
A Comparison of the Influence of Government Policy on Information and Communications Technology for Teacher Training in England and Northern Ireland

MICHELLE SELINGER

Cisco Systems, Feltham, United Kingdom

ROGER AUSTIN

University of Ulster, Coleraine, United Kingdom

ABSTRACT This article examines the introduction of national standards and guidelines for the use of information and communications technology (ICT) in initial teacher training in England and Northern Ireland. The context for the increased focus on ICT in teacher education is described for each part of the United Kingdom (UK). Comparisons are drawn between the two areas of the UK to show how schools and teacher training institutions have attempted to meet the standards within each political context by examining the positive features of three case teacher training courses, two in England and one in Northern Ireland. From this, inferences are drawn about the level of intervention by Government and whether greater government control has reduced or increased the integration of ICT into the cycle of teaching and learning.

The National Context for Initial Teacher Training in England and Northern Ireland

In 1992, initial teacher education in England stood 'on the threshold of being nationalised' (Pimm & Selinger, 1995) and with this movement came a set of competency statements, for which all beginning teachers were required to provide evidence (Department for Education/Welsh Office, 1992, 1993). This document also set out requirements stating that trainee teachers were to spend longer periods of time in school; currently this is 32 weeks for all 4-year undergraduate programmes; 24 weeks for all 2-year and 3-year undergraduate programmes; 24 weeks for all secondary (ages 11-18 years) and Key Stage 2/3 (ages 11-13 years) postgraduate programmes; and 18 weeks for all primary (ages 5-11 years) postgraduate programmes.

Over the ensuing years these statements were revised and centralised government control was increased. The revisions included additional statements for literacy and numeracy and for information and communications technology (ICT) (Department for Education and Employment [DfEE], 1998a). In 2000, a new consultation process was initiated and standards were streamlined to allow for more 'autonomy and flexibility in the design and delivery of training provision' (Teacher Training Agency [TTA], 2002a). In effect, standards have been replaced by non-statutory guidance for teacher training and more explicit guidance for ICT – the latter related to the National Curriculum for schools (TTA, 2002b, 2002c). In addition to this, tests in numeracy, literacy and ICT have been added, which trainees must pass in order to be awarded Qualified Teacher Status (QTS). These tests have received much criticism. Also, students are regularly audited and the Office for Standards in Education (OFSTED), the inspection service for schools and teacher training, inspects courses at 3-yearly intervals according to a set of criteria (Department for Education and Skills [DfES], 2002) to ensure that standards and other statutory requirements are being met, and:

- to help those who are thinking of teaching as a profession to base their choice of provider on sound comparative information;
- to assist the providers of initial teacher training to assess their performance and plan for improvement;
- to inform the analysis and implementation of government policy.[1]

Some have argued that this reductionism and mechanisation into measurable components reduced, rather than increased, the development of professionalism and the fostering of creativity in new teachers, and was one factor that led to a crisis in teacher recruitment (see Selinger & Yapp, 2001). In an interview with Mike Tomlinson, the Chief Inspector for Schools, Macleod (2001) reports that when asked 'Is it a matter of money?', Tomlinson's response was:

Money would help, but a lack of time to prepare and mark is a bigger gripe for existing teachers, coupled with an ever-growing tide of paperwork. Teachers are expected to prepare lesson plans in great detail for inspections and monitoring by head teachers. The introduction of the National Curriculum was welcomed by most, but there is a feeling that the Government now lays down what they must do in excessive detail and does not leave teachers free to use their professional initiative and creativity.

In one response to the consultation process for the new standards that came into force in 2002, the Universities Council for the Education of Teachers (2001) comments that one of its members expressed concern that:

What is apparently expected of NQTs [newly qualified teachers] after only a short period of initial education and training together with a limited amount of classroom experience is unrealistically high. For example, p. 9, 2.1: 'Those awarded QTS must demonstrate that they have a secure knowledge and understanding of the subject they are trained to teach and are able to respond fully and correctly to pupils' typical questions and misconceptions ...'

The Council concludes on this point: '... we suggest that *interpreted literally* this would be too much to expect of an NQT'.

The constitutional position of Northern Ireland within the United Kingdom (UK) has meant that government policy in education in Northern Ireland has often followed initiatives taken by the Department for Education in England and Wales. However, since the introduction of a devolved administration in Northern Ireland with the 1997 Good Friday Agreement, two Ministers of Education now determine education policy, one with responsibility for the school sector and the other for further and higher Education. Ministers are accountable to an elected assembly and specifically to an education committee of the assembly. The Good Friday Agreement also allows for a North-South Ministerial Council to discuss matters of mutual interest in education between Belfast and Dublin. In practice, policy either takes account of UK national directives but interprets these in the light of the special circumstances in Northern Ireland or, in some instances, is driven by particular needs in Northern Ireland. An example of this is the current review of the curriculum by the Curriculum Council in Northern Ireland (CCEA) or the ministerial proposals to alter the arrangements for the transfer of pupils from primary schools to post-primary at the age of 11. In the context of this article, the CCEA's review of the curriculum is highly significant in that its data gathered from young people showed that ICT is top of their agenda (Kenny, 2002).

