of partnership in small, geographically dispersed, often isolated schools
- Schools may offer infrequent or irregular placements
- Thinly distributed students.
- Distance learning ITE students are more likely than others to have school placements a long distance from campus.

Primary students are more likely to be alone on placement than are secondary:

'The nature of the flexible PGCE is such that the students go into school in isolation whereas on the secondary PGCE they go in as a group of 4 or 5 into one school. And 2 or 3 different subject mentors might be working with students so there is an opportunity for moderation within the school anyway'(Case study)

Technology mediated environment for schools

Figure 6: Enhanced primary partnerships



Understanding the demands and timing of the programme

School staff may understand poorly the differences between the traditional and distance learning programme and how this may be reflected in student needs. A video-conferencing link is being developed by one higher education provider and a training school cluster. This will enable staff in schools to 'see into' the campus based activities and hold discussions with staff and students.

Circumventing bureaucracy

Online or CD held information may provide accessible and navigable guidance and procedures for placements so that school staff can obtain exactly what they want without having to search large quantities of paperwork.

Facilitating consistency

Prior research at St Martin's suggests that geographical distance from the partner higher education institution could be damaging in various ways to communication and consistency of placement experience and assessment. New technology has the potential to facilitate student support by partner schools. However, there may be little information about how mentors would respond to such initiatives. A case study interviewee said:

'For the flexible PGCE they are in there on their own and the mentor is geographically isolated. We have a couple of students in Cornwall and another next year starting placement in Berlin. If it were possible to have

good quality hardware in there that would really enhance their work. The difficulty with it, though, is that there needs to be a kind of guaranteed commitment on the part of mentors to use that kind of thing to make it worth having and worth setting up. It is work to set it up. Last year's mentor review, some of them said, it would be good if we had the opportunity to get together aside from you, so we can thrash things out without you being there. If there is that interest and commitment we would like to be there. But we would have to do a bit of research to find out how many people often they would like would be interested and how they would like it setting up and how to be using facilities and that kind of thing'

A survey by Kynch (report 2003) found that a number of factors were conducive to mentor participation in technology mediated activities and that these factors varied sharply across primary schools.

DVDs featuring video-clips and other technology mediated resources may provide the basis for alternatives to face to face discussion between teachers and others who give support and feedback to, and assess students on, geographically distanced school placements. In order to enhance consistency, many initial teacher education programmes had some such plans. Examples are:

Use of pre-edited digital videos

- Self contained DVD with videos of classroom linked to easily navigable layers of structured analysis on different aspects; student or teacher can focus on chosen area and level; potential for in depth learning alone or for discussion; (Burch)
- Series of video-clips of teaching each year in a training school linked to clear, minimal 'word' programme guide for what schools may expect in distance learning ITE (Mackness)

'Interactive Classroom Explorer'

- The screen is divided into a window showing RealPlayer video, a scrolling text bar showing the transcript and a discussion/work area.
- The transcript and actions are searchable.
- Resources are linked in that may be viewed simultaneously.
- Video quotations can be snipped and placed within discussion or e-mails without talking up additional space.
- Phase 2 runs from a CD, phase 3 will run on-line.

c/o Colin Harrison at Nottingham

Access to technology mediated environment for schools

School mentor access to the technology mediated environment is both seen as desirable and technically problematic. Comments include:

'I don't know how useful it would be as yet, using blackboard for mentors. It is something we are very much looking at. It is a logistical nightmare because we have so many mentors that work in partnership with the college. I think it is about 1800. Having that many logins! There are also security issues as well'

'As part of our partnership events we have staff development. At recent events we have introduced them to blackboard. So they knew what the students were talking about. The mentors – what we call school link tutors – who came to the workshop were all very interested in our opening up a module just for partnership that they would be able to access themselves and to contact each other school link tutors and have easy access to everything the students access. The problems we forsee at the moment are that if you do that you open up network space and you are opening up technical problems such as what passwords they have and how often do those passwords need to be changed and who is going to deal with the technical questions – for example they can't get onto blackboard and their password is not working? That has been a bit of a battle just with the students. To take that out of the college environment is a tricky one. We are certainly not ruling it out and it I something we would like to explore. It is something those who did come along to the workshop were very enthusiastic about'

Two of the case studies had found a way of avoiding the password problem – by giving every mentor the same password. The disadvantages included that each could not be tracked and maintaining privacy for other users. One case study interviewee planned to set up a special site with external links:

'Because they couldn't use the VLE I've written a website to try and bridge that gap'

A similar one password access to a mentor blackboard environment is piloted and launched at St Martin's.

