

Transforming Schools with ICT:

The Report to the Welsh Assembly Government
of the Schools ICT Strategy Working Group



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Foreword from the Chair

This report is the product of a year long series of meetings of the task group established by the Welsh Assembly Government to consider how to take forward the use of ICT in schools.

We wanted first to clarify our brief. Our first debate was around the use of the ambitious word 'transform'. We concluded we had to remain with the word; there was no point in being other than aspirational. We were given confidence in this decision by what we knew of the developments in ICT already taking place in schools in Wales. Part of our report exemplifies the imaginative initiatives teachers have taken in the creative use of new technology in their classrooms.

We were also sustained by a belief in the potential of ICT to motivate and engage learners, and the wider school community and to support new ways of learning which will raise standards and reduce disaffection. ICT can open up new possibilities for schools to work and communicate more smartly and efficiently. We were mindful equally of the enormous potential benefit high levels of knowledge and skills in ICT can bring to the economy of Wales.

At the same time we had to recognise that the benefits already being experienced by embedding the use of ICT in the daily work of schools were far from uniformly spread. Our task was to try and identify the practical steps which should be taken over the next few years to move closer to realising the aspirations of the e-confident school and the e-confident learner. Our recommendations have been framed with that in mind.

I would like to thank all those who have taken part in our discussions, those who came to give evidence to the task group, who contributed to the consultation meetings on our interim report and who responded to requests for information and descriptions of good practice. I am very grateful for the work of the DCELLS team who supported and guided the deliberations of the task group. I also express my great appreciation of the commitment of the task group members, who stuck to the job through long and sometimes arduous discussions. I hope this report properly reflects the quality of their input.

Hugh Knight (Chair)
Schools ICT Strategy Working Group

Good progress... but not transformation

Overview of current use of ICT in Schools

It is now seventeen years since the invention of the World Wide Web. Personal computers, gaming devices and mobile telephones have become a ubiquitous feature of modern life. As a society, we are increasingly reliant on digital networks for information, entertainment and services. ICT knowledge and skills have become critical to economic development.

Yet when we asked a group of young people, through the Welsh Assembly Government's Model Assembly programme, for their views on developing the use of ICT in school, they responded:

- 'there's too much technology in classrooms'
- 'teachers don't use it as well as we do'
- 'we should be trusted to manage our own use of the Internet'.

For a working group tasked with producing a strategy for using ICT to transform learning, these messages presented some considerable challenges. Was ICT hindering or enhancing learning and what were the critical underlying factors? How far did these comments reflect contrasts between the ways in which young people use ICT outside school, including socially, creatively and for gaming, and the use of ICT to support learning and teaching within schools? How well did learners' use of ICT, in either context, help them to develop ICT skills which are needed for employment and how could we reconcile the natural desire of young people to be recognised as responsible and capable with the need to protect them from harm?

In our Interim Report which was published in March 2007, we set out the conclusions from key research studies which had been reviewed by the group. These had pointed to:

- increasing access to ICT within and beyond Wales but with clear inequalities remaining, particularly for children from low income homes;
- young people using their computers at home more frequently than at school but not primarily for learning;
- ICT in schools still not used to best effect; practitioners struggling to find time to select and evaluate digital resources, ICT improving traditional teaching styles but not transforming ways of learning, limited use of technology to support

learning beyond the school, inequalities of provision and development within and between schools; and

- opportunities for improving the coordination of advice on e-safety and involving young people in raising awareness.

Other research highlighted the range of factors which needed to be in place to secure the successful use of ICT in schools. The key conclusion of the independent evaluation of Becta's ICT Test Bed project, for instance, was that a high level of ICT equipment in a school or college would dramatically improve performance only so long as the right technology was in place and, significantly, that there was the leadership and enthusiasm to embrace it.

Against this background, we set out to establish what was the current 'state of play' for the use of ICT in schools in Wales, almost ten years after the launch across the UK of the National Grid for Learning.

We drew on several key sets of information:

- case studies of good practice provided by schools across Wales;
- a survey of local education authorities on the ICT services which they provide to schools;
- Estyn's 2007 report on the Impact of Better Schools Fund investment in ICT on standards;
- feedback from schools taking part in the pilot of the Becta ICT Self Review Framework in Wales;
- the Survey Digital Evaluation of NGfL Cymru;
- evidence from specialists in the field and from a series of consultation meetings on our interim report; and
- information already collected by the working group, including the responses to the 2003 ICT Asset Database exercise (the Atkins review) and an overview of the Better Schools Fund spending plans provided by local education authorities.

Practice in Wales

69 examples of good practice in the use of ICT were collected on our behalf by field officers from the NGfL Cymru team in consultation with LEA ICT advisors.

An overview of the case studies identified that:

- many of the exemplars featured work with interactive whiteboards, with a strong focus on the benefits of the technology for supporting collaboration and engaging all learners (and additional benefits where specialist equipment such as digital microscopes were used in combination with 'generic' ICT equipment);

- some schools were using websites or learning platforms (mainly Moodle) to engage with learners and make resources available beyond the classroom and school day. In some cases, teachers were using blogging and chat tools to enable teaching and learning to continue beyond the lesson. Others were making use of podcasts and wikis;
- some of the teachers involved had worked with NGfL Cymru in order to develop their local practice into digital resources which could be shared with all practitioners - and were then used in the school;
- one school had exploited SMS text messaging to encourage more creative writing among boys;
- several schools were making creative use of technology such as Digital Blue cameras to enable learners to review and evaluate their work in PE (as well as more 'conventional' use of digital cameras for art and media projects);
- videoconferencing had been used to support links between small schools and for sharing tuition and learning resources between sixth forms and colleges;
- specialist technology was being used to support learners with additional needs including support for inclusion activities; and
- some schools were providing ICT training for adult learners, including e-safety training for both parents/carers and learners.

Many of these examples focused on specific curriculum subjects and were a testament to the commitment and skills of individual teachers. Others demonstrated a whole-school approach supported by school leaders with a clear understanding of the importance of ICT for raising standards and the ways in which ICT can be used to promote inclusion and extend opportunities for learning for all learners.

A representative sample of these case studies are stored on NGfL Cymru.

LINK: <http://www.ngfl-cymru.org.uk/>

The perceived benefits of using ICT in these examples were varied but pointed to strong common themes:

- the increased engagement of children and young people with their learning when ICT was well used;
- the role of ICT in developing learners' confidence and self-expression;
- the importance of 'real time' activities;
- the need to recognise the wide variety of practice encompassed in using ICT for learning; and
- the potential for ICT to enhance teachers' enjoyment of teaching.

Becta's 2006 and 2007 reviews of the influence of Emerging Technologies on practice referred to:

- the use of weblogs and wikis;
- social networking tools and the 'new digital literacies';
- learning networks and the concept of the personalised learning environment;
- the use of computer games in education;
- individuals creating and sharing their own content; and
- drawing these strands together in the 'future VLE'.

Our review of case studies demonstrated that many of these changes are already present in Welsh schools and that teachers consider that they are having a positive impact on learning. What is more difficult to establish is the extent to which these uses of technology are common practice and which practices impact most on learning and attainment. There are, however, some indicators. Our survey of LEAs indicated that:

- over 50% of schools had a web-based learning environment - although only a minority of schools were actively using 'virtual learning environments' to support learning and teaching;
- there was only limited use of VLEs to support collaboration between institutions;
- teachers accessed their LEA intranets for information but not, generally, to share their own practice; and
- just over half of primary and special schools conducted an annual staff skills audit including ICT but this figure dropped to a third for secondary schools.

At the same time:

- over half of secondary schools had videoconferencing capability and data from UKERNA shows rapid growth in the use videoconferencing since the introduction of the JANET service to schools in 2006;
- 44% of LEAs reported the use of digital cameras or videos;
- interactive whiteboards are widely available in schools in Wales with many schools having enlarged on the Welsh Assembly Government's major investment in this equipment in 2001-02.

Research into the use of interactive whiteboards (IWBs) has found consistently that the length of time learners have been taught with the IWB is the major factor that leads to attainment gains. This appears to be the result of the IWB becoming embedded in teachers' pedagogy. For the technology to make a difference,

teachers need the confidence and skills to use it. When teachers then have had sustained experience (perhaps exceeding two years) of using an IWB they are able to change their teaching practices to make best use of its facilities.

Standards

Estyn's March 2007 report on ICT also commented on the increased use of virtual learning environments in schools, the positive impact of interactive whiteboards in lessons, and ways in which "teaching and learning in specific subject areas are benefiting from the thoughtful, well-planned use of specialist software and equipment such as:

- digital microscopes and datalogging in science;
- digital sewing machines in textiles;
- computer aided design and manufacture packages in design and technology;
- musical composition software and digital keyboards in music; and
- digital video cameras within PE."

