



Using technology and e-learning to support the 14–19 agenda



Becta

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The background to 14–19 change

This document, written in response to the final report of the working group on 14–19 reform¹, anticipates the Government's white paper on 14–19 curriculum and qualifications reform.

The DfES five year strategy

The *Five Year Strategy for Children and Learners*² addresses some of the fundamental issues that have beset education in the UK – pupils dropping out of education at 16, perceptions of vocational learning as second-best and the poor record of provision for, and attainment of, skills within the workforce. The five year strategy also aims to reduce bureaucracy and increase local and regional input in the development of provision.

The principles that underpin the five year strategy indicate a genuine change of emphasis:

- Greater personalisation and choice, with the wishes and needs of children's services, parents and learners centre-stage.
- Opening up services to new and different providers and ways of delivering services.
- Freedom and independence for frontline headteachers, governors and managers with clear simple accountabilities and more secure streamlined funding arrangements.
- A major commitment to staff development with high-quality support and training to improve assessment, care and teaching.
- Partnerships with parents, employers, volunteers and voluntary organisations to maximise the life chances of children, young people and adults.

Personalised learning

Personalised learning³ is about tailoring education to individual need, interest and aptitude to ensure that every student achieves the highest standard possible. It is a key component of the five year strategy for children and learners.

As a unifying theme for education, it faces its greatest challenge in the 14–19 arena where young people

increasingly engage with learning delivered through partnerships and in the world beyond school and college. The use of ICT permeates all five components of personalised learning. ICT provides a means of enhancing creativity, extending learning opportunities, and sustaining a varied but challenging pace of learning. The five components are:

- assessment for learning: rigorous target setting and pupil tracking
- effective teaching and learning: individual learning styles and teaching
- curriculum entitlement and choice: a combination that delivers a breadth of study and personal relevance
- organising the school: including partnership and schools of the future
- beyond the classroom: involvement of the community, local institutions and social services.

The working group on 14–19 reform

The working group on 14–19 reform, set up under the chairmanship of Mike Tomlinson, had the following terms of reference:

- a strengthened structure and content of full-time vocational programmes, and to offer greater coherence in learning programmes for all young people throughout their 14–19 education
- assessment arrangements for 14–19 year olds that are appropriate to different types of course and styles of teaching and learning, with the overall amount of assessment manageable for learners and teachers alike
- a unified framework of qualifications that stretches the performance of learners, motivates progression, and recognises different levels of achievement.

¹ Published by the DfES [<http://www.14-19reform.gov.uk>], October 2004

² Published by the DfES [<http://www.dfes.gov.uk/publications/5yearstrategy/>], July 2004

³ For more information about personalised learning, the framework that underpins its application, and to download the pamphlet, *A National Conversation about Personalised Learning*, visit the DfES website [<http://www.standards.dfes.gov.uk/personalisedlearning/>]



Skills for life

The *Skills for Life*⁴ strategy document set out plans to tackle the large number of adults without basic literacy and numeracy skills. The strategy provides opportunities to develop the skills needed to progress further in learning and in work. The focus on adult basic skills is a key part of the skills strategy.

The future of higher education

The white paper, *The Future of Higher Education*⁵, includes plans to expand foundation degrees in vocational areas and increase contact between higher education institutions (HEIs) and employers. These plans play a key part in developing the skills strategy.

Success for all

The *Success for All*⁶ document sets out the Government's plans to reform further education and training. The key elements of the strategy are developing provision to meet local needs, increasing staff development, and creating new planning, funding and accountability systems. The progress report, *Success for All: the second year*⁷, shows that already significant progress has been made. Over the next three to five years, the report's authors expect:

- each college and provider will have primary responsibility for its own self-assessment and improvement
- there will be effective support from the Learning and Skills Council (LSC), the inspectorates (Ofsted – Office for Standards in Education – and ALI – the Adult Learning Inspectorate) and a new quality improvement body
- significant and continuing improvements in learner success rates for the many and diverse groups of learners in the sector; this will help to increase the number of people with level 2 and 3 qualifications
- all LSC-funded provision regarded as satisfactory or better by 2008

- a sector engaging with and responding to business, and playing its full part in meeting our skills needs of the future.

Skills strategy

In 2003, the Government published a national skills strategy and delivery plan, *21st Century Skills: realising our potential*⁸. The strategy sets a wide-ranging agenda for raising skill levels among young people and adults, and for working closely with industry to ensure that policies meet the needs of employers. As well as drawing on other major educational reforms, the skills strategy focuses on collaborative work between Regional Development Agencies (RDAs), LSCs and the Employer Training Pilots under way in six local LSC areas. The strategy supports funding for training in key skills to level 2, and training to level 3 in areas that have been identified as priorities.

The role of ICT

ICT is a common theme in all of the Government's strategic development plans, where policymakers see it as necessary to support opportunities for all, lessen bureaucracy, and enable personalised learning and effective assessment. In these ways ICT can provide the means to raise attainment and meet the needs of learning and skills in the 21st century.



4 Published by the DfES [<http://www.dfes.gov.uk/readwriteplus/>], July 2001

5 Published by the DfES [<http://www.dfes.gov.uk/hegateway/strategy/hestrategy/>], January 2003

6 Published by the DfES [<http://www.successforall.gov.uk/>], November 2002

7 Published by the DfES [<http://www.successforall.gov.uk/>], November 2004

8 Published by the DfES [<http://www.dfes.gov.uk/skillsstrategy/>], July 2003



Part I – Introduction

Introduction

Education between the ages of 14 and 19 will depend on partnerships between schools, colleges and work-based learning. In turn, effective partnerships will be dependent on coherent ICT provision at national, regional and local levels.