The ICT Context in England

The Labour Party, shortly before it came into power into 1997, had commissioned the *Stevenson Report* on the use of ICT in schools (Stevenson, 1997) and McKinsey and Company (1997) to undergo an evaluation of the current state of ICT. Additionally, the synoptic report of the Education Departments' Superhighways Initiative, which funded 23 ICT projects across the UK, indicated positive gains from using ICT in the UK (Scrimshaw, 1997). As a result of these studies, when Labour came into power ICT was made a priority area and funds were set aside under an initiative called the National Grid for Learning (NGfL).

The National Grid for Learning Initiative in the UK

In November 1998, the NGfL visioning document, *Open for Learning, Open for Business* (DfEE, 1998b), outlined the challenges to learners, education and industry and set targets for 2002 as follows:

- Connecting to the Grid all schools, colleges, universities and libraries and as many community centres as possible.
- Ensuring that serving teachers feel confident and are competent to teach using ICT in the curriculum, and that librarians receive similar training.
- Enabling school leavers to have a good understanding of ICT, with measures in place for assessing their competence in it.
- Ensuring that most administrative communications between education bodies and the Government and its agencies cease to be paper-based.
- Making Britain a centre for excellence in the development of networked software content, and a world leader in the export of learning services. (British Educational Communications and Technology Agency [Becta], 2002)

A total of £657 million was made available from the National Grid for Learning Standards Fund Grant to support new technology in schools for the 4 years 1998-2002; and a further £710 million for the 2 years 2002-04 was announced in September 2000. In addition, £155 million was allocated for centrally funded projects, representing an investment of more than £1 billion in ICT for schools for the period 2001-04.

The NGfL portal is a gateway web site specifically designed to meet the needs of the UK's education and lifelong-learning sectors. It is the UK's national focal point for on-line learning, and provides an easy way for teachers and learners to find educationally valuable materials. A further document, *Transforming the Way We Learn* (DfES, 2002), was intended to stimulate informed debate about how a vision for the future of ICT in schools may develop.

NGfL Standards Fund Grants were made available to schools in 2001-02 through Local Education Authorities who had committed themselves to achieving a minimum threshold of access to ICT in all of their schools by 2002. These funds were then allocated to schools according to a set of criteria laid down independently by each Authority, which usually depended on a school having developed an acceptable ICT policy. NGfL funding will also be available in 2002-03 to help complete this process. The NGfL baseline is defined as:

- Access to ICT for teaching and learning purposes equivalent to a computer to pupil ratio of at least 1:11 in each primary school and 1:7 in each secondary school.

- A secure connection to the Internet in each school, with at least 20% of schools connected at broadband level.
- At least one networked computer with Internet access in each school for management and administrative purposes. (National Grid for Learning, 2002)

The Policy Framework for ICT in Northern Ireland

The size and population of Northern Ireland, with some 1.6 million inhabitants, roughly 1300 primary schools, 260 post-primary schools and five main teacher training providers, has helped to give ICT policy a particularly sharp focus. The framework for ICT policy within initial teacher education in Northern Ireland was laid down by a 1997 document issued by the then Department of Education for Northern Ireland (DENI). The *Strategy for Education Technology in Northern Ireland* [2] cited the wide range of learning benefits that pupils might expect to acquire through the use of ICT but noted that there were specific economic reasons for introducing a comprehensive strategy on ICT:

We know that education is for life not just for work. Nevertheless, the Province's future economic prosperity will depend in large measure on ensuring that our school and college leavers have a high level of appropriate ICT skills. A relatively peripheral area such as NI [Northern Ireland] must rely on 'high value added' activity and a highly skilled workforce to overcome lack of other resources and its geographical distance. (DENI, 1997, 3.2)

The report also noted the unevenness of ICT provision in schools and the wide variation in children's exposure to ICT, in spite of the fact that ICT was a mandatory cross-curricular theme. It pinpointed teacher training in ICT as a key issue but distanced itself somewhat from ICT policy in England with the comment:

We concluded that raising the level of teacher competence was probably the single most important factor in providing the impetus for ICT development in schools. The Stevenson Committee in GB [Great Britain] also reached this view of the priority need for teacher training. Unlike Stevenson, however, we believe that such training needs to be closely linked with a very substantial improvement in the ICT equipment provision in schools. Teachers' newly acquired ICT skills will quickly become rusty, and enthusiasm will rapidly become frustration, if lack of suitable facilities prevents their practical application in the classroom. We believe, therefore, that a major drive on training needs to go hand in hand with provision of sufficient modern equipment. (DENI, 1997, 4.2)

In fact, this demand for modern equipment was followed up by the development of a comprehensive plan for ICT provision in schools known as

the 'Classroom 2000' project. A roll-out of a managed service with leased hardware and the provision of a wide range of software to all schools began from December 2000 with a completion date of 2003.[3] The systematic planning for the integration of ICT in the school sector was complemented by the introduction of a voluntary scheme of ICT assessment at age 14 (recently extended to age 11), and by the development of a Northern Ireland node of the National Grid for Learning. This node, entitled the Northern Ireland Network for Education, has become the main portal through which teachers, pupils and student teachers share resources and interact electronically through email and computer conferencing.[4] In short, what the strategy provided was a vision of ICT that pervaded the school system, followed by the action and resources to turn the vision into reality (Kenny, 2002). And, judging by the number of Northern Irish ICT winners in national competitions such as those run by Becta, there is external evidence that this strategy is delivering high-quality ICT use in the education system.[5]