Estyn's overall conclusions were that standards of achievement in using ICT were continuing to rise across Wales but that standards were still higher - and were now improving faster - in primary schools. ICT as a key skill was still an issue in secondary schools and that there was undue variation in attainment within and between schools: "In the majority of primary and special schools, good progress has been made since 2002 in ensuring that all staff have the appropriate levels of skills and confidence to use suitable ICT resources in their teaching... senior managers and ICT co-ordinators carry out regular monitoring of teaching and learning to ensure that teachers implement plans in class and to identify aspects that were successful in facilitating learning and those that were not."

"Inspectors found similar good practice in a minority of secondary schools. More often ...good practice is limited to those departments where the teachers understand the benefits of ICT, and are enthusiastic about it in their lessons. In other departments, good practice is absent or limited to one or two teachers in the departmental team".

Proportion of classes in which standards in use of ICT across the curriculum were:			
	good or very good	grade 1 or 2	
	2001-02	2004-05	2005-06
Primary	50%	59%	66%
Secondary	20%	50%	51%

Source: Estyn

Estyn identified factors contributing to lower standards including:

- the range of opportunities to use ICT being confined to particular classes or certain subjects;
- teachers' lack of confidence with particular aspects of ICT;
- too little account taken of learners' use and knowledge of ICT outside the school; and
- teachers not always having high enough expectations of the level of skills that learners could achieve.

Providing effective continuity in ICT between Key Stage 2 and Key Stage 3 was still an issue for many schools. It was also noted that:

- some LEAs placed greater emphasis on supporting the development of ICT in primary schools than in secondary schools;
- many secondary schools gave inadequate attention to building progressively on learners' experience of ICT in primary schools; and
- there was wide variation within and between secondary schools in the extent to which subject departments effectively developed learners' ICT skills.

The working group also noted that entries and achievement in ICT GCSE - as distinct from the use of ICT to support learning across the curriculum - had increased significantly following the launch of the National Grid for Learning programme in 1998 but showed signs of reaching a plateau in recent years.

Entries and achievement in ICT GCSE: (includes pupils of all ages)			
Number of entries in ICT			
	1999/2000	2004-05	2005-06
Boys		6,205	6,312
Girls		4,824	4,988
Pupils	8,366	11,029	11,300
Percentage of entries achieved at A* - C			
	1999/2000	2004-05	2005-06
Boys		62.0	60.7
Girls		70.0	71.5
Pupils	57.0	65.5	65.5

Percentage of entries achieved at A*- G			
	2001/02	2004-05	2005-06
Boys		96.8	96.5
Girls		97.4	98.2
Pupils	96.0	97.1	97.2

Source: Welsh Examinations Database

Girls were achieving higher standards than boys but with significantly fewer girls entering for ICT examinations.

ICT skills and the economic context

The recently published Skills at Work Survey 2006 stated that over 71% of people surveyed said that their own job involved "the use of computerised or automated equipment". 75% of respondents said that using a computer was important or essential in their job - although the figures were much lower for use of email and Internet. The report also noted that "The usage of computing skills continues to be associated with substantial pay premia in the labour market. Compared with otherwise similar jobs that do not use computers at all, those which use them in a 'complex' manner - for example, using statistical software packages - pay an estimated 18% premium for females, 12% for males."

Importance of Use of PC or Other Types of Computerised Equipment to Job, 1997-2006					
Number of entries in ICT					
	Essential	Very important	Fairly important	Not very important	Not at all important
	(%)	(%)	(%)	(%)	(%)
1997	30.8	14.8	12.2	11.7	30.5
2001	39.7	14.8	13.8	10.5	21.1
2006	47.2	14.7	11.6	9.4	17.0

Source: Skills at Work Survey 2006

Intriguingly, the increase in the use of advanced technology was found to be fastest among older employees. The report noted that "over the period 1986 to 2006 as a whole, the gap between the young and older

employees has disappeared. However, both groups still lag behind employees aged 25-44 years old.”

However, ICT skills were deemed to be less important in employment in Wales than in other parts of the UK. Estyn’s 2007 report Transforming Schools drew attention to the importance for Welsh economic growth of promoting more rapid development of advanced skills, including ICT.

Access

One of the key factors determining the effective use of ICT is the extent to which teachers and learners have regular and reliable access to the technology.

ICT provision has increased substantially since the launch of the National Grid for Learning in 1998-9. At that point, it is estimated that on average each computer in schools in Wales was shared between 14 learners. The most recent figures suggest that the current ratio of learners to computer across Wales is:

Primary	8:1
Secondary	5:1
Special	2:1

Source: Welsh Assembly Government

These figures do not take account of other types of ICT investment such as whiteboards, wireless networks and digital cameras. However, it is not known how many of the machines counted for these figures are actually available for teachers and learners to use. The average figures conceal significant variations in levels of provision between LEAs and between schools.

Careers Wales Online

One area where these differences in access is already seen to be having an effect is in the use of Careers Wales Online, the Welsh Assembly Government funded service which helps young people plan and manage their learning goals. Anecdotal evidence suggests that many learners are unable to access Careers Wales Online when needed, for instance, in the context of PSE, WRE and CEG.

Connectivity has also improved. LEAs reported that all schools had a connection to the Internet by December 2002. Since then, over 98% schools in Wales have been connected to the broadband Lifelong Learning Network with bandwidth of 2mb or higher (primary and special) and 8mb or higher (secondary). Our LEA survey indicated that over 85% of schools now have a network point in every classroom -

although 10% of classes in primary and special schools are not connected. The use of wireless networks has increased with 20% of primary schools and 43% of secondary schools now having some wireless capability within school grounds.

As with access to hardware, access to broadband connectivity is not equal around Wales. In many cases, schools are sharing connections with other institutions and in these schools connectivity in individual classrooms is actually quite low. Others have asymmetric (ADSL) connections which restrict use of services such as videoconferencing. Bandwidth can be maximised with caching technology and careful planning of local networking but most primary and special schools are not equipped for this. Several schools in rural areas still cannot be connected to the LLN at an economically viable cost.

Figures from local education authorities indicate that, across Wales, 10% of primary schools, 3% of secondary schools and 11% of special schools are not connected to the LLN with the recommended levels of bandwidth.

At the same time, there is a significant minority of children and young people who do not have access to the Internet at home.

Support for schools

ICT is not a one-off cost. Desktop computers provided for schools in 1998-99 would now be considered obsolete in most organisations. Equipment needs to be maintained, and replaced. Connectivity charges are an annual burden on schools and authorities and as our understanding of the potential of ICT increases, so do the demands which we wish to place upon our infrastructure.

Primary and special schools do not generally have their own technical support and under the terms of the Teachers Workload Agreement teachers may not be required to undertake technical support themselves. Most secondary schools have a full time ICT technician or network manager.

LEAs in Wales provide a mixture of technical support, curriculum support and training to schools, much of which has until now been financed from GEST (Grants for Education Support and Training) and the Better Schools Fund. Increasingly, this funding is targeted towards improving the use of ICT rather than increasing or maintaining levels of equipment.

Our survey of LEAs confirmed the impression, set out in our Interim Report, of varying levels of support being available to schools across Wales. For instance, the number of schools served by each ICT technical or curriculum support officer ranged from more than 80 to fewer than 10. In terms of the average hours of support provided, the highest level of support amounted to one hour per school

per week and, as of March 2007, one authority no longer had an ICT advisory service. Levels of support varied between authorities with similar numbers of schools.

'Highlights' from the survey included:

- over 80% of LEAs provided an intranet for schools;
- over 80% of primary, secondary and special schools used their LEA intranet to access resources (although less than 30% of schools used the network to share resources with others); and
- 76% of LEAs reported having Acceptable Use Policies for the use of Internet (including publication of learner photographs) and email across all their schools. The corollary is that a quarter of authorities do not.

Authorities may, however, manage internet access filtering and email filtering centrally as well as providing other network management services. They will also provide support for new initiatives, for instance the introduction of whiteboards, PDAs and other technology into schools.

Professional Development

One of the statutory requirements which must be met in order to work as a qualified teacher in maintained schools is that a trainee must be assessed as meeting the Qualified Teacher Status (QTS) Standards. The QTS Standards are outcome statements that set out what trainees must know, understand and be able to do at the end of an Initial Teacher Training (ITT) course or employment based ITT programme. There are general QTS requirements which apply to those aiming to teach ICT - including the requirement for a secure knowledge and understanding of the subject they are trained to teach. For all teachers there are overarching QTS requirements that they know how to use ICT effectively, both to teach their subject and to support their wider professional role.