This document considers the part ICT can play in implementing 14–19 education. Part 1 looks at what the 14–19 agenda is and the impact the agenda will have on the delivery of education in schools, colleges and work-based locations. Part 2 looks at the role of ICT in enabling some of the more challenging implications of the 14–19 agenda.

The ICT in Schools programme (formerly the National Grid for Learning (NGfL) programme) has been responsible for pushing forward and supporting the development and use of ICT in schools. The National Learning Network (NLN) programme has been charged with supporting the development of ICT in post-16 education⁹.

The final report of the working group on 14–19 reform, (*14–19 Curriculum and Qualifications Reform* – often referred to as the Tomlinson Report), was published in October 2004. It sets out recommendations and proposals for an inclusive framework for curriculum and qualifications and sets, over a ten-year period, a challenging agenda designed to achieve a step-change for all.

It presents a huge challenge to all the partners who have to create the new flexibility expected in this distinct 14–19 phase. However, a great deal of good practice is already taking place and this has been recognised by the Government in its policy documents and by the working group on 14–19 reform. For example, 39 ‘pathfinder’ projects have been implemented with objectives which address 14–19 issues, and the Increased Flexibility Programme for 14–16 year olds is modelling successful ways to broaden the 14–16 curriculum through partnerships between schools and colleges or other training providers.

ICT is fundamental to making the new 14–19 vision a reality; and from this time forward the development of ICT for schools and colleges will need to be collaborative and have a common goal of providing ‘unified’ and ‘personalised’ services. In addition, schools and colleges will increasingly have to work in partnership with community services, higher education (HE) and industry.

14–19 curriculum and qualifications reform

The final report of the working group

Starting from the unequivocal view that ‘the status quo is not an option’, the final report of the working group sets out proposals for a unified framework for 14–19 curriculum and qualifications and counsels against ‘further piecemeal changes’. The framework ‘does not make the traditional distinction between vocational and academic learning’, and seeks, through personalised learning opportunities and programmes that are relevant to the needs of industry and higher education, to bring about a step-change in education with consequent benefits to the economy and social well-being.

Key objectives are that it should no longer be considered acceptable for a young person to leave education or training at the age of 16, and a young person’s learning programme should no longer be decided by what an individual school or college can offer. Instead, it will be the responsibility of schools and colleges to put together programmes that meet the needs and aspirations of learners. In some cases, individual schools or colleges will still be able to meet these needs. However, for many, a tailored programme will only be achieved through partnership between schools, colleges and employers.

The proposals of the report aim to:

- raise participation and achievement
- get the basics right
- strengthen vocational routes and increase the numbers taking advanced vocational qualifications

⁹ ICT (information and communications technology) is the term used to describe the use of technology to support learning and teaching in schools. ILT (information and learning technologies) is the term used by the college sector. This document, in common with the final report of the working group on 14–19 reform, uses the term ICT.



- provide greater stretch and challenge
- reduce the assessment burden
- make the whole system easier to understand for all stakeholders.

The 14–19 proposals in brief

- A new framework, encompassing all 14–19 programmes including apprenticeships and work-based learning, should comprise core and main learning. Every young person would also have to complete an extended project, which would replace coursework.
- A diploma framework at entry, foundation, intermediate and advanced levels and covering all types of learning programme wherever these are undertaken.
- Core learning is common to all programmes and diplomas and comprises:
 - specified levels of achievement in functional mathematics, functional literacy and communication, ICT
 - an extended project
 - common knowledge, skills and attributes (CKSA) such as personal awareness, problem solving, creativity, team working, and moral and ethical awareness
 - support for learners in planning and reviewing their learning, and guidance in making choices about further learning and careers
 - an entitlement to wider activities, for example, sport.

The report proposes that the core components are developed by the QCA in consultation with all stakeholders, including end-users and subject experts.

- Main learning constitutes the bulk of each diploma. The programme is chosen by the learner to develop knowledge, skills and understanding of academic and vocational subjects and disciplines. The main learning programme should ensure achievement and progression within individual subjects and areas of learning.

- All 14–16 year olds should continue to follow the statutory National Curriculum at Key Stage 4 and other statutory curriculum requirements.
- Improved vocational programmes that should be developed with the involvement of employers, higher education and other stakeholders to offer vocational learning and which should be delivered only where there are appropriate facilities and teaching and training staff with relevant expertise.
- Assessment at entry, foundation and intermediate levels should replace the existing GCSE-style examination with a predominantly teacher-led mode, though an element of external testing should remain.
- Recognising achievement – young people should enter the diploma framework at the level appropriate to them and progress at a pace appropriate to their abilities.
- Transcripts, providing details of a young person's performance, would be available to employers, universities and colleges. These would provide information about the components and grades achieved, the skills developed, the extended project and wider activities.

For their Neverwinter Nights project, West Nottinghamshire College won the Association of Colleges (AoC) Becta Beacon Award for the 'effective use of information learning technology to enhance teaching and support learning'. The team, which included some learners, redesigned a popular computer game called Neverwinter Nights. They created scenarios that allow learners to participate in a fun learning environment and achieve qualifications. (The program captures the student's actions within the game and generates evidence for the exam awarding bodies.) Comments from students have been positive, and the number of students achieving a pass in application of number has increased since the introduction of Neverwinter (from 90% in 2003 to 100% in 2004).