Specialists in schools

In the case study which featured the DVD of PE skills, only lack of staff time had prevented the development of use with partner schools in order to supplement specialist skills. Such needs would be relatively difficult to address in a geographically isolated school:

'It was the intention to have the partnership involved, to see what our students were doing and maybe have more realistic expectations of them as PE practitioners .. We are aware that many primary teachers do not have expertise in PE – so when a non specialist is observing a specialist PE student do they really know what they are looking for? .. to give the feedback that student needs to progress'

FURTHER CHALLENGES AND POSSIBLE SOLUTIONS

Nettiquette

Student behaviour in an impersonal environment may take unexpected turns.

'I had one group of students telling another (student) that they didn't want to work with her by text this year. Which I had never had before. It is a lot easier to communicate if you are not face to face'

Quality assurance of materials

Quality assurance issues arise in relation to:

- Content
- Relevance
- Manageability

The Draft Code of Practice for the assurance of academic quality and standards in higher education, section 2, Collaborative provision, flexible and distributed learning including e-learning, is available on the QAA website:
http://www.qaa.ac.uk/public/COP/cprovis/draft/letter.htm

There are also concerns about the difficulty of maintaining quality assurance of web-links, including their solidity and virus protection. SOSIG provides a comprehensive and practical list of criteria for evaluating a resource in terms of content, form and process. It is at:
http://www.sosig.esrc.bris.ac.uk/desire/ecrit.html

Data storage and management

(to insert links)

Improving commonly used VLEs

Both commonly used VLEs attracted criticism from staff. Typically:

'I think the thing we most want to do now is to rationalise the way we are using blackboard. This applies to all the programmes that are using it. It is partly to do with the thing itself. You have to have a course devoted to a subject and it is very difficult to move from one to another and there are very few opportunities for cross discussion and so on. It is also to do with that it is bewildering for the student at the moment. When they log in at the moment if they are say yr 1 undergraduate primary student they will have something like 12 different courses they are supposed to keep up with. That is not manageable for them and it is not manageable for the tutors. There is that issue that we want to sort out'

For staff who have become accustomed to using these VLEs there are limitations to what they can do and this is frustrating. However the fixed costs of investing in a VLE and developing staff use of it are very high and this creates a barrier to exit. Alternative VLEs are being developed which are designed for university learning environments and which may have advantages sufficient for them to become competitive. (to insert links)

MANAGING TECHNOLOGY MEDIATED LEARNING

'Surely as a senior manager what you want to do is to invest in every sense, in the experienced staff, and buy in other people to do the donkey work to release those people to do what is really important. It is all about assuring quality of materials, learning outcomes, assessment and all those things we are all judged by but doing it in a more strategic way rather than a reactive way'

Becta's ICT network aims to encourage the exchange of information between people involved with policy making at all levels. www.becta.org.uk/research

To progress technology mediated learning successfully there appear to be a range of preconditions:

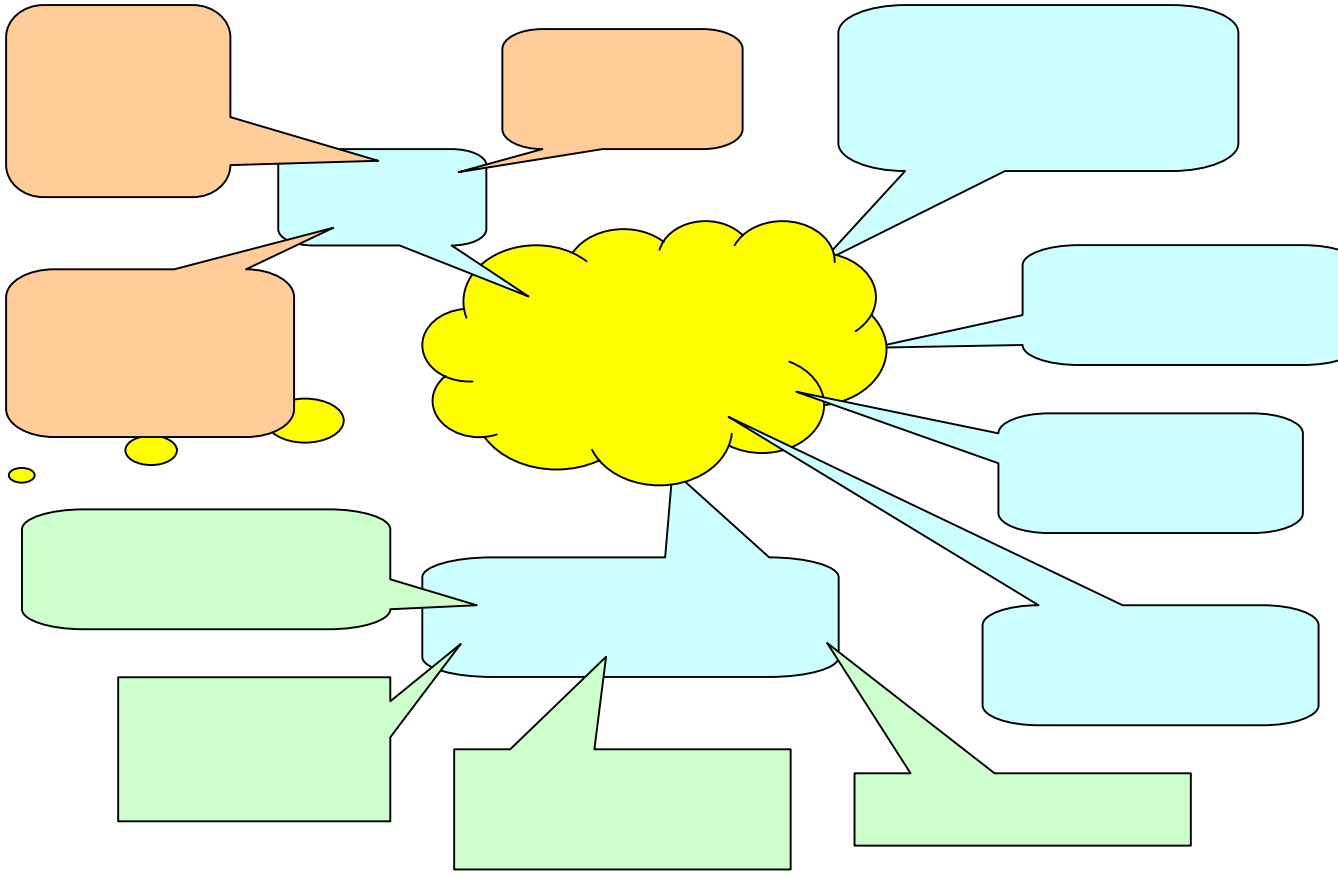
- Staff in higher education need to be comfortable using the technology before they can use it as an effective teaching tool (Selinger, Case Studies) and this takes time

- Students need access in and off campus to resources; to be familiar with use of technology; to be willing and have time to engage in activities (SOLE 2004, Sharp 2004, Kynch 2002)

- School staff, to provide appropriate support to students, need access in school to resources; to be prepared for and have time to engage with technology and discussion (Kynch 2003)

Staff and technology mediated learning

Figure 7: Staff and new technology mediated learning



Time to prepare resources
Making the transition, for staff, appears much more time consuming and challenging than expected:

'A huge amount of time has been taken up with getting resources in a format suitable for online, distance learning. We really underestimated how much time was going to be involved with this. You kind of think you have resources prepared for face to face learning – it can't be much more – but it is – there is a huge amount of time involved'

Confidence
'Before we embarked on this the staff were trained up both in terms of using webCT environment but also in terms of what's required for distance learning. It's not enough for the staff – the tutors still say 'I don't know enough about it – I don't feel comfortable enough with what I am doing'. It has got better when they have tried out the activities. That has helped give them confidence in what they are doing'

Familiarity with using pedagogy
There is some evidence that wide disparities between staff preparedness for technology mediated learning in any programme persist. However if

appropriate activities are already embedded in their traditional courses then transfer to technology mediated learning is easier for staff. Estimates vary as to how quickly the technical capability of academic staff develops. After a year of the programme in one case study:

'there are about half of them who are comfortable using it. Those who are already quite technically able didn't have too much problem in adjusting to this. For others it is still that technical aspect – not so much designing the materials as technically getting them onto the online environment'

Meaningful ownership

Ongoing induction of new staff into technology mediated courses is likely to be needed. However there may also be a further issue: the transfer of 'ownership' to them may appear less meaningful if the structure is very prescriptive because of tight structuring of activities.