One of the issues raised with the working group during consultation on its interim report was the variation in the level of ICT training offered by ITT providers in Wales. We have also been advised that ICT is one of the most common areas for action identified for early professional development of teachers. In many cases, this may reflect the difficulty of compressing a wide range of activities into the one year postgraduate training programme.

The General Teaching Council for Wales is leading on the development of a Professional Development Framework for teachers in Wales. The Council's proposals include formalising national programmes and arrangements in Wales so each of the key professional milestones in a teacher's career have a national programme of professional development linked to them, underpinned by professional standards. Teachers aspiring to excellence in the classroom or as middle leaders would be able to take part in the Chartered Teachers programme, which would include an optional element on ICT.

Aside from QTS standards, the GTCW Framework would not directly address the classroom use of ICT, or the management of ICT across schools, as part of the formal requirements for professional standards. However, the Council has made proposals for ensuring the availability of high quality training for teachers across Wales, which would include ICT training. These are based around the quality assurance of providers - including LEAs - and a voluntary Code of Practice.

In our survey of LEAs, 71% of authorities indicated that they provided some form of ICT training to headteachers. In one case this was linked to formal accreditation. Authorities also provide training to teaching and support staff and are developing a range of local programmes for practitioner development as well as initiatives focussed on promoting good practice.

As we noted in our Interim Report, however, there are no agreed benchmarks for assessing the quality, effectiveness and impact of the ICT training on offer across Wales.

Curriculum and Assessment

The Welsh Assembly Government intends that, from 2008, there will exist in Wales a single coherent framework for curriculum, assessment and qualifications for learners aged 3 -19. The agenda for the development of this revised curriculum and assessment framework for Wales was based on the Minister's acceptance of the key recommendations of the *Review of the school curriculum and assessment arrangements 5-16: A Report to the Welsh Assembly Government April 2004*.

The revised arrangements aim to:

- be learner-centred and skills focussed;
- build effectively on the Foundation Phase; and
- link effectively with the 14-19 Learning Pathways programme.

Some key Curriculum Developments in Wales relating to ICT

Skills Framework

The Skills Framework underpins all the subjects of the National Curriculum and aims to ensure a coherent approach to learning and progression. The inclusion of ICT within this Framework recognises its importance for all learners, and the need for ICT to be firmly embedded across all learning. Guidance will focus on continuity and progression in ICT, thinking, communication and number for learners from 3-19 and beyond.

Personal and Social Education

The revised Framework for PSE for 7 - 19 year olds reflects the continuum of personal and social development from the Foundation Phase to the 14-19 Learning Core. Within the framework learners are expected to develop their application of ICT skills, their understanding of the benefits and risks of using ICT and an understanding of the importance of adopting safe and legal practices when using ICT.

Foundation Phase

The proposals in the Welsh Assembly Government's document *The Learning Country: Foundation Phase 3-7 years* included developing a curriculum that linked and strengthened the principles and practice in the document *Desirable Outcomes for Children's Learning Before Compulsory School Age* with the programmes of study and focus statements in the Key Stage 1 National Curriculum.

In the Foundation Phase, it is recognised that ICT should be holistic and integral to all seven areas of learning. Children's ICT skills, knowledge and understanding should be developed through a range of experiences which involve them; (i) finding and developing information and ideas, and (ii) creating and presenting information and ideas.

Key Stage 2 and Key Stage 3

A revised subject Order for ICT at Key Stage 2 and Key Stage 3 in the National Curriculum in Wales will be implemented from September 2008. The revised Order is intended to be manageable for schools to reflect the focus on skills development and application and be relevant to the twenty-first century. It will also emphasise the importance of the safe use of ICT in the programme of study for each key stage. 'Level descriptions' have been revised to clarify progression. ICT may also contribute to the 'options' part of the Welsh Baccalaureate Qualification framework, at all three levels. The options, which are also a requirement for the Welsh Baccalaureate Qualification, can be chosen from any of the external qualifications, at the appropriate level, that are approved for use in Wales.

Current Developments in Qualifications

Key Stage 4

The *Review of the school curriculum and assessment arrangements 5 -16 (2004)* recommended that "...ICT should become part of the mandatory curriculum at Key Stage 4. Schools should make provision that allows all students to develop and apply their ICT skills 14 -16." Schools would be expected to enter all those students who could benefit from it for an appropriate qualification in ICT, which could be Entry Level, Key Skill, GCSE or a specialist qualification in ICT.

The arrangements allow for access to these qualifications by a range of pathways including cross-curricular approaches and timetabled slots, giving learners access to appropriate assessment and accreditation of their ICT capability. The Welsh Assembly Government will be publishing guidance for schools including information on the range of qualifications which could be offered to students.

GCSE

As part of the Welsh Assembly Government's 14-19 reforms, GCSE ICT qualifications are being reviewed. Revised GCSE ICT specifications will be in place for teaching from September 2010. Particular attention is being given to ensuring that young people attaining Grade C and above have effective capability in a clearly specified range of ICT skills. To ensure changes are based on sound evidence, a pilot qualification has been running since September 2007.

GCE

Subject criteria for GCE ICT and GCE Computing were reviewed in 2006 and awarding bodies have developed revised specifications for teaching from September 2008. These specifications are based on a four-unit structure (two AS units and two A2 units). Whilst reducing the burden of assessment, the revised specifications are designed to stretch and challenge students and a new grade, A*, has been introduced at A Level to report on the achievement of the most able.

Key Skills

The current range of Key Skills in ICT qualifications will be available (for registration) until August 2010. Work is continuing on the convergence of Key Skills and Basic Skills, to produce a single set of standards covering the range Entry Level 1 to Level 4.

The Welsh Baccalaureate Qualification

The use of ICT is a central feature of the Welsh Baccalaureate Qualification, both within the programme of learning, and as a method of delivery and learning which permeates the whole qualification.

Key Skills, including ICT, form part of the Core Certificate of the Welsh Baccalaureate Qualification at all levels. Depending on the programme followed, ICT may also contribute to the 'options' part of the Welsh Baccalaureate Qualification framework, at all three levels. The options, which are also a requirement for the Welsh Baccalaureate Qualification, can be chosen from any of the external qualifications, at the appropriate level, that are approved for use in Wales.

The working group acknowledge the review of the school curriculum and made its own contribution to the consultation in March 2007. In its response it welcomed the increased emphasis placed upon e-safety and made comments upon the progression within the level descriptions. The working group also supports the commitment to accrediting ICT skills at Key Stage 4.

However, the majority of the group believe that the profile of ICT should be elevated to that of a core subject. This would support our challenging aspirations for monitoring all levels of ICT capability and establishing a minimum ICT entitlement in all classrooms and settings across Wales.

ICT may also be used to facilitate the assessment of learner's performance, especially at Key Stages 2 and 3:

- a forthcoming requirement for teachers to maintain skills profiles (for year 5 from the school year 2009/2010) will be supported directly by e-technology linked to schools' Management Information Systems; and
- the 2007 roll out of external moderation of Key Stage 3 teachers' understanding and application of standards has demonstrated how technology can be used effectively by schools to provide sample evidence. It is anticipated that greater use will be made of this, across a range of subjects, in 2008 and beyond.

Awarding Bodies are developing and implementing an increasing range of e-assessment schemes, tailored to the needs of particular specifications at Key Stage 4 and beyond. These range from timed on-screen tests to e-portfolios of evidence for internally assessed, externally moderated coursework.

The working group acknowledge the move toward e-assessment which increases the need to reach appropriate levels of provision and access whilst promoting the effective use of ICT in all schools.

Staff will also need appropriate training and support, not only in administering the assessments but in making use of electronically stored data to impact upon individual achievement and attainment. Another issue for schools in Wales (and elsewhere in the UK) is the lack of a single, standard way of sharing data between different management information systems.

The Welsh Assembly Government's main mechanisms for the provision of learning resources for schools are:

- the commissioning of curriculum resources, including digital resources, by the Qualifications and Curriculum Group (formerly ACCAC);
- the NGfL Cymru website; and
- the Bilingual Resources Unit for post 16 vocational resources.

Classroom Resources

One of the objectives included in the Welsh Assembly Government's education policy document *The Learning Country: Vision into Action*, is to "continue to support the development of Welsh-medium and bilingual classroom resources". This work is mainly carried out within the Qualifications and Curriculum Group of

the Welsh Assembly Government's Department for Children, Education, Lifelong Learning and Skills (DCELLS). The materials commissioned are classroom materials for learners that the commercial market fails to provide:

- Welsh language materials to support the teaching of Welsh as a subject and all other subjects through the medium of Welsh; and
- bilingual (Welsh and English) materials supporting aspects of the curriculum that are specific to Wales.