The outline diploma framework¹⁰

	Diplomas		Current qualifications	
Advanced	Core	Main learning	Level 3	Advanced Extension Award; GCE and VCE AS and A level; level 3 NVQ; equivalent qualifications
Intermediate	Core	Main learning	Level 2	GCSE grades at A*–C; intermediate GNVQ; level 2 NVQ; equivalent qualifications
Foundation	Core	Main learning	Level 1	GCSE grades D–G; foundation GNVQ; level 1 NVQ; equivalent qualifications
Entry	Core	Main learning	Entry	Entry Level Certificates and other work below level 1

Inclusion

The proposals for a new system of 14–19 education are, by their very nature, inclusive. The incorporation of vocational and academic routes into the proposed diploma framework, and the flexibilities of course choice within it, suggests that there is less likelihood of learners being channelled down a predetermined route at an early age towards a point of no return. The proposed diploma framework unlocks learners from age-related qualifications, allows them to pursue learning at their own pace and apply for formal recognition when it is appropriate. Enabling all learners to learn at speeds dictated by their abilities is one of the core means by which to personalise learning for all.

Flexibility across the spectrum is provided by:

- the availability of extension activities
- the incorporation of study at higher education level for high achieving learners
- an entry level diploma which supports learners unable to access full programmes
- diplomas at foundation level or higher.

The ability, over time, to draw out small elements of learning according to a personal pathway goes some way to support the inclusion of those learners who are unable to continuously access education in one location – for example children of travelling families or armed forces personnel.

ICT and e-learning are clearly essential to support the delivery and differentiation of learning resources and the delivery of a flexible pace of education to each learner. This publication puts the argument that technology, and the application of ICT and e-learning, are essential to the successful implementation of 14–19 reform, and in many cases, essential to support inclusion. However, where technology is applied to support 14–19 reform, care needs to be taken to ensure that this does not block or limit access for some learners.

Proposals for reform

The evolutionary timeline

The final report of the working group stresses the need for evolution rather than revolution. It sets out several important milestones that will affect the way schools, and colleges and training providers deliver 14–19 education.

¹⁰ Reproduced from *14–19 Curriculum and Qualifications Reform: final report of the working group on 14–19 reform*, published by the DFES [<http://www.14-19reform.gov.uk/>], October 2004; reproduced with permission



The following section is reproduced, with permission, from the annexes of the final report of the working group on 14–19 reform:

The first five years will focus on the design of diploma framework, modelling, curriculum and assessment systems, and changes to infrastructure. This will prepare the ground for a pilot of the programmes, components and systems that together will make up the diploma framework. After piloting and adjustments, the diploma will be introduced, possibly rolled out over a few years.

2007	a single online qualification/examination registration system to be operational;
2007–08	first teaching of revised qualifications in preparation for diploma changes, including improved vocational components; GCSEs contain more in-course assessment; core components in functional mathematics, functional literacy and communication and ICT are available as stand-alone qualifications; criteria for the extended project available for use; new entry level components available;
2009	restructured advanced components to include more demanding A2 and an extended grade scale and decoupled A1 and A2 available for piloting in preparation for the diploma;
2009–10	full pilot commences;
2010	the adult vocational framework of achievement is fully operational, with credit system in place; and the apprenticeship framework is aligned with the new diploma system;
2013	new infrastructure arrangements in place; and
2014–15	new diploma system starts – a two-year roll out culminating in the withdrawal of qualifications for 14–19 year olds and the introduction of the diploma.

National issues

The place of ICT in the Government's 14–19 agenda

Content

The demand for flexibility in learning inferred by the 14–19 agenda will increase the need for appropriate digital learning content to be accessed 'at any time and in any place'. Curriculum Online is supporting the national market for schools-focused digital learning content. Similar provision for access to post-16 content is being made. For example JORUM (JISC (Joint Information Systems Committee) Online Repository for Learning Materials) will be one of a range of new services offered to further education. The Regional Broadband Consortia (RBC), who manage broadband services for schools, serve as a regional focus for the development of online content and are already providing multimedia services to schools over the emergent national schools network.

Subject associations offer a curriculum-based focus and are working in close co-operation with the DfES and Becta to develop and promote digital content and learning. The museums, archives, libraries and galleries sector is opening up a vast array of resources through the New Opportunities

800 hours of curriculum materials are hosted in the virtual learning environment (VLE) of Hull's City Learning Centre. The Centre is working with schools that are creating curriculum materials and making these, and assessment tools, available to all users of the VLE.

The British Pathe Archive Schools Licence project provides access to 3,500 hours of digitised film over the schools' National Education Network. The BBC and Channel 4 are digitising content for learning. Teachers and students are able to re-purpose the resources – supporting both the individualisation and personalisation learning agendas.



Fund (NOF), Culture Online and other funding programmes. City Learning Centres (CLCs) and specialist schools also undertake a content development role for their school and college audiences. The NGfL, FerI, the Teachers' Resource Exchange (TRE) and Virtual Teacher Centre (VTC) provide access to a vast body of resources, both online and traditional in format, much of which is provided through open contributory processes. The Specialist Schools Trust (SST) provides a support network encouraging the exchange of good practice and resources and the DfES-funded Teachers' TV will enable teachers and schools to learn by sharing practical ideas and information. The work of the Sector Skills Councils (SSCs) is promoting a new range of resources for industry programmes and qualifications. Schools and colleges are developing their own content, often course and programme specific, and making this available to colleagues.