Preparedness of new staff

The IT Network support website aims to provide information, guidance, support and advice to help teachers in the classroom make the transition to being a trainer of prospective teachers of IT. This TTA funding project is at: http://www.ict-tutors.co.uk/

Staff beliefs about what works best

There are still technophobes and also staff who hold a genuine belief that traditional methods are superior. Different views emerged about the extent to which such staff would – or should – use technology mediated learning:

'the next thing is addressing in various ways the incredible variability with which different tutors use VLEs. What has happened is that very quickly the expectations of the students have been built up to a level where I think they really value high quality uses of the VLE … They are probably going to be quite scathing about tutors who don't use them. Therefore it is about managing student expectations'

' I think it is absolutely fine for tutors not to use VLEs at all if that is not within their teaching style and not within the way they want to work. I don't see why people should be obliged to use a particular way of working or communicating if they don't think it is going to enhance their teaching. But students do expect it so its quite an issue'

Motivation to use technology mediated learning

The case studies suggested that some staff were personally motivated to use the new technology. Three main reasons were identified:

- Personal enthusiasm
- Seeing the new techniques work

it has got better when they have tried out the activities. That has helped give them confidence in what they are doing.

- Perceived need to keep up with a fast moving scenario and with schools

'I am more than happy for other members of staff to say 'I don't think it has a role to play in what we are doing and therefore we are not going to use it'. As long as it has been considered and thought about. … The only thing I might worry about is if in five years time when technology has advanced even more and it might then have become relevant – have they stayed in touch enough to be able to access it quickly enough to use? For example our primary trainees are using interactive whiteboards all the time in classrooms. Schools have them. Yet interactive whiteboards have turned up here at college and not many people have used them …. It is important that if our students are using the technology we need to be working with it too'

Management approaches

Persuasion

Management could take several approaches to foster staff motivation. The case studies included the following:

- Encouraging the perception that there will be future savings of tutor time

- Taking a 'Softly softly' approach so staff not rushed into learning about technology and how to use it at the same time

'I can look to see to what extent tutors are accessing different bits of the VLE and what kinds of stuff they are managing to post up there. I have an idea already about who is using it and who isn't but I haven't tackled that as a development issue yet because I want to give people time to settle in and get used to using it first'

- Perceived link to survival of the ITE programme

- Provision of extra time to staff:

'The thing that adds to workload and hasn't been recognised is the time involved in creating and maintaining learning materials for this kind of work. I have applied for a block of development leave for the entire team specifically to update learning materials. So that they will be bought out of teaching in order to do that'

- One to one support in initial stages by learning technologist, technical support; programme leaders and team

Applying pressure

Management might also allow pressure on staff to use technology mediated activities through:

- Students demand for use of new technology
- Ofsted inspection

Specialist support

The role of learning technologist is relatively new – papers are still emerging at conferences to define the role eg see http://www.shef.ac.uk/ncl2004/Proceedings/Symposia/Symposium/Jones.htm For the purposes of this report the role was to facilitate the embedding of structured activities as an expert advisor on blended learning in the context of different types of programme.

Support – in terms of staff time and advice and support from specialist learning technologists – not just to undertake the transformation from traditional to new technology mediated resources of courses, but to maintain these, appeared to make a substantial difference to the speed and success in meeting the challenges of adopting technology mediated learning.

The availability of the services of learning technologists in the university appeared to be very effective in developments on both technical and learning fronts. A case study illustrated one model of provision:

'Our university has a system where you bid in for the time of the learning technology unit. We got support for this year and for next year for the online programme. The idea is that once these things are in place they (academic staff) then take on responsibility for maintaining the resources and keeping them up to date. And also introducing them into other courses as well'

Learning technologists take over where academic staff lack technical skills:

'The Learning Technology Unit are the ones who approach the technical bits of it. We obviously do not have the time or the inclination to do that. So we pass on a lot of our stuff to them and say how do you do this and can we do this? If we are using a bit of video with students who are on campus – can we do this with webCT? So they sort that out for us'

'The learning technologist works alongside tutors on a one to one basis. Tutors have a word document and Mary helps them to transfer that into a more appropriate format for online learning'

A learning technologist described her design advisory role. This seemed to play a major part in ensuring that appropriate pedagogies were used and

structured learning activities were effectively embedded to take account of the challenges of distance learning:

'There are ways of breaking down tasks they might have done more as a group. So instead of having a group meeting we introduce peer interviews, where one peer interviews another. (For example) a drama simulation where there was quite a lot of good work anyway. Where the whole process required a lot of group work, we've take time to organise before people got back to each other. The main area they have to discuss with each other is the asynchronous discussion area. Whereas if they are working with a partner they can cut through time difficulties. By just phoning each other, introducing a more immediate communication. It means that they can use chat very easily. We felt we wanted to break it down a bit, to have them using different kinds of communication. Having quite a bit of partner telephone work too, to have a different way of motivating each other. A particular example was a press interview which took the place of a related group activity. They had to telephone their study partner – one would be a reporter and they would have a kind of role play. The other would remain in the role they were given for their group. Then they would change over. The reporter would write up a news night and they would take that to the group and that would take the simulation forward again'

The preparation for the face to face sessions was carefully crafted:

'The telephone tasks have been quite useful throughout. They have helped to maintain contact and motivation. What we are mostly using the distance part of the course for is setting them up for these face to face meetings, preparing them so they would do a lot of online group work and telephone work – preparing lessons, preparing music pieces, and then when the network day came they would either present individually or as peers selected from a group. For the simulation for example, all the work except for the final – what was called a public meeting - took place online. There were online discussions and online peer meetings, the one to one press interview, that led up to the network day. The face to face part of it took place on one of the face to face days'

The constructivist approach was consciously adopted:

'I think the most successful topics have been where there is the most variety in how students find materials – there are parts where they have to search for their own materials and help to build the resource where there is more of a constructivist philosophy. And there is building their own resource and contributing to a kind of team set of materials. I think those are the most successful. Whereas in certain subjects it is easier to do that' (Learning technologist)

The design recognised the benefits of varying activities:

'When students are doing a whole range of subjects they do get a variety of delivery. If they are doing quite a lot of group work in one subject then it

is possibly a change to do something where they are working more reflectively for some modules. There might be reflective tasks and then they might go on to do something different such as an online quiz. So I think the fact that the course coves a range of subject areas, the subject areas themselves tend to require different modes of delivery. They help to offset each other' (Learning technologist)

Technical support could transform a concept into an attractive resource:

'As they watch the DVD you can bring up little windows with the basic teaching points or basic teaching progressions or ideas for putting it into more open skill context. What I did then was to work with the ICT support unit here and they developed a package to run those clips. They wrote the package themselves. I intended originally to do it through a powerpoint application. But what they have designed is something that will load itself onto anyone's computer when it is put in and can be used straight away'

Learning technologists also helped to meet other challenges:

'Our learning technologist has done fantastic work synchronising with college central systems on common logins and passwords and getting them to realise there are a range of students who are not just on BA BSc programmes for three years and in college every day. We were hoping to move to a portal log in system. Once they are logged onto a pc they are able to access all the relevant stuff. Although that applies better for people who are here than accessing remotely'

Administrative support

Administrative support for the distance learning programme is deemed essential as a point of student contact:

'The one thing I would say is that running a programme like this relies utterly on having very good quality administrative support. We have a really good administrator in terms of that social kind of communication and clearing up queries'

'They would much rather ask an administrator because it may be that they have got the wrong end of the stick and they don't want you to know that'

PERSISTENT DIVERSITY AND TECHNOLOGY MEDIATED LEARNING

It appears that the diversity of contexts in which technology mediated learning is being taken forward - in particular for distance learning ITE - is a prominent feature. The case studies suggest that it is associated with a wide range of factors including:

- Staff access to extra (probably unpaid) time on demand
- Appropriate administrators 'on the front line'
- Availability of learning technologists and other technical support

- Characteristics, capabilities, co-operation, collaboration, culture of students and student cohorts; course staff and teams in higher education; staff in schools and schools
- Staff in related organisations eg LEAs
- Hard- and soft-ware and connectivity provision
- Utilisation of the various activities available on a VLE

The largely unknown - and possibly unknowable - interactivity between these variables, and the potentially huge number of possible permutations which shape an individuals learning environment suggests that diversity is likely to be a persistent feature of technology mediated learning.
Such diversity may, alternatively, be viewed as a developmental phase – which with sufficient research evidence; an appropriate pedagogy and design of the technology mediated learning environment; sufficient resources for support for staff knowledge and understanding and technical input, etc will prove transient.