Resources are commissioned across the whole range of curriculum areas, for learners of all abilities from Foundation Phase to A level. The resources cover all types of media, being mainly print, but including a variety of ICT based media. Approximately 40-50 new projects are commissioned each year from the available £2.1m budget and 200-300 titles are published annually as a result of the commissioning process. Resources are commissioned on the basis of needs identified by teachers and in discussion with the WJEC, NGfL Cymru, the Welsh Books Council and BBC Wales.

The DCELLS Bilingual Policy Branch carries out additional commissioning of Welsh medium and bilingual teaching and learning resources for post-16 vocational subjects:

- agriculture
- business and ICT
- drama and performing arts
- child care
- health and social care
- tourism and leisure.

For both these DCELLS programmes, resources are increasingly being commissioned in digital format including CD ROMs, DVDs and online materials. The online resources are hosted by NGfL Cymru.

The NGfL Cymru website was first launched in 2002 with the objective of providing bilingual (Welsh and English) content for schools, teachers and learners in Wales. The initiative was intended to draw together materials which had already been developed locally by schools and LEAs, to stimulate commercial development of resources for Wales, and to give teachers the opportunity to develop their own ideas into digital resources which could be shared across Wales. Resources were expected to satisfy quality assurance requirements and to be freely available for use in schools in Wales.

By December 2006, the NGfL Cymru team had developed 1,695 resource packs for schools, incorporating 7,495 individual activities of which 4,965 were available through the medium of English and 2,980 were available through the medium of Welsh.

Following an independent evaluation of NGfL Cymru and a European procurement exercise, the contract for the future management and development of NGfL Cymru has (again) been awarded to the Welsh Joint Education Committee with significant changes to the core contract requirements:

- the target 'audience' for the website now covers all practitioners working - in a variety of settings - with learners aged 3 to 19;
- the clear focus for the site is on supporting practitioners and providing materials which can be used in the classroom or across VLEs;
- the requirement explicitly recognises the introduction of the Foundation Phase, as well as the importance of vocational education and the needs of practitioners working in further education;
- the site will continue to provide quality assured resources to support delivery of the current and revised National Curriculum;
- there is an increased emphasis on promoting and sharing good practice and on supporting practitioner communities, closely aligned with the Welsh Assembly Government's aspirations for pedagogy; and
- there is an intention to develop a service alongside, and eventually integrated with, the new NGfL Cymru user forum which will allow teachers to upload their own locally developed materials which have not been quality assured.

Although usage figures for the NGfL Cymru website have risen (now c.9000 visits per day) there is still relatively low awareness of the service among teachers in Wales. Estyn's 2007 report on ICT noted that none of their inspectors had observed NGfL Cymru resources being used in the sampled schools. Our review of case studies, however, evidenced the value attached by teachers and learners to resources which had been developed for NGfL Cymru within their own schools.

NGfL Cymru is being positioned as a service for teachers and other practitioners, not as a provider of resources for independent use by learners (although in practice this may overlap). Resources of this type were until recently being developed for learners in Wales as part of the BBC Jam project.

As part of *laith Pawb*, the Welsh Assembly Government's National Action Plan for a Bilingual Wales, the Welsh Language Board was asked to draft an IT Strategy for Welsh. This strategy, launched in April 2006 notes the future developments needed to ensure the language's place in technology. The Board has commissioned and created many ICT products which will help schools (details of which can be found on their website, at the end of this chapter).

The Board aspires to a situation where schools offer a proactive language choice via IT interfaces of all kinds. The main interfaces available in Welsh thus far are Microsoft Office 2003, Windows XP and OpenOffice, all free of charge. The Board recently announced that free language interface packs would also be available for Windows Vista and Office 2007. The free Language Control Centre facilitates this, and also easy switching between languages, ideal for bilingual situations and homes.

E-safety

Becta research identified¹, in 2006, that many schools are not being provided with up-to-date support and advice about e-safety. It reported that: "The most common breach is the viewing of unsuitable online material. However, the research found that where learners were taught about e-safety, all breaches of e-safety were reduced." It also concluded that; "teachers ability to deal with breaches of e safety varies according to the training and support they receive, the policies and procedures in place in schools and the effectiveness of technical support."

Online safety is being taken into account in the review of the National Curriculum in Wales. In addition, the Welsh Assembly Government has already supported a range of activities to raise awareness of e-safety issues for children and young people including work with WISEKids, the Children's Commissioner for Wales and the Child Exploitation and Online Protection Centre (CEOP). These included:

- An A4 booklet providing advice to parents/carers in the Broadband Wales school packs which were issued to primary schools January 2006;
- CEOP workshops for police-school liaison officers; over 130 individuals have been trained and accredited to deliver CEOP's education and awareness programme Think U Know in Welsh schools last year; and
- Promoting Personal Safety in PSE, a curriculum resource pack based on work undertaken in secondary schools by the NSPCC and including basic information for learners about the nature and extent of sexual abuse on the Internet in order to help keep themselves safe.

Recent incidents of cyberbullying, and ongoing concerns about issues such as illegal downloading, demonstrate that it is important to promote the safe and responsible use of ICT to children and young people. Discussions with LEAs have indicated a strong demand for practical guidance for schools (and authorities) on how best to support e-safety - as well as to address health and safety concerns arising from the deployment of technology such as wifi in schools.

¹ "E-safety: the experience in English educational establishments", Becta 2006

Summary

In our Interim Report we said that there was much to celebrate in terms of what had been achieved with ICT in Wales and this is true. The case studies of good practice, in particular, have highlighted the considerable professional commitment in many schools to getting the best out of ICT in order to support their learners. However, the key messages for us have been:

- the need to address the striking inequalities in the provision of hardware, connectivity and technical/advisory support for schools across Wales so that regular, reliable access for teachers is the norm.
- the need to ensure that learners are not disadvantaged through lack of access to technology beyond school.
- that current best practice should become the standard. We, therefore, need to ensure that all teachers have the skills and confidence to use technology effectively in the classroom and that they have access to high quality training in the pedagogical applications of ICT and to examples of best practice. They also need to be aware of the health and safety and online safety issues presented by ICT.
- that further innovative practice be encouraged and disseminated. ICT is only used to best effect where there is an environment that supports it; to create this environment. School managers need to exercise leadership and include the promotion of ICT in school improvement planning. Practitioners need to be encouraged to develop further innovative practice.

In the next section, we explain how our review of ICT practice and provision in Wales has helped shape our aspirations and objectives for the School ICT Strategy.

Further information

<http://new.wales.gov.uk/>

<http://partners.becta.org.uk/index.php?section=rh&rid=13768>

<http://www.ngfl-cymru.org.uk>

<http://www.microsoft.com/uk/office/cymruwales/>

www.welsh-language-board.org.uk/technology

<http://publications.becta.org.uk/>

<http://www.esrc.ac.uk/>

<http://www.bwrdd-yr-iaith.org.uk/>

From Evidence to Action

Defining aspirations and priorities

In our interim report, we identified the following key priorities for the strategy:

- fully implementing the developments already started;
- achieving consistency across Wales; and
- doing more to transform learning and organisational effectiveness.

In light of the dialogue and written responses which followed publication of the report, and our further review of ICT provision and practice in schools, we have concluded that action in these areas remains critical to the successful use of ICT in schools, but we need to challenge ourselves further:

- implementing fully the developments already started, with high expectations of the standards to be achieved by all;
- achieving both equity and quality; and
- working together for transformation.

The Welsh Assembly Government, local authorities and schools have all invested significantly to improve ICT provision in schools and this has clearly had an effect. However, provision still varies unacceptably between schools and authorities, and many schools in Wales still do not have access to a robust broadband infrastructure.

The driver for change is expectation. We should have high expectations of what learners can achieve with ICT, taking account of the skills they are already acquiring outside school, and we should also have high expectations of teachers. We need to ensure that there is equity, not only in ICT provision, but in the training and support which are provided to school staff, so that all staff can work to the same high levels of competence and confidence.

ICT should be a vehicle for promoting inclusion, not for widening gaps in opportunity and outcomes. We should recognise that not all learners have access to ICT outside schools and are potentially at a disadvantage because of this. We should maximise the potential of ICT to enable learners with additional learning needs to make greater progress.

We should be able to measure the effect which ICT is having and celebrate the successes of both schools and learners.

We need to ensure that we are making effective use of ICT to analyse and share data - especially between primary and secondary schools - and to promote “collect once, use many times, by all” methodologies.

Technology brings the potential for change but it is people who make change happen. In schools, there is a need for clear vision and leadership which understands the potential of ICT for supporting attainment across the curriculum, and for improving planning, management and communication within and beyond the institution. At the national level, we need to ensure that ICT is a recognised contributor to national strategies, in particular for Pedagogy, 14-19 Learning Pathways, community-focussed schools and Inclusion.