Innovatory programmes are exploring the use of games, simulations, industry applications, virtual reality environments, and contributory databases; and the convergence of television and computing heralds a new phase of multi-sensory, interactive learning opportunities.

Leadership

The role of leadership in a world of partnership calls for new vision, long-term planning and a clear view of the present and future potential of ICT. There is a need for co-ordination between local LSCs, LEAs, schools, colleges, work-based learning providers, Connexions and other stakeholders.

The Centre for Excellence in Leadership (CEL), launched in October 2003, is one of the key national agencies within Success for All. The CEL exists to serve potential leaders at all levels within the learning and skills sector including FE and sixth form colleges, independent providers, adult and community providers and specialist colleges. Their remit is to foster and support leadership improvement, transformation, and build capacity across their sector and provide leadership for employers and learners.

The National College for School Leadership (NCSL) jointly with Becta has adopted many elements of online support in its programmes and courses. These programmes include Strategic Leadership of ICT (SLICT) which is a professional leadership development programme designed by headteachers for headteachers; and more recently teamSLICT (in partnership with the SST). As its name implies, the teamSLICT programme has been designed to address the needs of secondary leadership teams. The programme works to address issues associated with the embedding of ICT throughout the curriculum and across secondary schools. SLICT focuses on headteachers and helps them to review their leadership and consider the possibilities that ICT could provide to broaden and enhance learning in schools¹¹.



11 More details about NCSL programmes can be found online [<http://www.ncsl.org.uk/>]



The Area Inspection Framework (to become Joint Area Reviews in 2005) has been developed to help leaders assess their provision of 14–19 education. It sets out the framework that the local LSC, LEAs and their partners are inspected against in respect of their provision of 14–19 education and training. The focus of the inspections is measurement of the effectiveness and quality of the strategic planning for this phase of education and training, and assessment of leadership and management in relation to the effectiveness of the implementation of the 14–19 strategies in the area.

Assessment

In the 14–19 agenda, assessment is seen as a part of the formative learning process whereby the choices made by students, supported by staff and other counsellors, form decisions about their individual pathway through the qualifications and curriculum framework. This raises a number of issues that must be dealt with consistently by all exam boards, moderators, teachers, lecturers and assessors. The 14–19 proposals would require examination boards to develop:

- transcripts to record achievement that are linked to programme details and references
- rolling assessment to cope with the need for flexible pace
- online assessment to enable the full use of flexible learning locations and to make the process more effective for student, assessors and awarding bodies
- accreditation of 'external' activity
- assessment of Modern Apprenticeships which is clear, consistent and avoids the mountain of paper evidence associated with NVQs.

The use of technology-based systems, such as online simulations and digital video records of practical and



personal interactions, is likely to increase. Colleges and schools increasingly use learning platforms to undertake some form of ongoing assessment, whether through the use of online multiple-choice quizzes or through the submission (and return) of more analytical work online. Local area 'portals' – Middlesbrough, for example – offer learners, parents and providers access to cross-sector learning programmes and information.

The Lowestoft E-learning project is a collaborative venture between Lowestoft college and three local schools. To support the 14–19 phase, the participants aim to implement a VLE across their institutions. Currently, planning includes consideration of the steps needed to enable an informed choice of VLE, the proposed staff development programme, and developing the next stages of the project.



The 14–19 pathfinders and ICT

The projects, which have collaborative delivery at their heart, are designed to test the local delivery of 14–19 education and training in a range of settings. The key aspects being tested include:

- the development of full partnerships between providers
- the offering of a broader curriculum
- enabling a flexible pace of learning
- an entitlement to specialised help to reach level 2 in literacy
- numeracy and ICT post-16
- the extension of work-related programmes and enterprise education
- the use of new vocational options (including vocational GCSEs)
- coherent advice and guidance on progression and career routes.

Although the development and use of ICT and e-learning solutions were not the main thrust of the pathfinders, many are utilising e-learning to support flexible course delivery. Others mention the creation of region-wide managed learning environments (MLEs), the use of e-learning for vocational skills and the creation of virtual workplaces, the use of e-mentoring and e-buddies schemes, video conferencing and the development of online learning materials. Information is available in the evaluation report on the early pathfinder projects at the pathfinder website¹²; and many local government offices support the dissemination of information through a regular programme of conferences and seminars.

Similarly, the ICT Test Bed Project¹³ is examining how effective use of ICT can support the wider government agenda of school reform. The project has identified three 'clusters' each of between eight and eleven schools and a linked post-16 college. The project is concentrating on clusters as a means of fostering greater co-operation between the schools and their local college, and of achieving the project aims.

Surrey S4 group has established a project using the materials from Ferl Practitioners' Programme to provide training for practitioners across the educating sectors. The steering group includes representatives from the local LSC, Adult and Community Learning centres, schools and libraries as well as the Regional Support Centre (RSC). Using the materials as a starting point, the project aims to create a customised ICT and e-learning course for these different audiences while maintaining a consistent message and approach. For example the schools programme concentrates upon the use of learning platforms whereas the further education (FE) programme emphasises active learning.