The Impact on the Initial Teacher Training Sector

The Inclusion of ICT in the Standards for Teacher Training in England

It is interesting to note that in England, the statement for ICT has come full circle. In the first set of standards there was just one sentence about the use of ICT, which was greatly elaborated into a complete annexe in 1998, with 46 sub-statements for 'effective teaching and assessment methods' and 66 for 'trainees' knowledge and understanding of, and competence with ICT'. In 2002, some 10 years later, there is just one sentence again, albeit with non-statutory guidance available for each subject area at both primary and secondary level, and some reference to noting that ICT has to be used in subject teaching according to the National Curriculum for England and Wales.

In most cases the introduction of ICT into teacher training programmes has been accelerated because of these new requirements, which required students to demonstrate both subject competence and integration into subject teaching (DfEE, 1998a), although there have been problems in ensuring the standards were always able to be met. At the time of introduction in 1998, many schools were still implementing ICT policies and finding ways to upgrade their current computing facilities. Yet the standards required students be given opportunities to practise and demonstrate in the classroom a variety of methods and skills related to the use of ICT in subject teaching. (For further details of the standards see Pritchard, 2001.) The NGfL funding that was made available to schools came in tranches, and Local Education Authorities distributed funds according to certain criteria, that meant not all schools received funding for equipment in the first round.

Additionally, the training for teachers in schools under the New Opportunities Fund was introduced later than it was for trainee teachers, so for a time there was a lag in developments.

This led to a certain amount of dissatisfaction on the part of trainees who, in a debriefing session on their return from their first teaching practice since the introduction of the standards, reported both in feedback forms and in discussion with tutors that they could not see the point of the emphasis on ICT in their higher education institution, when schools could not give them the experiences of which they were asked to provide evidence in order to meet the required standards. Perhaps it was the right approach but too soon and with too high an expectation of a smooth transition in the first instance. Additionally, the way in which teacher training courses were now structured meant that pressure was put onto students and staff to cram even more into the reduced time in the higher education institution. This was especially true when schools could not be universally relied on to provide the necessary support in meeting the standards, either because they did not have sufficient kit, school staff were unfamiliar or uncomfortable with using ICT, or because there were few schools with a coherent ICT policy. In the UK the responsibility of ensuring the standards are met falls to the higher education institution and to this end OFSTED inspections will grade the institution down if schools fail to comply and give students the necessary support and experience. The 'partnership agreement' between schools and teacher training institutions means that schools receive payment for their part in training students, and as approximately two-thirds of students' time is spent in schools on postgraduate teacher training courses, the monitoring and support for schools is extensive to ensure that standards are met. In the case of ICT this support was in some cases extensive.

Funding to meet the standards was made available to higher education institutions but this was only to induct mentors from school and staff from the institution into the standards and to explore jointly how they could be met. Very little funding was given to higher education institutions to ensure they could provide the necessary experiences, despite representation being made that the current ICT facilities in universities were either not relevant or they were unsuited to meet the demands of the new standards, and that many subject staff themselves needed more formal training in the effective use of ICT in their subject.

The Situation in Northern Ireland

In Northern Ireland, the Education Technology Strategy recognised that while substantial work needed to be done immediately in the school sector, it was going to be vital for the initial teacher training sector to improve the quality of the ICT training of student teachers. However, the approach initially adopted from 1997 was to put the responsibility on the universities

and university colleges to consider how best to develop a range of competences in ICT:

Against this background, we concluded that early and decisive action is needed to enhance the competence of teachers in the use of educational technology. Newly trained teachers are now expected to acquire these skills as part of their initial training: this is reflected in the common profile of competences against which student teachers are assessed. In addition, we have the example of the Open University where ET [educational technology] is a standard part of the delivery medium of the PGCE [Postgraduate Certificate in Education] course, and there are some good examples in other teacher education institutions of action to focus greater attention on the use of ET as part of students' own learning, thereby setting examples for them to follow as part of their later teaching. In general, however, we consider that HEIs [higher education institutions] need to define more precisely what standards they will expect from students in this area, in showing not only personal proficiency in ICT but also the integration of ET in their pedagogy. (DENI, 1997, pp. 12-13)

Annexe 5 of the Strategy indicated the key targets for teacher competence in education, which would apply to both serving teachers and those in initial training: first was the requirement to 'define standards from student teachers in personal proficiency in ICT and in the integration of ICT into their pedagogy'. Unlike England, where these standards were then prescribed in detail by the TTA and subject to external testing as described above, there has been far less prescription in Northern Ireland. In practice, student teachers are expected to develop personal, subject and teaching competence in three core aspects of ICT, namely word processing, electronic communications, the use of databases and spreadsheets, and one other optional area. This is in line with what the Strategy document expected as 'certificate level' in ICT competence from serving teachers.