Across Wales, we need to improve joint working, so that we can lend each other strength in supporting schools and maximise the benefit of our shared investment in ICT.

The question we were asked most often in consultation this spring was about funding for improvements. Part of our remit was to provide costed recommendations for consideration by the Welsh Assembly Government and by local authorities in the context of their annual budget planning rounds. Our estimates of the costs of implementing the recommendations in this report are set out in Annex B to this report.

Our view is that there is a need for continuing and enhanced investment in ICT for schools. We must also recognise that as ICT is increasingly a part of normal life outside school, so it should be regarded as a normal part of life within school. There is responsibility nationally, locally and in schools for ensuring that children and young people have appropriate access to ICT for learning.

Against this background, we have revised our overarching vision and aspirations for schools using ICT in Wales as follows:

Our Vision for Schools

Competent Learners

All learners are able to use technology safely, critically and responsibly to work independently and collaboratively to enhance their learning and attainment, regardless of ability or prior knowledge.

All learners are able to select from and use a range of alternative and appropriate bilingual tools to solve real, meaningful and challenging problems using a variety of strategies.

All learners are able to effectively use ICT across the curriculum and transfer their ICT skills to new situations in order to contribute positively to the economic development of Wales and compete in the world of work.

All learners are provided with a means to measure progress and inform them how they can improve learning through the use of ICT - thus promoting and reinforcing life long learning.

All learners to have the ability to learn basic information literacy, enabling them to make informed decisions over content they may be directed to in an uncontrolled environment (e.g. Internet).

Empowered teachers

All teachers use ICT safely and effectively, as an integral tool to support high quality blended learning, teaching and assessment when appropriate.

All teachers have access to high quality resources, in Welsh and English across the curriculum, and are able to adapt these or produce their own resources to suit a diverse set of learners.

Teachers share good practice with other practitioners through the efficient and effective use of ICT.

ICT is an integral feature of continuing professional development.

Teachers have access to a support centre able to advise on the effective use of technology for learning and teaching and assessment.

Teachers make appropriate use of ICT to track learners' progress and set challenging and meaningful targets across phases, classes and year groups.

Effective schools

All school leaders are committed to effectively implement the role of ICT in transforming learning and teaching to raise standards.

ICT is used effectively and appropriately in learning and teaching in every lesson and learning setting.

Access to learning, learning opportunities, resources and information is available to all learners, parents/carers and practitioners through a robust and reliable technical infrastructure capable of evolving to meet technological change.

Access to high quality, sustainable advisory, technical and management support is available to enable schools to maintain, investigate, implement and develop existing and evolving applications of ICT to best meet learning, teaching and management needs.

All schools make effective use of ICT to support differentiation, continuity and progression for all learners.

There exists a robust infrastructure accessible to all learners, parents/carers and teachers with support readily available for all.

Life long learning is supported by the active involvement of parents/carers and the wider community through the effective use of ICT.

All providers have access to a support centre able to advise on the effective use of technology for learning, teaching, management and administration.

And the Strategic Objectives to fulfil this Vision:

Competent learners

High Expectations - set high and challenging expectations for all learners within and, where appropriate, beyond the National Curriculum.

E-safeguarding - provide joined-up information and support to promote the safe and responsible use of ICT and protect children and young people from harm.

Empowered teachers

Effective pedagogy - set clear professional standards for practitioners and provide high quality support for the ICT capabilities of the whole school workforce.

Effective schools

Extending access - develop and ensure availability of bilingual learning platforms in Wales across a robust ICT infrastructure, providing equality of access to ICT in schools and extending opportunities to all learners including those with additional needs.

A culture of self-evaluation - improve the strategic development of ICT in schools through robust, whole-school processes of review, planning for improvement and assessment of impact.

The following sections set out the key actions which we believe will help achieve these objectives.

Organisational effectiveness

The remit of the working group made specific reference not only to transforming learning but to 'school organisation'. We have defined organisation broadly and it includes:

- the management of the ICT 'estate' within schools;
- planning the use of ICT across the curriculum;
- the use of ICT to support school administration;
- the use of ICT to monitor learning outcomes and plan effective progression and transition;
- use of ICT to support learners' access to learning outside school (including homework assignments);
- attendance and behaviour (including e-safeguarding);
- links between schools and between schools and other providers;
- the use of ICT to support data analysis and sharing especially between primary and secondary schools;
- support for small rural schools and split-site schools;
- links between practitioners, and learning communities;
- communication with parents/carers;
- support for community learning;
- engagement with local businesses and employers; and
- schools' own online presence - school websites.

There is, in fact, no 'clear blue water' between the use of ICT for learning and the use of ICT for managing schools. Our recommendations address both issues together. In some instances they are directly concerned with promoting greater integration between the tools used for school administration and support for learning, teaching and assessment. As stated earlier, it is important to recognise that schools will not be able to get the best use from ICT unless this is part of an integrated approach.

As action is taken to fulfil the Welsh Assembly Government's objective that all school buildings should be fit for the purpose of education in the twenty-first century, it is essential that a criterion for capital investment should be that the ICT requirements of a modern school are taken into account at the design stage of new buildings, rebuilds and refurbishments.

Other issues

It is perhaps inevitable that the working group would not be able to give full consideration to every issue presented to it. Through this strategy we have set out the actions which we consider will contribute most directly to transforming all schools with ICT. However, we continue to welcome advice and comments on any of the issues which we haven't fully addressed including, in particular, the use of ICT for learners with additional learning needs; the use of data in schools; ensuring a supply of ICT technicians with up to date skills in schools; and school building and design including how to make effective use of ICT whilst promoting sustainable development.

High Expectations

Challenging learners through a revised national curriculum

Our Interim Report set out aspirations for developing competent learners. We set out an aspiration for learners to use a range of ICT tools knowledgeably, effectively and reflectively, working independently and collaboratively as appropriate. Assessment of their ICT capability should provide learners and teachers with a means of promoting and reinforcing their learning.

We continue to believe that the strategy for ICT must start with our expectations of learners, the opportunities they should be offered and the ICT capability they should be expected to acquire.

We welcome the steps which the Welsh Assembly Government is already taking to ensure that the use of ICT and development of ICT skills is embedded across the National Curriculum and its associated assessment arrangements. In particular, the proposals for ensuring that all learners leave statutory education with some formal recognition of the ICT skill levels they have attained. The recommendations set out below, and indeed throughout this document, are the additional steps which we think are necessary in order to ensure that these changes have a real and meaningful impact on learning and attainment.

Recommendation 1

Make ICT a core subject within the National Curriculum.

Recommendation 2

Ensure that all schools have detailed and high quality curriculum guidance on the delivery of National Curriculum ICT and the application of ICT skills across the whole curriculum.

Recommendation 3

Establish, keep under review and monitor the levels of ICT capability against which learners at different ages and stages should achieve.

Recommendation 4

Provide detailed non-statutory guidance to schools on assessing levels of learners' capability drawing upon exemplar schemes of work and good practice from LEAs and schools.

Recommendation 5

Ensure that all learners are able to spend one hour per day using ICT appropriately to support their learning and self assessment, and one hour per week developing their ICT knowledge and skills.

Recommendation 6

Ensure LEAs include the development of learners' ICT capability within their Children and Young People's Plans.

Expected Outcomes

By 2012:

- a strategy to develop the use of ICT in schools is a feature of all local authorities' Children and Young People's Plans;
- all learners have one hour contact time with ICT per day to support their learning and self assessment;
- all schools have incorporated into their curriculum planning, a minimum of one hour per week during which individual learners can develop and enhance their ICT knowledge and skills;
- a model for profiling learners' ICT skills in order to inform assessment will have been developed and piloted;
- 85% of learners at Key Stage 3 achieve level 5 or higher in ICT;
- 100% of secondary school learners leave school with accredited recognition of their ICT capability.
- moderation and external verification of attainment in ICT at Key Stage 3 ensures consistent and reliable understanding and application of level descriptions and sharing of good practice across NGfL Cymru;
- all teachers in Wales are making use of NGfL Cymru to access resources and good practice; and
- exemplar portfolios are shared locally through LEA learning platforms and linked to NGfL Cymru.

In order to measure progress:

- All schools should be required to report on learners' attainment in ICT at ages, 7,11,14 and 16;

- Estyn to be remitted to carry out a further review of the teaching and impact of ICT in schools in 2011-12; and
- Review and evaluation of the NGfL Cymru contract.