¹² More information about the 14–19 pathfinders can be found online [<http://www.dfes.gov.uk/14-19/index.cfm?sid=8>]

¹³ More information about the Test Bed Project can be found online [http://www.teachernet.gov.uk/wholeschool/ictis/ict_active/testbed/]



Part II – A place for ICT

Introduction

The Government's vision of 14–19 education relies on every education provider committing to membership of educational partnerships through which learners can be provided with a personalised programme of learning. This local and regional pooling of skills and strengths provides the required broad-based curriculum but is dependent on the learner travelling to access the learning, or the learning travelling to the learner.

In addition, data about the attendance and performance of the learner must move with the learner to all of the host institutions, and potentially to the providers of formal accreditation. Without the effective exploitation of ICT this will not happen with the necessary speed and ease to support learners, practitioners and managers.

It is therefore vital that the systems and structures underpinning the management of learning are sufficiently flexible to enable differentiated pace and place. Such systems and structures must take sufficient account of the needs of partnership and be capable of operating in a context wider than that of a single institution.

The Shropshire 14–19 pathfinder is looking at an LEA-wide VLE across primary schools as well as 14–19 institutions. 14–19 work further exploits technology through video conferencing the use of PDAs and most recently Tablet PCs.

Access, partnership and collaboration

A number of key issues need to be addressed in order to enable effective local partnerships. Most of these issues will be eased by the application of technology.

National infrastructure. The roll-out of broadband services across the UK is increasing the opportunities for online learning in all communities. Schools, colleges and

adult education institutions are well ahead in the plan to provide all education locations in England with broadband services as part of a national infrastructure. The development of a national infrastructure capable of delivering secure services to schools, colleges and all the other partners involved in student support and assessment is a necessity if the required personalisation and assessment regime is to be met.

The interconnection of the 10 RBC networks and the development of the regional FE centres and their networks, for example Western Colleges Consortium (WCC), represents the first phase of this step-change in provision. The emergent National Education Network (NEN) for schools is already offering services with a number of pilots, including video conferencing through a common gateway.

Standards. The goal of unified provision is not one of 'one size fits all'. It is about developing standards and technical specifications that will ensure that all learners receive consistently high ICT support whatever solutions are adopted in a particular locality or wherever they are in the country. Becta is taking a lead role in working with stakeholders to achieve this.

Learning platforms. The use of learning platforms – often referred to as VLEs or MLEs – is increasing. They are becoming more effective as suppliers provide greater flexibility in their operation, and as they become more sophisticated they can work with management information systems (MIS). Staff and management are increasingly familiar with their operation, and with the planning and training required for their successful implementation.

Harnessing technological advances. The use of technologies such as email, mobile phones and personal digital assistants (PDAs) is increasing and teachers are using these successfully to maintain contact with their students. Applications and personalised services available over networks will increase student opportunities to study at a range of locations and help keep software applications stable and updated. Convergence of television and computer systems is being piloted in Hull.



Similarly, Kickstart TV is an interactive, digital TV learning service developed on behalf of the LSC as part of the Government's Widening Participation agenda. Kickstart is designed to test the feasibility and effectiveness of interactive digital television to deliver learning. Convergence of mobile phone and data systems, including multimedia, opens further possibilities. At this point, it is aimed at motivating users to improve their literacy, numeracy and job skills – firstly by offering interactive activities to 'brush up their skills', such as quizzes and games – then signposting them to other learning via the National Advice Line.

Transfer of student data. Currently, much student data is duplicated – and given separately to schools, colleges, Connexions services, and so on. Discussions about a unique learner number and dataset are being facilitated by DfES and LSC through the Managing Information Across Partners (MIAP) group. Some regional pilots are investigating the use of shared baseline information and have shown that shared information is essential for working effectively in partnership.

Student assessment and tracking. This can be a function of a good learning platform. ICT provides an excellent means of formative assessment. However sharing learning platforms between providers, or ensuring compatibility of data between different learning platforms, needs a joint commitment and increases the onus on joint working. Data protection issues come to the fore when data is shared outside a single institution. This is an area in which colleges have much expertise and can share it with schools.

Post-16 e-learning. The challenge will be to facilitate the changes needed to embed e-learning into the broad strategic delivery areas across the sector as set out in the published strategies: 14–19 strategy, *Success for All*, the skills strategy (*21st Century Skills*), and *Skills for Life*.

Student support. This can be identified through appropriate tracking before serious problems occur. The Connexions service particularly needs to have timely access to data. Advice needs to be given to teachers and lecturers supporting online learning, particularly if this is happening at a distance. Online mentoring and web communities are two approaches currently being piloted. Online support, particularly where a student is working through courses at a slower pace, can help to keep that slower pace low key, and avoid the imposition of a 'low status' tag.

Duty of care issues. These are more likely to occur in a college situation, and most likely in areas of vocational training. Appropriate guidelines need to be made available to all staff in all institutions dealing with the 14–16 age group. For vocational training areas that give rise to problems, the use of digital cameras and webcasting are excellent solutions. For example, an

Coventry's 14–19 pathfinder has developed a bank of lessons that can be broadcast live over the internet using Coventry's synchronous e-learning technology project. A team of specialist teachers design and broadcast live lessons to support GCSE and A level English, sociology, ICT, French and German. The technology provides a virtual classroom in which students can join a live class from different geographical locations including from home. Live lessons are teacher led and interactive using the range of tools that the technology provides. Live lessons are recorded and added to an archive so teachers and students can access them outside of the real time lessons.



agricultural college is already using this technology to show activity in the lambing pen to younger students. Transport of 14-year-olds is an issue which regularly arises - a member of staff needs to travel with such students and, where greater distances are involved, a whole or half-day needs to be taken out of the timetable unless the learning travels to the learner.