A subsequent directive (2001) from the Department of Education for Northern Ireland brought the Northern Ireland requirements more closely into line with student teachers in England and Wales. This new directive was partially based on the document *Initial Teacher Training and the Use of Information and Communication Technology in Subject Teaching* (DfEE, 1998a). The detail and implications of this paper are discussed below but requirements on paper mean little without monitoring and without the involvement of the school sector. In both respects, there are important differences between Northern Ireland and England.

Monitoring the quality of the ICT provision in initial teacher training institutions in Northern Ireland remains part of the function of the 'link inspectors' from the Education Training and Inspectorate. The 'link inspector' scheme is based on individual inspectors developing a working relationship with teacher training tutors. It has been in operation since

1997, when an annual 'visitation' was felt to be more productive than a more formal inspection carried out at longer time intervals. Such visits include observation of tutors working with student teachers and visiting teaching practice schools to observe student teachers in action.

Unlike the situation in England, placement schools in Northern Ireland receive no payment for accepting student teachers and do not have a written contract with teacher training institutions. Instead, there is a partnership agreement, in which schools facilitate the student teacher's work, including access to ICT, but formal assessment of student progress is left to the teacher training institution.

The relatively small size of Northern Ireland and the multiple informal networks of those involved in teacher education have created an environment in which the introduction of ICT has been gently but firmly encouraged. Although the teacher training institutions fell outside the financial support provided for schools' ICT provision through the Classroom 2000 project, the Department of Education has supported a number of ICT initiatives in initial teacher education. Notable among these has been the 'INTENT' project (<http://www.ulster.ac.uk/faculty/shse/Education/intent/index3.htm>), which aimed to build ICT capacity in the teacher training institutions in Northern Ireland. There has also been the 'Dissolving Boundaries Project' (<http://www.dissolvingboundaries.org>), which has involved student teachers working with schools in Northern Ireland to forge ICT links to schools in the Republic of Ireland.

ICT Requirements for Student Teachers in Northern Ireland

Like England, the Inspectorate Statement (DENI, 2001) listing the ICT outcomes expected of student teachers, again referred to personal, subject and teaching competence. The thrust of personal competence was to acquire the 'skills, knowledge and understanding of *when, when not and how* to use ICT effectively in teaching particular subjects' (p. 2). In this section, student teachers are expected to have competence in a minimum of four ICT tools and 'skills in the functions, operation, use and capability of ICT which supports teaching approaches appropriate to the subject and age of the pupils' (p. 2).

Subject competence was defined as 'knowledge of the functions, operation, use and features of ICT including speed and automatic functions, capacity and range, provisionality and interactivity' (p. 2) and how ICT 'can support teaching and learning appropriate to the subject and age of the pupils' (p. 2). Additional requirements in subject competence include knowledge of subject-specific ICT courseware, the ways in which information can be handled through ICT, 'how to plan for differentiation and progression and to support and assess their pupils' progress in using ICT' and knowledge of the requirements of information technology as a cross-curricular theme and as a key skill unit in A level and GNVQ courses.[6]

Finally, student teachers are expected to be aware of the 'relevant health and safety, legal and ethical issues' in the use of ICT.

Teaching competence in ICT was defined as the 'ability to plan, prepare, teach, assess and evaluate lessons' (p. 4), in which ICT could be seen to be supporting a range of suitable learning outcomes. Student teachers were also expected to be able to use ICT, including the National Grid for Learning, to 'assist in personal and educational administration tasks, prepare lessons, find relevant educational research and inspection reports and support their own personal and professional development' (p. 4). This guidance also accepted that work with student teachers was simply the first step on the road of professional development. In Northern Ireland, all beginning teachers undertake a year's induction followed by a 2-year programme of Early Professional Development, which is provided by education advisers in the five Education and Library Boards. The development of teaching competence in this model accepts that some aspects of ICT may be best done in initial training, while others are better delivered during the first years of teaching, known as 'induction', and Early Professional Development. Transition from the initial phase of training to the next stages is managed through a joint committee that represents tutors in initial teacher education and advisers responsible for induction and Early Professional Development.

The tone and content of the Education and Training Inspectorate guidance show a desire to ensure that expectations of student teachers in terms of ICT were broadly similar to those in England and Wales. In practice, however, teacher training providers in Northern Ireland have been given considerable flexibility in determining how these ICT standards should be met.

Responding to the ICT Requirements in England: a case study from two universities

Two schools of education at English universities – one in the Midlands and one in the South of England – are discussed here as examples of innovative practice. In one the coordinator for ICT pre-empted the push to ensure trainee teachers were competent users of ICT and pushed for an upgrade in the current facilities. There were networked PCs in the institution but they were slow, had no hard drives and were set up for university students. They did not mirror the facilities found in schools and students had little experience or opportunity to use these machines. There was only one computer room in a good state of repair and the other was only used as a last resort, so few staff made any use of ICT in their teaching.

Funding the scale of developments that would bring ICT to the forefront of the department was not available, so sponsorship was sought and gained from RM plc, a leading educational computing manufacturer, to provide a state-of-the-art multimedia centre with two well-equipped labs, a

drop-in centre for open access and four laptops with data projectors for staff to use in other teaching rooms. Later, more PCs were placed in the newly created numeracy and literacy centres and connected to the RM network. A Centre Manager was appointed, who had been an ICT coordinator in a school, to support the students and staff. Technical support was provided through a managed service. The machines provided were similar to those going into many schools and students could borrow from a collection of nearly 300 educational CD-ROMs, some of which had been bought specifically for course requirements and others that had been donated by software publishers who saw the potential of encouraging trainee teachers to sample their products.