Further information

Definition of ICT capability

ICT capability involves demonstrating skills in the processes of gathering, searching, exploring, analysing, presenting, communicating and sharing information, underpinned by an understanding of key concepts related to the nature of information and of technology. It includes a set of technical competences together with a confidence in learning to use new tools; a disposition to solve problems and enhance results with ICT in unfamiliar contexts; a knowledge of the potential and limitations of familiar tools; an awareness of the opportunities and dangers inherent in the use of ICT and a willingness to reflect on the use of ICT in the world beyond one's immediate experience.

For further information of ICT in the national curriculum in Wales please visit:

<http://new.wales.gov.uk/topics/educationandskills/?lang=en>

Link to Guidance on Local Co-operation under the Children Act 2004:

http://www.learning.wales.gov.uk/scripts/fe/news_details.asp?NewsID=1914

E-safeguarding

Using technology safely

Media reports on threats to children using the Internet are regrettably familiar. Surveys of children and young people have shown that too many of them have:

- encountered pornography or violent images online;
- experienced some form of 'cyber bullying'; and
- had disturbing encounters in chat rooms.

Many children who use social networking sites (such as Bebo and Myspace) do so to stay in touch with friends from school and other people they already know. A significant number, however, have met people that they know only from the Internet. When young people do encounter something 'inappropriate' online they don't necessarily tell their parents/carers. Young people are also drawn into activities which they may regard as harmless, such as illegal downloading of music and video, which can in fact expose them to legal sanctions.

Responsibility for protecting children against these and other dangers is shared by the whole community but schools have a clear role to play in educating for and promoting the safe and responsible use of the Internet:

- in teaching ICT in the curriculum;
- in their own use of ICT for learning;
- in working with parents/carers; and
- through their wider policies on respect and behaviour.

We welcome the steps which the Welsh Assembly Government is taking to include e-safety issues at all stages of the revised National Curriculum for ICT. We also acknowledge the commitment of the Welsh Assembly Government to all aspects of child protection and note the guidance on e-safety which has been provided through organisations such as WISEKids, CEOP and Becta.

The recommendations set out below represent the additional actions which we consider are necessary to ensure that e-safety and health and safety in the use of ICT is an integral part of safeguarding children.

Recommendation 7

Provide a single, updated source of advice and information for schools on the safe and responsible use of ICT including e-safety, legislation, health and safety issues and educating young people.

Recommendation 8

Ensure all LEAs apply appropriate safety policies consistently across all their schools.

Recommendation 9

Publish guidance on the safe and effective use of the Internet in schools which is based on a shared understanding of the need for:

- a consistent approach across Wales and the UK;
- practical guidance at all levels;
- clearly defined roles and responsibilities including those of local authorities and schools;
- protecting and supporting all children, including those learning in hospitals, care homes, libraries or at home; and
- filtering policies which reflect the age and maturity of learners, as well as curriculum needs, but allowing for the possibility that in this instance, 'one size may fit all'.

Recommendation 10

Promote e-safeguarding as one of the functions of the Local Safeguarding Boards and provide information and guidance on this issue to the Boards.

Recommendation 11

- Promote mentoring/awareness raising for young people and their families through joint training for school staff, school governors and parents/carers.

Expected Outcomes:

100% of schools are aware of where to find advice on e-safety and ICT health and safety issues.

All LEAs have Acceptable Use Policies covering all their schools.

Common minimum standards for Internet/email filtering applied to all schools, taking account as appropriate of learner age.

In order to measure progress:

Estyn inspections of child protection policies include attention to e-safety issues; this to be covered in the Chief Inspector's Annual Report.

Monitor LEA e-safety arrangements to ensure they promote safe and responsible use of the internet rather than rely upon blocking sites.

Further information

<http://www.kidscape.org.uk>

<http://www.childnet-int.org>

<http://www.wisekids.org.uk>

<http://www.ceop.gov.uk/>

<http://schools.becta.org.uk/index.php?section=is>

Effective Pedagogy

Supporting the ICT capabilities of the whole school workforce

Young people leaving school today have never known a world in which ICT did not exist. Increasingly, this is also true of their teachers.

In the twenty first century, ICT should not be an 'add on' in the classroom, nor should it be a barrier to learning where teachers lack confidence in either the quality of the infrastructure, their own capability to use ICT with their students or the promptness of the support they receive in case of difficulty.

School leaders have an important role in planning for and promoting the use of ICT across the curriculum.

The Welsh Assembly Government is taking forward work on a national strategy for pedagogy which will, we hope, recognise that using ICT to:

- extend the range of teaching styles and modes of learning and self assessment;
- motivate and engage learners; and
- promote inclusion and provide support for children with additional needs should be everyday elements of 'mainstream' effective pedagogical practice.

GTCW's Professional Development Framework also provides an opportunity to ensure that professional standards for practitioners and the training and support which they receive, in particular from local education authorities, create an environment in which teachers and school leaders value and make good use of ICT.

The following recommendations set out our approach to ensuring that high quality ICT training is available for the school workforce in Wales.

Recommendation 12

Adopt and implement a centrally managed national training programme for school leaders on the use of ICT to transform learning, teaching and assessment and improve school organisation.

Recommendation 13

Working with providers of Initial Teacher Training, ensure that all trainee teachers receive appropriate training in the pedagogical applications of ICT.

Recommendation 14

Adopt and implement national standards for practitioners in the use of ICT and effective pedagogy in order to guide training providers, including local education authorities, on the outcomes which their training should help practitioners to achieve. These standards should cover:

- middle managers and subject leaders;
- ICT leaders; and
- all practitioners.

A set of proposed standards is set out in Annex A.

Recommendation 15

Working with the GTCW, develop a Code of Practice and accreditation arrangement for in-service training in ICT which will be implemented through the Better Schools Fund.

Recommendation 16

Develop national standards and appropriate training programmes for support staff (including technicians).

Recommendation 17

Use the resources of NGfL Cymru to:

- provide ready access for teachers to rich and stimulating curriculum resources, not available through other means;
- increase the availability of online resources for teachers in both Welsh and English;
- demonstrate best practice in the use of these curriculum resources;
- provide online forums for school leaders, teaching and learning leaders, ICT coordinators and practitioners in order to share good practice in pedagogy and the effective use of ICT in supporting learning and teaching;
- establish and maintain a national repository allowing practitioners to share and exchange non-quality assured resources with others; and
- publish models of good practice for collaborative working and sharing of resources.

Recommendation 18

The Welsh Assembly Government to investigate the feasibility of:

- developing a repository for schools of appropriate audio and visual materials, with the copyright owned, to support the increasing demands made by learners and awarding bodies; and
- entering into licensing agreements with commercial providers for bilingual curriculum software and online learning tools for schools.

Expected Outcomes

ICT competencies are incorporated into Chartered Teacher modules.

A Code of Practice and accreditation arrangements for in-service training in ICT are agreed with training providers by September 2009.

The national school leadership programme is launched by September 2008.

By 2012:

- 40% of all headteachers have been accredited through a national school leadership programme in ICT. To achieve accreditation, headteachers should demonstrate how their school is making progress in completing element 1 (leadership) of the Becta Self Review Framework.
- Training programmes supported with grant from the Better Schools Fund provided by LEAs have been accredited in line with the new national Code of Practice.

In order to measure progress:

- LEAs demonstrate through their Better Schools Fund spending plans how they will progressively enable all education professionals to meet the proposed national standards for ICT capability.
- Welsh Assembly Government to publish composite picture of training plans and exemplar plans.
- Estyn to carry out external evaluation of LEA training programmes as part of their annually remitted activities funded by the Welsh Assembly Government.
- Steering group, composed from major stakeholder groups, to monitor and evaluate NGfL Cymru contract from September 2007. Final report published by 2010.

Further information

<http://www.gtcw.org.uk/>

<http://www.ngfl-cymru.org.uk>

Extending Access

A bilingual learning platform for Wales

We will not be able to transform learning and teaching in schools until all teachers and their students have ready and reliable access to ICT in and out of the classroom.

Technology should be used to promote inclusion, not to further exclude children who do not have access to ICT at home.

We will not make best use of ICT until we embrace the way in which technology is evolving and recognise that children and young people are already doing so.

Our review of good practice in Wales showed that many schools have already discovered for themselves the benefits of providing a secure online environment which allows their learners to access learning outside school and to share their learning with one another. Most LEAs are already providing some form of intranet service although at present this is mainly used as a way to deliver information, resources and guidance, rather than to promote dialogue and the sharing of good practice between practitioners.

We need to consider how best to build on the investment of time and resources which schools and authorities have already made in extending these services across Wales. We also need to ensure that we secure best value for money from all investment in ICT.

The recommendations below set out what we consider to be the essential minimum standards of ICT provision in schools and the steps which need to be taken to ensure that all schools have access to a robust and reliable infrastructure.