A simple concrete example is the evidence of wide diversity in the use of discussion boards. In cases where there is little or sporadic use, is this because students feel especially exposed? Or that they see little value in time spent on activities? Could expert design eventually transform use for all? How far will the profile of use continue to vary according to the characteristics and culture of students?

A central feature of the technology is change and evolution. Are wider disparities associated with faster pace of change? (The research literature relating to such questions is outside the remit of this report)

WILL COSTS FALL IF TECHNOLOGY MEDIATED LEARNING IS ADOPTED?

Technology mediated learning Implies substantial fixed costs. These include the upfront cost of purchase of the 'virtual learning environment'; the set up costs; the training and experience acquisition of staff; the investment in learning technologists and training and experience of appropriate pedagogies; the opportunity cost implies for research; the corresponding induction of school staff into teacher education; the initial lower retention of students dislodged by uncompensated effects of change; higher set up costs for delivery of courses and formative assessment. These fixed costs should be spread more thinly across higher student numbers. Economies of scale may be realised if the same fixed costs are spread across a cluster of programmes, eg the undergraduate programmes for teacher education. One of the case studies had planned for this. Fixed costs are also spread more thinly over successive cohorts so it is useful to assess the shelf life of each part.

If one institution reckons that distance learning is cost effective, this may not apply to other providers. The diverse contexts explored suggest that institutions can learn relatively little from each other, more where there are close similarities. While a common approach to pedagogy generates

synergies, in other dimensions these are not likely to extend uniformly across teacher education. This might appear to suggest that a 'full economic cost' approach, as is being developed for research, assessed on 'activity based costing', may be appropriate for individual institutions. The problem is that this approach does not provide a mechanism to discriminate between fixed and variable costs, although the distinction is critical to evaluating the viability, in the longer term, of technology mediated learning. Under such circumstances, and the pressure to adopt new technology mediated learning, the viability of courses, in terms of unit cost, is likely to vary.

The valuation of student teachers, based on government subsidy, is also uncertain. The impact of variations of funding on distance learning programmes for teacher education also have implications, because of economies of scale, for the viability of undergraduate and campus based PGCE programmes. If the impetus of such developments is impeded by funding restrictions, re-start up costs for subsequent new technology mediated learning programmes may become prohibitive, given the fixed costs. If the government is serious about the adoption of new technology, smooth, predictable funding appears essential.

THE VERDICT ON BLENDED LEARNING:

A pervasive view from the case studies is to question whether a fully online course will ever be appropriate for initial teacher education. There are some individuals at either extreme - those who would see e-learning as totally inappropriate; or who look to global provision for teacher education. Strong endorsement has emerged that student learning experience can be substantially enhanced by well designed, contextually sensitive, technology mediated activities. However, although all courses build in evaluation it is not clear how far research evidence about the effect of developments on the student experience is consistently collected, validated by triangulation with other data, or disseminated. This short piece aims to take a small step towards assessing the evidence base, and offering a variety of possible solutions to meet typical challenges encountered in technology mediated learning for primary teacher education, where these are likely to be more extensive.

ADDITIONAL REFERENCES

'Consistency or Contingency? Fairness of Assessment on School Placement'; Kynch,C., BERA September 2001
'Ethical or Management Dilemma? When Confidentiality plays Second Fiddle'; Kynch,C., Collaborative Action Research Network Conference November 2001
'Storm in a tea cup or just brewing: consistency of assessment on block placement,' Kynch,C., BERA 2002
'The real cost of diversity: holistic, emotional organic student response and support in a parsimonious climate' Bundy,R., Kynch,C., Roberts,D.; BERA September 2002

'How well does Distance Learning cater for diversity? The views of students about the role of new technology on a flexible modular course leading to a postgraduate certificate in education' Kynch,C.; BERA September 2002
'The cost of diversity: implications of research into feedback and support in distance learning for initial teacher education' Kynch,C.; Mackness,J.; BERA 2003
'Learning to learn through e-learning', Kynch,C.; Nordic Educational Research Association, 2004

APPENDIX A

WHATEVER HAPPENED TO VIDEO-CONFERENCING?

Video-conferencing, which appears an obvious means of providing face to face interaction at a distance, did not feature in the case studies, although pilots were planned. (For guidance on specification see www.becta.org.uk/research**).** The quality of images; cost and technical complexities appear to be constraints. However Netmeeting was cited as a effective and simple route for global synchronous interactions, although subject to connectivity and interruption problems.