Working closely with a group of ICT specialists from the Midlands group of the Association for Information Technology in Teacher Education (ITTE), tasks were put together to help students gain competence and confidence with ICT applications. An audit was developed and primary trainees were timetabled for ICT lectures and workshops, all set to meet the new standards that had now been brought in. Secondary students had ICT as a focus in their subject sessions, with an introductory lecture given to the whole cohort followed by a multidisciplinary workshop. Staff were given induction sessions in the centre and started to incorporate ICT more fully in their teaching, using the centre for some of their teaching sessions.

At the mentor training sessions for partnership schools, the standards were explained and a computer conferencing system made available for all staff and students to communicate back with the University. A checklist of possible points of discussion with a student was given to schools as part of a handbook relating to how the standards for ICT could be met by students working in schools. These were closely linked and related to the standards under the headings of planning, teaching and learning, classroom management and evaluation. For the primary students there were also a number of tasks set that students had to complete in schools. The secondary students' ICT tasks were set in conjunction with the subject tutors for each course.

Having a set of comprehensive standards to adhere to certainly helped push the ICT agenda, but they were only one subset of a long list of other standards. Additionally, ensuring trainees could provide evidence of how they had met the standards was difficult, if trainees who were already overloaded had to produce yet another portfolio of evidence. In the end, the trainees were asked to take each statement and indicate where in their other portfolios evidence of using ICT in that context could be found, ensuring that all of the sub-statements had been met. Pritchard (2001), in a previous issue of this journal, discusses the standards in more depth and how these initial plans for primary trainees have matured and developed.

In the other University similar arrangements were put into place. The ICT component of the primary PGCE course is addressed in three strands, namely:

- a discrete focus on the development of children's ICT capability;
- permeation of the use of ICT in subject teaching;
- expectations for the use of ICT in the classroom during school experiences.

The programme for the discrete focus takes place in eight 2-hour sessions, which address a conceptual framework for teaching and learning with ICT, understanding the requirements of the National Curriculum for information technology in schools, planning and assessing ICT capability, and professional issues including an ICT audit and action plans.

In the final session, issues and visions for using ICT in education are discussed. In the first school experience students are expected to use ICT and are given an assignment on evaluation of classroom practice. The trainees' competence and confidence with the use of ICT in their professional work is assessed through a written rationale and evaluation for classroom practice, a portfolio of work undertaken during the PGCE course, and the successful completion of school-based activities required during school experiences.

Impact on Student Teachers

In both cases student teachers reported feeling confident and competent about their use of ICT, although they felt they could have had more opportunities in schools to use ICT. In the Midlands case, the ICT sessions in the University for primary students were overcrowded and there was little opportunity for differentiation because of this, but because of the availability of the drop-in centre facilities, students were able to come into the multimedia centre and ask for extra support and spend more time on the machine, whenever they wished. Certainly the opportunities for just-in-time learning made students more confident and in a newspaper report on the centre, students interviewed reported that their experience of ICT in teaching had been a positive one (Haigh, 1999). The entry audit of students revealed that a small number of students were lacking in rudimentary ICT skills. In discussion with them in initial sessions, they stated that – although this concerned them – it had not deterred them from coming into teaching and the opportunity to develop these skills appears to be unanimously expected and welcomed.

Responding to the ICT Requirements in Northern Ireland: a case study from a University in Ulster

The School of Education in this University in Ulster provides initial teacher training through its PGCE course, a 1-year intensive programme based

partly in the University, but for two-thirds of the year in schools. Currently, 190 students are enrolled following either the PGCE primary course or one of the eight secondary subject options.

Well before 1997 and the introduction of a required ICT element on the PGCE course, individual tutors had been involved in a number of ICT projects, but there was no coordinated policy of integrating ICT into the course. From 1997, ICT training of all PGCE staff became a priority; assisted in part by the migration from an Apple Macintosh platform to a PC-based system throughout the University. Prior to 1997, any ICT work that was done was seen as being the responsibility of staff with ICT expertise; after 1997, PGCE tutors accepted the argument that the only realistic way to integrate ICT into all PGCE courses was for each tutor to take responsibility for this aspect of teaching.

It has taken time to reach a point where all tutors feel confident about ICT and to be able to agree on what should be expected of students. In the case of the use of electronic communications, for example, it has taken 4 years to reach a point where it is now accepted that all students should contribute to a reflective on-line forum every week that they are on teaching practice. It took a similar length of time to agree that when students enrol, they should complete an audit of their ICT skills and that thereafter, the best way to develop ICT competence was to have an initial ICT 'blitz' for 1 week, followed by 3 hours a week in each subject for the 12 weeks the students are in the University. To achieve the latter meant negotiating with the University's computer services to ensure that appropriate educational software was available in computer suites and that priority booking was given to education students.