These recommendations address the needs of schools as a whole. We wish to make it clear, however, that accessibility is as important as 'access'. All children and young people should have access to ICT to support their learning including those with additional learning needs.

Recommendation 19

For learners to have the 'contact time' with ICT, as recommended in 'High Expectations', we must ensure that all classrooms are 'digitally enabled'. The working group has defined this as:

- a learner: computer ratio of 5 to 1 or better in primary and secondary schools and 2 to 1 or better in special schools;
- one or more internet access points in every classroom; and
- access in every classroom to interactive whiteboards or other forms of technology which can be used for whole-class teaching and group work and other collaborative forms of learning, as well as assistive technology as required for learners with additional learning needs.

Recommendation 20

Establish agreed national standards and protocols for the procurement of ICT hardware and software for schools, working with Value Wales.

Recommendation 21

Ensure that all schools have regular and reliable broadband connectivity of an appropriate bandwidth which is regularly monitored and reviewed in light of emerging uses.

Recommendation 22

Specify the levels of technical support that schools need in order to sustain regular and reliable access to IT equipment and identify best practice and monitor effectiveness across each LEA.

Recommendation 23

Establish the use of learning platforms in all schools by:

- defining the main functions which learning platforms must fulfil having regard to the 14-19 agenda, the promotion of learning communities within schools, the role of schools in their communities and the wider eWales and Making the Connections agenda;
- requiring local authorities to establish learning platforms in

- establishing a closed forum for the review of best practice; and
- publishing guidance on accessibility standards and where further advice can be found to on how best to ensure that all learners have the opportunity to access learning through the learning platform.

Schools and LEAs will demonstrate regard to the requirements of the Disability Discrimination Act and ensure that learning platforms are accessible, or reasonable adjustments are made, for all learners regardless of any disability or specific learning difficulty. Learning platforms should also be delivered bilingually in Welsh and English.

Recommendation 24

Provide advice and support to local authorities and schools on integrating learning platforms and curriculum networks with schools management information systems.

Recommendation 25

Provide advice and guidance on the appropriate technical and pedagogical practices of video-conferencing and other associated technologies that promote collaborative teaching and learning.

Recommendation 26

Set up a number of appropriately resourced projects to evaluate the benefits and risks of:

- combining different types of technology and pedagogy;
- providing handheld devices for individual learners to enhance their learning; and
- using technology to promote inclusion (including home access and assistive technologies).

Recommendation 27

Research the implications and opportunities for wider use of open source software in schools.

Expected Outcomes:

Agreed national standards for ICT procurement by September 2008.

Report on open source software published in 2008. Report informs guidance on national procurement standards.

Learning Platforms protocol published and adopted by all LEAs by April 2009.

By 2012:

- all schools connected to LLN successor at recommended benchmark levels;
- all schools have bilingual learning platforms and all learners have the opportunity to access learning through these, with appropriate adaptations and support provided for those with additional learning needs; and
- outcomes from the evaluation projects are disseminated via NGfL Cymru.

In order to measure progress:

Annual LEA survey of ICT provision in schools in Wales including connectivity levels, usage and feedback from schools on technical support.

Further information

Definition of a “learning platform”:

A ‘learning platform’ is an umbrella term used to describe software whose core role is to deliver and support on-line learning and teaching in some way. It usually combines several functions, such as organising, mapping and delivering curriculum activities, and the facility for learners and teachers to have a dialogue about the activity, all via ICT.

Learning platforms can range from products which provide electronic learning resources and facilities for uploading your own and third party learning content, to more complex systems that not only allow practitioners and learners to upload resources, but include a learner tracking system, communications tools, on-line assessment, and the ability to share data with existing management information systems. The latter might often be more commonly referred to as a Virtual Learning Environment (VLE).

For more information on learning platforms and their use in schools, visit:

<http://www.becta.org.uk/schools/learningplatforms>

Other links:

<http://www.ngfl-cymru.org.uk>

<http://www.wetpaint.com>

<http://www.yackpack.com/education.html>

<http://moodle.org>

A Culture of Self Evaluation

Implementing the ICT Self Review Framework

The working group recognises that its recommendations will present a significant challenge to many schools. They will need strong leadership and support to ensure that they understand the issues which underline effective use of ICT in schools and are able to identify their own needs and take action to address them.

It is also important that evaluating schools' use of ICT is 'part and parcel' of the overall evaluation of school performance.

We were asked, as part of our remit from the Welsh Assembly Government, to consider whether the Becta Self Review Framework for ICT (the SRF) would be an appropriate mechanism for supporting schools in Wales.

The Becta Self Review Framework is intended to help schools to identify how they are currently using ICT and how they can improve this across the organisation. The Framework comprises eight elements which are intended to cover the whole development of ICT across the school:

- Leadership and Management
- Curriculum
- Learning & Teaching
- Assessment
- Professional Development
- Extending Opportunities for Learning
- Resources
- Impact on Learner Outcomes.

Schools can use the Framework, including an online assessment tool, by themselves or with the support of trained assessors.

The SRF was piloted during September 2006 - March 2007 in 26 schools in Wales, working with 10 LEA advisors who had been accredited as assessors following training with Becta.

Participating schools expressed strong support for the scheme, highlighting the following key benefits:

- a nationally recognised quality assurance scheme as opposed to a quality control scheme;
- places the schools self-review and evaluation at the core of the process;
- encourages a school to demonstrate processes that clearly chart outcomes and impact over time;
- shows what can be done next to help the school plan for future improvement;
- relates to ICT in learning and teaching and use of ICT as a management tool;
- ensures a rigorous assessment process externally verified; and
- offers any school the opportunity for celebration and public recognition when obtaining the ICT Mark or being nominated for an ICT Excellence Award.

The main difficulties encountered by schools were in meeting the requirements of 'extending opportunities for learning' and assessing impact.

Of the participating schools, 19 have successfully proceeded to ICT Mark accreditation (not a mandatory element of the pilot) and 3 were nominated for Becta ICT Excellence Awards.

Following consideration of the pilot outcomes and discussions with participants, the working group has recommended the formal adoption of the Self Review Framework and the ICT Mark in Wales, subject to a number of conditions. We note that work is now ongoing to address these conditions.

Recommendation 28

Adopt the BECTA ICT Self Review Framework (SRF) for Wales as the mechanism by which all schools in Wales will:

- self evaluate current provision and practice in the use of ICT;
- have, as part of their school development plan, appropriate monitoring and evaluation to inform future planning and target provision and practice in the use of ICT; and
- have the opportunity to acknowledge and celebrate success by seeking external recognition, such as the BECTA ICT Mark or an ICT Excellence nomination.

This recommendation is subject to the following conditions:

- the framework and online tool must be provided bilingually in Welsh and English; and
- the Framework is clearly aligned with the seven questions in the Estyn Common Inspection Framework.

Outcomes:

By 2012:

- 95% of schools in Wales are or have been engaged with the Becta ICT Self Review Framework process; and
- Of these, 80% will demonstrate progress in at least two of the eight key elements, one of which must be element 8 (impact).

In order to measure progress:

Require LEAs to support, monitor and report on progress in the implementation of self review in their local areas.

Remit Estyn to evaluate the adoption of the ICT Self Review Framework across Wales and its impact on ICT standards.

Further information

<http://schools.becta.org.uk/>

For copies of the self review framework, in English and Welsh, follow link:

http://www.ngfl-cymru.org.uk/2-0-0-0_national_initiatives.htm

Delivery

A National Schools ICT Unit for Wales

Many of the actions recommended in this document can be delivered through existing structures within the Welsh Assembly Government, Estyn, local authorities, schools and with the co-operation of other partners and agencies. However, in order to ensure that taking the actions forward has impetus and focus the working group recommends that:

- a high level steering group be established with a brief to monitor and report annually on implementation of agreed recommendations;
- a new memorandum of understanding be negotiated with Becta to ensure best use of their resources in Wales; and
- an appropriately funded national schools ICT unit be set up, with a remit to work with a range of partners in the Welsh Assembly Government, Estyn, local government, schools, the commercial and voluntary sector and others in order to:
 - promote the development and adoption of learning platforms in Wales, including the formulation of interoperability standards for learning platforms;
 - develop the potential of ICT to support/promote the “Making the Connections” agenda including coordination/management of national level education ICT investments in partnership with Value Wales;
 - provide a central source of guidance for local authorities, schools, Local Children’s Safeguarding Boards and Welsh Assembly Government on issues relating to the protection of children on the Internet and ICT health and safety;
 - ensure the effective dissemination to all schools of best practice in developing learners’ ICT capability and the use of ICT to improve learning, teaching and assessment;
 - day to day management of the NGfL Cymru contract;
 - provide advice to the relevant agencies on the levels of ICT capability to which learners at different ages and stages should be aspiring and the curriculum guidance which should be made available to schools;
 - ensure that the development of learners’ ICT capability is embedded in all the national strategies which affect curriculum delivery and assessment;

- provide advice and guidance on the use of technology to better meet the needs of learners with additional learning needs and meet the requirements of the Disability Discrimination Act;
- work with local authorities in support of their strategies to develop learners' ICT capability in every local area (taking account of additional learning needs and the needs of both Welsh and English medium education);
- develop and manage research and evaluation projects;
- provide expertise on specific projects and initiatives identified through the strategy; and
- commission and manage an evaluation strategy to ensure the successful implementation of the Schools ICT Strategy.