Websites for information about video-conferencing (data from ESCalate VLE conference):
ReLaTe is developing and testing video conferencing software for use in language teaching. It is a joint project between the University of Exeter and University College London (UCL). http://www.ex.ac.uk/pallas/relate/)

Videoconferencing for Foreign Language Learning website is designed to provide visitors with a useful list of links to the various aspects of exploiting videoconferencing technology to develop foreign language skills and intercultural competence. This page is developed and maintained by Robert O'Dowd, a lecturer in EFL and a Pill candidate at: the University of Essen, Germany.
http://www.geocities.com/Athens/Rhodes/824 7/vcing.html

Video Conferencing in Higher Education
On-line paper by Dr. Lynne Coventry, Institute for Computer Based Learning, Heriot Watt University, Edinburgh.
http://www.man.ac.uk/MVC/SIMA/vide03/contents.html

Educational Videoconferencing: 'Critical Success Factors' A paper prepared for the Conference, 'Delivering Flexible Learning in Training and Education' at the Wentworth Hotel, Sydney, 3-4 March, 1997
http://www.jma.com.au/videpape.htm
Savie is a website devoted to videoconferencing in education. This information service and the training modules are produced as a direct outcome of the SA VIE Project (Support Action to facilitate the use of Videoconferencing In Education) which was a joint initiative of K. U Leuven - A VDienst, Belgium and Lifelong Learning Institute Dipoli, Finland. The SA VIE Project was supported by DGXIII-C of the European Commission under

the auspices of the TELEMATICS APPLICATIONS PROGRAMME. The project also enjoyed the support of EuroPACE 2000, Videra Oy (Finland), Alcatel Bell (Belgium) and IOS Press (Netherlands). http://www.savie.com

Videoconference bureau is a vdeoconference booking service mainly aimed at business users

http://http://www.videoconference-bureau.com/
Computer games in education take interactivity beyond the level of development in the case studies but are being adopted for example in some subjects for example management learning. BECTA provides a list of sources of information and research in games in education
http://www.becta.org.uk/research

Also an article:
Butler M & Kelley P, Videoconferencing, in Leask M & Pachler N (eds) Learning to teach using Information and Communications Technology (ICT) in the Secondary school Routledge, London 1999

APPENDIX B: NOTES FROM THE ESCALATE VLE CONFERENCE 2004

One broad type of research on ICT and its impact consists of general considerations of the relations between ICT, teaching and learning, as opposed to evaluations of specific projects or interventions. It is possible to identify a selection of important substantive strands in this literature, including the following:

- ICT and its impact on student motivation (e.g. Cox 1997)
- ICT, learning processes and classroom organisation (e.g. Selinger, 1999; Somekh and Davis, 1997)
- ICT, in-service training and professional development (e.g. Harris, 1999)
- The use of ICT in particular school subjects (e.g. Leask and Litchfield, 1999)

This list is by no means comprehensive but in terms of the search for ways of linking ICT and school improvement, some of the most important developments have been in these strands of this literature, particularly in the way that a focus on the importance of classroom activity has been developed. Overall, much of the evidence that has formed the basis of this literature is founded upon the perceived benefits (or disadvantages) of using particular types of hardware or software or of particular ICT projects or strategies. Few direct links with school effectiveness and school improvement processes have been made. However, there has been a tendency in these writings in recent years, as with the SESI literature, to move the focus onto teaching and learning in the classroom. The work on classroom organisation, computers and pedagogical styles, student motivation and achievement, w and on practical strategies for using ICT to develop learning, provides a good foundation for making such links in the future.

APPENDIX C: SOME QUOTES

'The question is….. whether a university will survive and prosper …. without rapidly integrating the various dimensions of flexible learning into its process, culture and values.'

(Moran, 1997)

'There is increasing demand from learners, who want more flexible forms of study and learning programmes better tailored to their needs.'

(DfES, 2003)

'Like it or not, e-learning is here to stay'

(Moore & Aspden, 2004)

APPENDIX D: SOME CONTROVERSIAL ISSUES NOTED IN THE CASE STUDIES

- Prescriptiveness of highly structured student activities and assessment
- Nationwide 'best practice' software (why reinvent the wheel?) or flexibility of 'cottage industry' dovetailed to local needs
- Empowerment of tutors (associated with both)