The sharing of content and access to learning resources. This is another learning platform issue. The use of video conferencing and webcasting technologies can help with remote learning, but they are technologies that require a great deal of support. Similarly, partnerships with local employers flag up issues of network suitability, internet connectivity and data security.

Parity of staff and student experience. On a national level, courses are going to be taught in different locations by different people from different organisational cultures. For example, a vocational GCSE could be taught in a school or college, or conceivably both. Ongoing, formative, online assessment will enable appropriate tracking for learner and practitioner, regardless of location.

Management of collaboration. There is a real need for a central co-ordinator, and 'ownership' of the individual student experience. This student 'management' role is likely to require access to comprehensive data management systems.

Key areas in which ICT can support 14–19 education

Management and leadership	The dissemination of information about national strategies and their influence at institutional level. Managing data related to funding and inspection. Monitoring attendance and providing access to appropriate services. The development of joint ICT strategies.
Administration	The development and purchase of content to be available via regional mechanisms. Making electronic data about student registration accessible across institutions.
Teaching and learning	Enabling cross-institution access to digital learning content and re-purposed content via a learning platform and promoting dialogue about this.
Student tracking	Setting and auditing regional targets; tracking progress against national targets. Enabling cross-institution access to student progress reports via a learning platform.
Student support	Providing access to online information about regional work experience and Modern Apprenticeship placements. Using joint access to a learning platform and to email/practitioner discussion forums to enable liaison on the provision of additional materials and support.
Staff support	Providing and monitoring staff development. Provision of an online forum for sharing good practice and training needs.

Figure 1

With knowledge of the key issues that underpin successful partnerships, it is possible to look at the structures and systems within the individual institution and the forces at a regional level which influence them. These institutional and regional structures will provide the context in which appropriate **cross-sector** systems can be developed and operated in order to offer a broad-based and flexible curriculum. The following section will look at how such systems can help to support this, with reference to the key themes identified in Figure 1.



ICT within the institution

Internal systems in educational institutions predate the 14–19 agenda; they provide a mixture of constraints and opportunities for managers and generally provide only partial solutions to the new requirements for cross-institutional collaboration, online working, and student (and sometimes staff) movement. The technology underpinning them typically includes:

- workstations in suites and/or distributed (although there are not always sufficient resources to meet all the learning needs)
- broadband services as part of regional and national managed networks
- email, video conferencing, intranet and website communications and publishing
- (increasingly) a single, institution-wide learning platform
- (increasingly) laptops and other mobile devices.

Collaboration at the institutional level is critically dependent on collaboration and support at the regional level. Strategy, funding, infrastructure and monitoring are all regional roles which impact heavily in the individual institution.

Following the success of their e-ILP (electronic individual learning plan) pilot, Cornwall College is rolling out the system throughout the college to its 56,000 students. The e-ILP system records learner data from across the college. It operates alongside the MIS system, and the e-registration system, drawing in enrolment and attendance data to present a holistic picture of the student. The system records both educational and pastoral information, for example, qualification details, and health information, and it allows for the recording of initial assessment data, learning style preference and additional support needs.

ICT in the regional management of education

Key partners, including LEAs, local LSC, RBC and the JISC-controlled RSCs, manage existing regional systems. These organisations handle ICT infrastructure, services (such as video conferencing and content development) and have a technical support role; they also evaluate roles and outcomes.

	Institutional systems
Key issues	Existing internal systems
Management and leadership	<ul style="list-style-type: none"> • unified institutional ICT/ILT strategy
Administration	<ul style="list-style-type: none"> • an MIS specific to the institution • local timetabling and registration
Teaching and learning	<ul style="list-style-type: none"> • learning content and planning shared within departments • e-learning emergent
Student tracking	<ul style="list-style-type: none"> • student tracking (but not always shareable between departments to enable the formation of a holistic picture of student performance)
Student support	<ul style="list-style-type: none"> • face-to-face, individual and group student support (usually more efficient in those institutions with institution-wide, technology-based student tracking)
Staff support	<ul style="list-style-type: none"> • varied support systems; funding and training for staff on e-learning



Regional systems	
Management and leadership	<p>Schools and colleges have increased devolution of funding and a remit for strategic leadership at the local level.</p> <p>Regional involvement in strategy development, administration and evaluation is required by the 14–19 agenda and many other government reforms.</p> <p>As national strategies take greater account of regional issues, there is a place for regional bodies to work with institutions to develop regional ICT strategies that support common access to learning materials and systems.</p> <p>With the advent of 14–19 inspection, some local LSCs have joined with LEAs to become accountable for the provision of a 14–19 offer across their region.</p>
Administration	<p>Local LSCs and LEAs are responsible for data collection, and local LSCs are responsible for monitoring activity through evaluation and tracking of multiple funding streams using institutional MIS data.</p>
Teaching and learning	<p>RBC work with partner LEAs to establish appropriate connectivity and provide e-learning content and services for schools. Colleges have a baseline level of connectivity provided through the Joint Academic Network (JANET) and source their own e-learning content.</p>
Student tracking	<p>Local LSCs have targets at level 2 and level 3 and implement strategic area reviews. LEAs monitor schools against benchmark data and intervene where standards slip. Both have an interest in accurate and timely student tracking data. The 'strategic area review' process has the potential to be a powerful integrating force. However, there are plans to rationalise the collection of data about the learner across education providers.</p>
Student support	<p>Access to systems that are wider than the institution such as the Connexions service or employers' forums can be more usefully managed on a regional basis.</p>
Staff support	<p>LEAs, RBCs and RSCs have a role to play in providing staff development and support in the use of ICT.</p>

Local LSCs have responsibility for the funding of post-16 education in schools, sixth-form colleges, FE colleges and work-based education and training, while LEAs have responsibility for the funding and appropriate provision of pre-16 education in schools.