Proposed National Standards for Practitioners

a. Senior leadership teams should:

- recognise, through observing exemplary practice provided to them, the significance ICT can make to support learning and teaching;
- be able to demonstrate effective use of ICT themselves;
- engage in professional collaboration, dialogue and review that leads to well informed professional judgements;
- consider the potential of ICT to support learners with disabilities when reviewing and revising the school Disability Equality Scheme;
- be registered to support a nationally agreed ICT self review framework through which they actively promote ICT to support the curriculum, management and whole school improvement;
- promote and develop the school as a lead community learning and information hub;
- guarantee a coherent professional learning and ICT development plan for all staff, monitored and reviewed annually and linked to the schools overall strategic plan;
- understand how current, emerging and mobile technologies can be utilised to transform learning, teaching and assessment and support organisational effectiveness; and
- ensure sustainable access to high quality technical support to maintain and develop the application of ICT to support learning, teaching, assessment and management.

b. Middle managers and subject leaders should:

- be able to demonstrate effective use of ICT themselves;
- support senior management team on keeping the ICT policy under review and up to date;
- establish a comprehensive scheme of work for ICT covering all aspects of the programme of study;
- support and train staff in delivering appropriate subject schemes of work;

- liaise closely with a range of ICT support staff to advise on appropriate curriculum resources for each subject area and how to make effective use of ICT to support each subject;
- for those with additional educational needs, where appropriate, identify and provide suitable assistive technology, complete with appropriate training, to enable access to the curriculum. This may involve consultation with external professional agencies supporting such learners;
- identify and disseminate effective ways of teaching using ICT;
- support the management of the school's ICT resources, and make every effort to ensure it has sufficient resources to support each subject area and a variety of learning and teaching strategies;
- provide advice and guidance to parents on how to support their children with school work using ICT; and
- keep everyone up to date on current legislation and, in particular, lead on e-safety.

c. All teaching staff are able to:

- adopt, and then with experience adapt, appropriately differentiated resources to meet a diverse range of learning needs;
- make available digital copies of learning materials used in lessons for those learners with print disabilities;
- introduce learners to how technology can be used to support in specific subjects across the curriculum;
- plan ICT activities to engage learners within and beyond the classroom, which takes account of skills learners already have;
- utilise current and emerging technologies to make effective use of ICT to support learning, teaching and assessment;
- critically evaluate the impact of ICT on learning and teaching and, in turn, inform future planning;
- record attendance data accurately through electronic systems;
- store, interpret and analyse learner performance data and provide appropriate and challenging feedback and targets to inspire learners to progress further;
- engage in effective practices using ICT to support learning, teaching and assessment; and
- use on-line tools to support learning and teaching safely and securely and know the risks associated with these methods.

Estimate of cost

The following table sets out the estimated costs, over three years, of the individual working group recommendations which we consider would require significant additional investment by the Welsh Assembly Government, Local Authorities and schools.

Costs which are *not* detailed here include:

- staff development within schools to ensure the effective use of ICT, in particular to support the increased level of ICT provision which the working group recommends under Extending Access;
- the preparation of curriculum and other guidance which could potentially be managed by the Welsh Assembly Government within existing departmental running costs.

Recommendations requiring additional investment	Cost (£000)
<p>High and challenging expectations</p> <p>Continued provision of grant support through the Better Schools Fund of training to support the introduction of revised national curriculum and assessment arrangements from September 2008. £4.6 million was included in the draft circular for 2008-09 onwards but this grant was expected to cover training in all areas of the national curriculum, not just ICT. It will, therefore, also require a commitment by schools to develop and support the effective use of ICT by all staff.</p>	
<p>E-safeguarding</p> <p>Mentoring pilot project</p>	200

Recommendations requiring additional investment	Cost (£000)
<p>Effective Pedagogy</p> <p>Development and piloting of senior leadership programme in ICT; delivery of training to 2 staff per school; piloting of code of practice/accreditation of training provided by LEAs.</p> <p>The NGfL Cymru contract has already been upgraded to include learning communities and other changes at an additional contract cost of £400k per year.</p>	3,600
<p>Extending Access</p> <p>Digitally enabled classrooms</p> <p>Laptops/PCs for teacher use; whiteboards/other interactive equipment; projectors and mounting; internet access points in classrooms</p>	31,600
<p>1 hour per day contact time with ICT per learner</p> <p>Increased PC/laptop provision to enable this (5:1 learner: PC ratio)</p>	6,720
<p>Learning platforms</p> <p>Servers and software licences for primary schools; learning platform development; targeted funding for schools below benchmark connectivity</p>	14,520
<p>Innovation and additional learning needs</p> <p>Interactive equipment for research & evaluation projects; assisted Learning equipment</p>	2,400
<p>A Culture of Self Evaluation</p> <p>The Better Schools Fund circular for 2008-09 includes £7.5 million for the roll out of the Framework and the support of training and other measures to improve practice in schools (and enable schools to meet the SRF benchmark standards). Continued provision will be needed during 2009-10 and 2010-11 to ensure that all schools across Wales are supported through this process.</p>	
Delivery Unit	1,200
Total (excluding NGfL Cymru and Better Schools Fund)	60,240

Membership and remit of the group

Working Group

- Hugh Knight (Chair), Chief Schools and Lifelong Learning Officer, Cardiff Council (retired from post December 2006)
- Simon Brown, MHMI (Managing HMI), Estyn (Her Majesty's Inspectorate for Education and Training in Wales)
- Jendy Hillier, School Improvement Adviser, Vale of Glamorgan LEA
- Einir Huws, Deputy Headteacher of Ysgol Glanrafon, Welsh Medium Primary School, Mold, Flintshire (until March 2007)
- Dr Steve Kennewell, ICT Co-ordinator for Swansea School of Education
- Jacqueline Williams, Head of ICT at Newbridge Comprehensive School, Caerphilly
- Bernie Zakary, Senior Manager, Tools, Advice and Guidance, Institutional Development Directorate at Becta
- Paul Martin, School Development Adviser (ICT) seconded from Torfaen LEA to support the working group

Officials attending from the Department for Children, Education, Lifelong Learning and Skills

- Hugh Griffiths, Qualifications Development Manager, Qualifications and Curriculum Group (14-19 Division) - until February 2007
- Dr Alun McCarthy, ICT Subject Officer, Qualifications and Curriculum Group (14-19 Division) - joined group in February 2007
- Christine Major, Senior Learning Policy Manager in Further Education with responsibility for E-learning

Secretariat

- Kerry Darke, DCELLS (Performance and Improvement, Children and Schools Group)
- Maureen Potter and (from September 2006) Richard Lowcock James, DCELLS (Performance and Improvement, Children and Schools Group), clerk to the group

The remit of the group was as follows:.

Remit for the Schools ICT Strategy Working group

To prepare a strategy document for developing the use of ICT in schools. That strategy should be based on a vision of the potential for ICT to transform: learning, teaching and attainment, within and beyond the curriculum, within and beyond the school; and organisational effectiveness.

The development of the Schools ICT strategy provides a mechanism for:

articulating a shared vision, a statement of aspirations describing how we see the future of ICT in education;

agreeing the high level aims, the outcomes needed to bring about that desired future; and

setting objectives, the things that need to be done in order to realise these outcomes.

This strategy will provide a clear framework for joined-up action by central and local government; for decision-making and planning by individual schools and teachers; and for closer working between schools and other education providers. It should identify the ways in which ICT can - and should - be used to help achieve the ambitions for education and learning in 2010, which are set out in **The Learning Country**. It also describes the potential and aspirations for using ICT to transform learning, teaching and attainment looking to **2010 and beyond**.

The strategy should also address those issues relating to **organisational effectiveness** within schools, and to schools in the wider learning context, where ICT has a key role to play.

And equally important, the strategy will itself be a vehicle for **raising awareness** of the best practice in the use of ICT in Wales and elsewhere and the key ICT services and resources which already exist, or are being developed, to support teachers and learners in Wales.

The group will be expected to consider the resource implications, to recommend relevant targets and provide costed proposals to deliver the key actions it has identified.