The assessment of students' ICT competence is done through a portfolio which students build throughout their course and which requires both statements of ICT work done and examples drawn either from time spent in the University or in school on teaching practice (McNair & Galanouli, 2002). The portfolio reflects the three main areas of ICT competence, namely personal, subject and teaching. At the end of the year students are required, as part of this portfolio, to write a short reflective report on their experiences of using ICT. This is assessed, like all other aspects of the course, on a competent/not competent basis. Tutors feel that the advantage of a portfolio approach to assessment is that it takes account of the differences that exist in schools with regard to the provision of ICT, it allows for the growth of subject-specialist interests and is more likely to develop reflective practice than a skills test of ICT competence.

The flexibility of the portfolio has also meant that new developments in the use of ICT can be accommodated easily. Since 2000, for example, the University has benefited from a licensing agreement with the suppliers of the Classroom 2000 software, so that all titles destined for schools are now available as training material for PGCE students. Evaluation of such software is a routine part of the portfolio requirement. Similarly, when the

School of Education decided to introduce student laptops and wireless technology into some of the PGCE teaching rooms in 2001, the portfolio enabled student teachers to reflect on the advantages of integrating ICT into the normal pattern of teaching and learning, rather than the artificial removal of ICT-based learning to the computer laboratory.

Three further developments are worth noting here. First, the development of a PGCE web site for students has brought together the first part of a virtual learning environment with course information, educational links and opportunities for students to publish learning resources. Second, some students are already involved in small-scale pilot work which revolves around them teaching classes at a distance; in a recent example, PGCE students worked with 13 year-old pupils on a citizenship project using computer conferencing, video conferencing and *PowerPoint* as the central communication and presentation tools. Finally, since student teachers do not receive separate accreditation from the University for their ICT competence, it was agreed by the course team in 2001 that their job prospects might be advanced through enrolment on the 'Intel Teach to the Future' ICT training programme. The requirements of this course, which is accredited by Oxford University Department of Educational Studies, fit neatly into what was already required in the ICT portfolio.

Work of this sort has been actively encouraged by the Inspectorate in the knowledge that this goes well beyond what was suggested as an acceptable level of ICT competence in 2000. Indeed, it is precisely because of the dynamic nature of ICT, with its capacity to transform learning, that discussion of minimal standards has to be done flexibly. The University has benefited from an Education and Training Inspectorate perspective that progress in ICT is more likely to be achieved by judicious pump-priming of ICT projects than from heavy-handed, inflexible diktat.

Impact on Student Teachers

Demand for places on the PGCE courses at the University of Ulster has remained very strong over the last 5 years, in spite of the financial advantages to students from Northern Ireland of enrolling on teacher training courses in England and Wales, where student teachers generally receive a £6,000 bursary. Student teachers in Northern Ireland receive no such support, in spite of the evident financial hardship that many of them experience.

In the annual course evaluation of PGCE students (in June 2001), over 85% of students on the course commented that they had found the ICT component of the course 'extremely valuable', and that it had given them confidence to use ICT in the classroom. We had no evidence that the growing role of ICT on the PGCE course has discouraged potential applicants; indeed, it is quite possible that the reverse is true. The ICT training that student teachers receive on the course may in fact be a positive

attraction; this takes us back to the wider picture of the importance of ICT within Northern Ireland both in support of the economy and as a tool for maximising educational opportunity and achievement. The 1997 Peace Agreement was based on a vision of Northern Ireland as a place where social cohesion was a key target; the potential of ICT to assist in this, through its capacity for inclusive dialogue through education, should not be underestimated.

Were the Standards Met in England and Northern Ireland?

In 1998 in a letter to the Secretary of State for Education, ITTE expressed concern about the ability of its members to meet the standards. They wrote:

Resources provided to support the existing criteria for ITT [initial teacher training] courses (Circulars 9/92 and 14/93) will clearly be inadequate for the greatly increased requirement for ICT. The need for subject-focused ICT provision is welcomed but even the best-resourced institutions will require further machines and software in addition to the upgrading/replacement of any existing computers that are currently unable to run multimedia applications and access the Internet. In addition some providers will need additional or upgraded network cabling. Increasing the requirements for ICT will also mean additional expenditure on both technical and software support [...] We cannot rely solely on partner schools to provide adequate competence and confidence, since the developments in schools vary considerably and students will need time to consolidate and develop the ICT experiences gained in schools.

In the event many of these predictions were proved right. Inspections of teacher training courses are carried out every 3 years by OFSTED, the government agency for the inspection of schools in England and Wales. Each year the Chief Inspector produces a report and evidence strongly points to the fact that schools are not able to provide students with the ICT experience they need to meet the standards. For example, in his report on primary mathematics, Tomlinson states:

The weakest aspect of training is that relating to the use of ICT to support and promote the learning of mathematics. Considerable efforts are made by providers in their centre-based courses to promote the knowledge, understanding and skill of trainees, for example the use of software to demonstrate graphs and to consolidate skills in calculations and the recognition of shapes. Assignments illustrating the use of computers in mathematics often enabled trainees to demonstrate a theoretical understanding of relevant applications. However, the use of ICT in the classroom is much less in evidence. This reflects the low priority given to the use of suitable software in mathematics lessons in primary schools. (OFSTED, 2002a, p. 339)