RBC are consortia of LEAs and are the key partners in developing the NEN and supporting the collaborative

use of ICT technologies (such as video conferencing) and media-rich resources between schools.

The JISC RSCs promote and support the use of online learning technologies and resources in the FE sector, HEIs and in adult community learning.

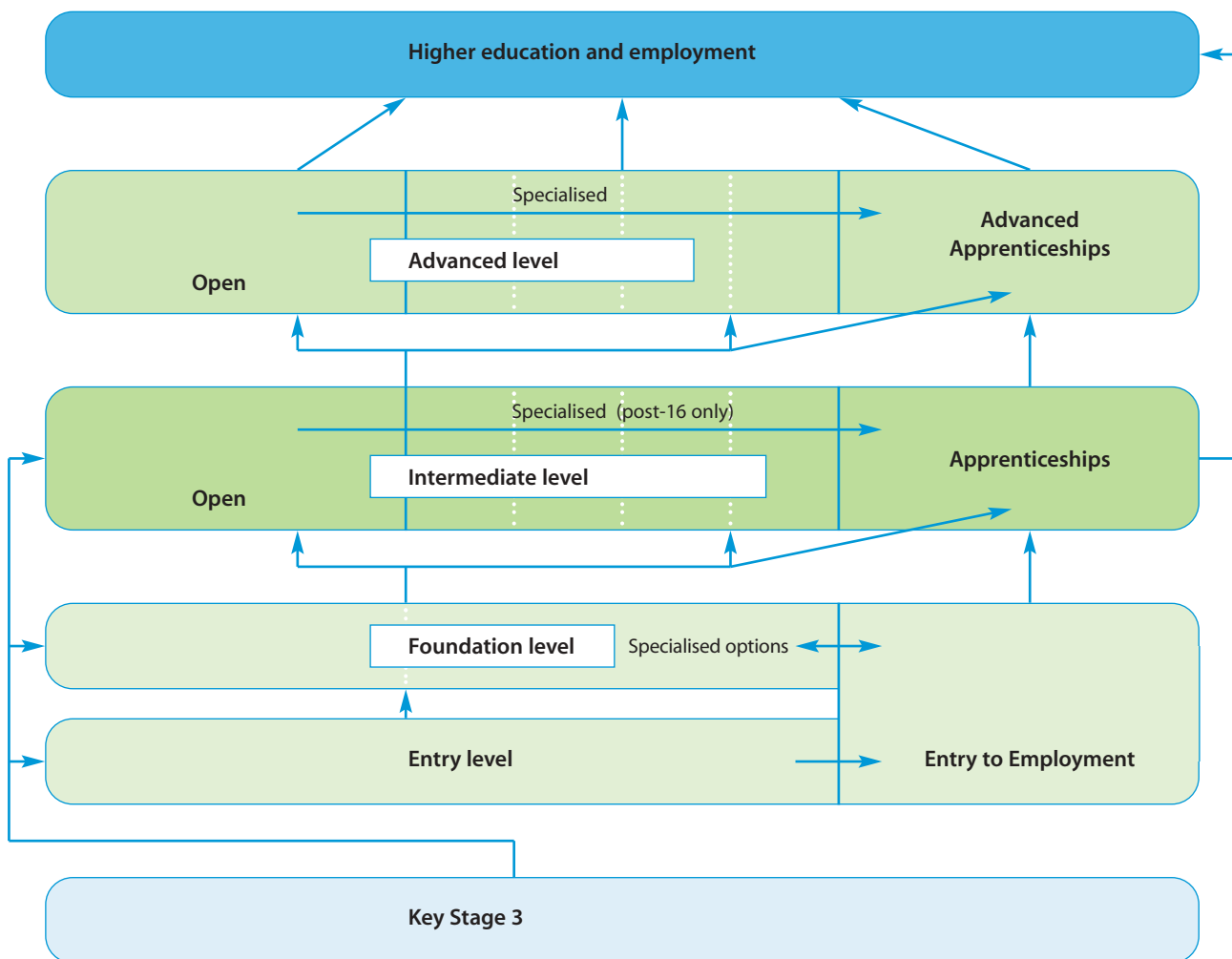


The use of ICT across sectors and institutions will influence the success of 14–19 education

Main progression paths through the 14–19 diploma framework

Young people will be able to follow many different routes through the proposed diploma system. This diagram¹⁴ illustrates some of the most likely progression routes, though others will be possible.

14–19 reforms imply that cross-sector systems will need to be developed and in practice their development will involve partnership working at all levels. These partnerships will not function without technology and may not work well with existing structures. There is additional pressure on the schools sector for closer working or common governance across schools.



¹⁴ Reproduced from 14–19 Curriculum and Qualifications Reform: final report of the working group on 14–19 reform, published by the DfES [<http://www.14-19reform.gov.uk/>], October 2004; reproduced with permission



Some of the existing cross-sector systems comprise:

- joint strategy working through the Increased Flexibility Programme, Aim Higher (formerly Excellence Challenge) and similar programmes
- cross-school management programmes provided by NCSL
- content available across schools (through RBC and LEAs, the VTC, ICT Advice, and the TRE) or across colleges (through national repositories such as Ferl and the NLN Materials Project)
- partnerships between specialist and Beacon schools and other local schools, increasingly supported by technology
- staff support and training across colleges (through ILT Champions/RSC work and the new, UK-wide Ferl Practitioners Programme) and schools (Hands on Support programme, national strategies, and embedding ICT in teaching and learning)
- data transfer between schools and colleges
- some evaluation of provision through 'area-wide reviews' and 'strategic area reviews'.

At a local level, cross-sector systems could be required that include:

- compatible MIS systems – and the timely development of a unique learner ID
- compatible, interoperable and remotely accessible learning platforms, assessment software and student tracking systems
- joint timetabling software and an awareness of all available courses
- a means of transferring and updating individual learning plans among the schools/colleges/work-based providers involved
- for all teachers, access to support and training in the use of new technologies
- access to teaching of specialist subjects (through specialist schools or Centres of Vocational Excellence). This will be especially important in rural areas, where travel to a local specialist school to access an entitlement subject not taught by the student's own school, is impracticable.

At a regional level, cross-sector systems could be required that include:

- joint strategy working between the heads of LEAs and local LSCs
- evaluation of provision – through 'area-wide reviews' and 'strategic area reviews'
- regional database of course provision with details of time slots and locations
- regional database of work placement and Modern Apprenticeship opportunities
- the development of regional timetabling software, which could provide a solution to logistical problems, although this would require robust and truly collaborative partnerships.

It is in these cross-sector partnerships that the goal of interoperability becomes truly essential. Interoperability of learning platforms, or elements of learning platforms, content and content repositories (for example, Curriculum and College Online), registration and tracking systems, assessment systems and information management systems is assumed by the 14–19 agenda. It is not yet a reality.

International comparisons

Comparison with international education systems highlights the focus of other developed countries on the need for dedicated vocational education, particularly for

The video-conferencing initiative, one of several learning technologies initiatives set up by the Department of Education and Training in Victoria, Australia, is an excellent example of partnership working to deliver the school curriculum to rural areas of Australia. The partnership assists schools in remote areas of Victoria to deliver a broader curriculum for all students regardless of their geographical location. It does this by using desktop video conferencing, telematics and shared mobile technology resources. The initiative has won national and international awards for innovative use of technology in educational settings.



the post-16 sector, and significant attempts to provide online learning opportunities in this field.

In Australia and New Zealand, unit-based assessment systems incorporate both general and vocational education and build towards national certificates of achievement; however the 14–19 curriculum is decided at a local level in the separate states or territories.

Certain states or territories in Australia and New Zealand are also offering online distance-learning opportunities to the post-16 sector. For example, the state of Victoria in Australia provides online learning opportunities through the Technical and Further Education (TAFE) Virtual Campus. There are over 1000 modules offered by 90 registered training providers.

Both France and Germany offer targeted vocational qualifications in dedicated vocational education institutions for 16- to 19-year-olds. In Germany the complex system of vocational education also includes apprenticeships, where the vocational institutions provide one- or two-day release programmes for work-based training.

In Denmark 40 per cent of young people take the apprenticeship route starting with a year in college in a relatively broad occupational grouping; during this time they have the opportunity to sample a range of occupations before finally determining in which of 200 trades to specialise. Employers are not identified until after the apprentices start their programme, so in 10 per cent of cases the college provides simulated practical work.

The Swedish school leaving certificate taken at the end of compulsory comprehensive education, is assessed mainly by teachers, with national standardisation through the quality assurance measures taken by the municipality. There are national tests in Swedish, English and mathematics, which are used to calibrate school assessments, but it is not essential for each pupil to take the tests.

The upper secondary school leaving certificate offers a choice of 17 programmes, two of which are academic. Syllabuses are nationally determined, with core and optional subjects. There are compulsory national tests in Swedish/Swedish as a second language, English and mathematics; for other subjects, teachers decide the assessment method and undertake the assessment.

For the apprenticeship programme learners take a school component, based on the upper secondary curriculum and a locally determined and assessed component of 'learning in working life'.¹⁵

¹⁵ Reproduced from the *14–19 Curriculum and Qualifications Reform: final report of the working group on 14–19 reform*, published by the DfES [<http://www.14-19reform.gov.uk/>], October 2004; reproduced with permission



For further information

Through its existing work Becta provides advice and guidance on the use of technology within 14–19 education and is developing support for the new uses of ICT required by the 14–19 agenda.

We are always interested to know how schools and colleges are addressing their local 14–19 issues. For further information, or to contact the 14–19 team, email: 14-19@becta.org.uk

For Becta information on 14–19 strategies and case studies:

<http://www.ferl.becta.org.uk/14-19>

For further information on the 14–19 pathfinders:

<http://www.dfes.gov.uk/14-19pathfinders/>

For information on the use of learning platforms:

<http://ferl.becta.org.uk/display.cfm?page=76>

<http://www.becta.org.uk/research/reports/vle.cfm>

For on-going discussion about 14–19 and ICT, see Becta Talk

http://www.ictadvice.org.uk/index.php?section=il&cat=code=talk_index

For information about leadership issues

http://www.becta.org.uk/leaders/school_leaders.cfm





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