For primary science he reported: 'Few trainees, however, used ICT successfully to support their science teaching' (p. 343), and in secondary courses he reported similar findings:

The content of secondary ITT courses is now more closely related to the QTS standards and this has contributed to continuing improvements in the quality of training and assessment. It is now widespread practice to establish common school-based programmes across the training partnership so that the subject training undertaken by mentors in schools is better structured and complements university or centre-based training. Where shortcomings exist, these are often because school-based mentors are not sufficiently familiar with their training roles and responsibilities. The quality of training, however, remains strongly dependent on the practice in individual placement schools. Many ITT providers have difficulty finding sufficient schools that are models of good practice, particularly in three key aspects: the assessment of pupils; planning for the National Curriculum; and the use of ICT in subject teaching. (OFSTED, 2002a, p. 349)

Additionally, in some teacher training institutions OFSTED inspections indicate that although ICT is being used in the institutions, tutors are not always modelling good practice in their teaching.[7]

However, exit audits, course evaluations and OFSTED reports on individual institutions have demonstrated that the introduction of the standards has had a significant impact on trainee teachers' competence and confidence in using ICT. During mentor debriefings, many trainees have reported it as an immense source of support in schools. The NGfL and New Opportunities Fund training are beginning to have an impact on schools and trainees' experience and the structures for them to use ICT in the classroom on school experience are now in place. Since higher education institutions now work closely with partner schools there have been opportunities to discuss how ICT standards are going to be met and how roles need to be divided, and issues identified have started to be resolved.

Analysis of the ICT policy for initial teacher training in Northern Ireland throws light on the question of standards, on the process of monitoring and on the socio-economic place of ICT in this part of the United Kingdom. A current (2002) review of the 1997 Strategy indicates that good progress has been made:

Initial Training

4.5 Define standards expected from student teachers in personal pedagogy in ICT and integration of ET in their pedagogy.

'Target achieved: The Northern Ireland Teacher Education Competencies model defines the competences in ICT which should be developed initially by student teachers and then progressively through

the induction and early professional development stages. Teacher education institutions audit the ICT skills of students on entry and provide a programme of training where necessary. Students are expected to make use of ICT in lessons during their teaching practice. The curriculum advisory services report that most student teachers are emerging into schools with improved ICT skills.

The opportunity exists, given the common platform of ICT resources now in schools, for use of ICT in lessons during teaching experience to be formally assessed.

The teacher training institutions are engaged in work to ensure that not only are ICT skills well developed, but that the use of ICT become a part of the learning experience in the teacher education curriculum of student teachers. (Department of Education, 2002)

There have been some important changes in the requirements for student teachers and beginning teachers to learn how to incorporate ICT into their teaching during school experience and during the period of Early Professional Development. Significant improvements have been seen in the levels of competence of newly qualified teachers.[8]

Conclusion

Until as recently as 1980, government education policy in England and Wales generally left initial teacher training institutions to determine how best to prepare teachers for a changing curriculum. This laissez-faire policy meant that standards of training in initial teacher training were left to the universities and colleges themselves to determine through a system of self-regulation.

From 1992, government policy became increasingly interventionist in all aspects of training, including detailed specifications for ICT competence. The evidence from the case studies of teacher training institutions cited in this article is ambivalent about whether external imposition of standards and requirements has necessarily acted as a catalyst to 'improved' performance. In all three case studies, innovative work in ICT was already happening and would have continued. There are at least two key reasons for this: first, the initial teacher education sector has a deeply embedded culture of professional development, which means that it often anticipates new trends and expectations, particularly with regard to areas like ICT. Second, the initial teacher education sector understands the need to ensure that student teachers find employment and is therefore sensitive to the demands of schools in terms of ICT competence from beginning teachers. But demands for such improved competence from the school sector have not been uniform and this reflects the uneven pace at which schools have invested in ICT hardware or received their NGfL Standards Funds. In addition, some

schools have only recently completed their training so teachers are only just starting to understand the potential and have begun to use ICT in their classrooms. Many still lack confidence (OFSTED, 2002b) so being able to support newly qualified teachers or trainees in their use of ICT is going to take more time.

In Northern Ireland, ICT policy for initial teacher education is a very good example of professional partnership between the teacher training institutions, their partner practice schools and the Department of Education through the Education and Training Inspectorate. Northern Ireland has had the added advantage that the benefits of ICT are widely understood and welcomed. Furthermore, its size has enabled policy decisions to be taken in a way that has been genuinely integrative.

Notes

- [1] Teacher Training Agency Quality Assessment Framework: <http://www.canteach.gov.uk/community/itt/quality/assessment/framework.htm>
- [2] Northern Ireland Education Technology Strategy: http://www.deni.gov.uk/about/strategies/d_ets.htm
- [3] Classroom 2000: <http://www.deni.gov.uk/ppp/classroom2000/classroom.htm>
- [4] The Northern Ireland Network for Education: <http://www.nine.org.uk>
- [5] Becta ICT in Practice Awards: <http://www.becta.org.uk/news/practiceawards/awards/resultslisting.html>
- [6] A levels are public examinations usually studied by 16-19 year olds in full-time education, mainly in academic subjects, but more recently including a growing number of vocational subjects. GNVQs offer students an alternative to A levels and GCSEs (16+ public examinations). Each GNVQ is related to a broad area of work, but is designed to provide students with a general education as a preparation for employment or further study. They are available in 14 vocational areas and at three levels to cater for students of most abilities.
- [7] OFSTED web site: <http://www.ofsted.gov.uk>
- [8] Review of The Strategy for Education Technology in Northern Ireland: http://www.c2kni.org/ET_Review

Correspondence

Michelle Selinger, Cisco Systems, 9 New Square, Bedford Lakes, Feltham, TW14 8HA, United Kingdom (mselinge@cisco.com).

References

- Association for Information Technology in Teacher Education (1998) Letter to David Blunkett.
- British Educational Communications and Technology Agency (2002) *Building the Grid* [on-line]. Available at: <http://buildingthegrid.becta.org.uk/index.php?loclD=102>
- Department for Education and Employment (DfEE) (1998a) *Initial Teacher Training and the Use of Information and Communication Technology in Subject Teaching (Annexe B of DfEE Circular 4/98)*. London: DfEE.
- DfEE (1998b) *Open for Learning, Open for Business*. London: DfEE.
- Department for Education and Skills (DfES) (2002) *Transforming the Way we Learn*. London: DfES.
- Department for Education/Welsh Office (DFE/WO) (1992) *Initial Teacher Training (secondary phase) Circular no 9/92*. London: DFE/WO.
- DFE/WO (1993) *The Initial Training of Primary School Teachers Circular 14/93*. London: DFE/WO.
- Department of Education (2002) *A Review of the Strategy for Education Technology in Northern Ireland* [on-line]. Available at: <http://www.class-ni.org.uk/etstrategy/etstrat/teachers/teacher1.htm>
- Department of Education for Northern Ireland (DENI) (1997) *Strategy for Education Technology in Northern Ireland* [on-line]. Available at: http://www.deni.gov.uk/about/strategies/d_ets.htm
- DENI (2001) *A Survey of the ETI of Initial Teacher Education: working papers – English/literacy; mathematics/numeracy; ICT; and classroom management*. Belfast: DENI.
- Haigh, G. (1999) Building up Class Confidence, *Times Educational Supplement*, 14 May. Available on-line at: http://www.tes.co.uk/search/search_display.asp?section=Archive&sub_section=Friday&id=311324&Type=0
- Kenny, J. (2002) With a Little Help, *EC and T*, June/July, pp. 25-26.
- Macleod, D. (2001) Teacher Shortages, *The Guardian*, 28 August. Available on-line at: <http://education.guardian.co.uk/teachershortage/story/0,7348,543474,00.html>
- McKinsey and Company (1997) *The Future of Information Technology in UK Schools*. London: McKinsey and Company.
- McNair, V. & Galanouli, D. (2002) Information and Communications Technology in Teacher Education: can a reflective portfolio enhance reflective practice?, *Journal of Information Technology for Teacher Education*, 11, pp. 181-196.
- National Grid for Learning (2002) *Standards Fund Document* [on-line]. Available at: http://www.teachernet.gov.uk/Document_Bank//index.cfm?id=2385
- Office for Standards in Education (OFSTED) (2002a) *The Annual Report of Her Majesty's Chief Inspector of Schools Standards and Quality in Education 2000-01*. London: Her Majesty's Stationery Office (HMSO).
- OFSTED (2002b) *ICT in Schools: the effect of government initiatives*. London: HMSO.

- Pimm, D. & Selinger, M. (1995) The Commodification of Teaching: teacher education in England, in M.F. Wideen & P.P. Grimmett (Eds) *Changing Times in Teacher Education: restructuring or reconceptualisation*. London: Falmer Press.
- Pritchard, A. (2001) Meeting the Requirements of the Initial Teacher Training National Curriculum for the Use of Information and Communications Technology in Subject Teaching, with One Year's Cohort of Postgraduate Primary Trainees, *Journal of Information Technology for Teacher Education*, 10, pp. 293-312.
- Scrimshaw, P. (1997) *Preparing for the Information Age: synoptic report of the Education Departments' Superhighways Initiative*. London: DfEE.
- Selinger, M. & Yapp, C. (2001) *ICTeachers*. London: IPPR.
- Stevenson, D. (1997) *Information and Communications Technology in UK Schools: an independent enquiry*. London: The Independent ICT in Schools Commission.
- Teacher Training Agency (TTA) (2002a) *Qualifying to Teach: professional standards for qualified teacher status and requirements for initial teacher training*. London: TTA.
- TTA (2002b) *Handbook of Guidance on QTS Standards and ITT Requirements* [on-line]. Available at: http://www.canteach.gov.uk/publications/community/itt/requirements/qualifying/standards_guidance.doc
- TTA (2002c) *National Curriculum for the Use of ICT in Subject Teaching: exemplification materials* [on-line]. Available at: <http://www.canteach.gov.uk/community/ict/exemplification/index.htm>
- Universities Council for the Education of Teachers (2001) *UCET Response to TTA Consultation Standards for the Award of Qualified Teacher Status and Requirements for Initial Teacher Training* [on-line]. Available at: <http://www.ucet.ac.uk/resoect01ttacons498.html>