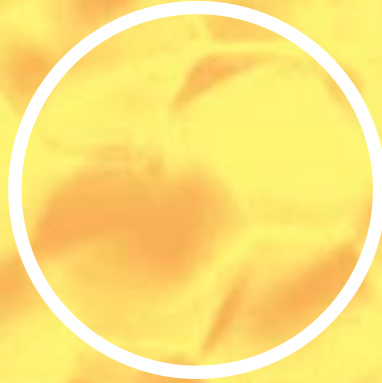# Extending
the boundaries of learning

This is one of a series of occasional publications for those who provide support to schools, colleges and education organisations. The series aims to equip LEAs and other intermediaries with current information and resources, so that they may support schools and other education providers in working towards sustainable, embedded use of ICT.

Becta
ICT Advice

Overview

ICT enables access to learning for a wide range of learners, in non-traditional locations, and beyond the constraints of the traditional timetable. ICT is extending some traditional boundaries, and breaking down others, by enabling learning to take place wherever the learner is located and at whatever time suits them. It is also enabling access to the curriculum and skills for a range of learners – not only those with sensory and physical impairments but also those such as the disaffected and chronically sick – who have traditionally been hard for education to reach.

As a result of external pressures from government policies and strategies, schools and other education organisations are being encouraged to consider the need to personalise learning, to reflect on the issues of transition and to develop learning into a community-owned activity. There is huge potential for ICT to support developments such as these, and the additional value and facilities that ICT can bring should be an early part of strategic thinking on these themes.

Recent years have seen a range of initiatives and activities in which ICT has helped some organisations to extend the boundaries of learning. Evidence of the success of these early approaches is now appearing and we have reached the point where lessons can be learned and experiences shared on both the ICT and non-ICT factors that have led to this success. Boundaries have been broken within and between learning institutions and new virtual communities have been established through ICT. It is time now to expand the virtual community into new partnerships, drawing on the knowledge and strengths of others to ensure that we make the best of the ICT and learning opportunities available.

It is clear that ICT offers a range of tools and facilities capable of supporting and delivering learning that reaches beyond traditional limits. This publication offers case studies, exemplars and guidance that LEAs and other support providers can use to support schools as they develop their thinking on how ICT can extend the boundaries of learning.

ICT is extending some traditional boundaries, and breaking down others, by enabling learning to take place wherever the learner is located and at whatever time suits them.

Starting as we mean to go on: continuing learning beyond the nursery

Crook Nursery School in County Durham is a school of 78 pupils, providing two sessions a day for children aged between three and five years. As part of the ICT Test Bed project, the school has been considering how ICT can best benefit its learners, and decided to approach this through a number of strategies which would engage the parents and communities of children in the learning processes.

- **Establishing a parents' room**

A purpose-built room equipped with 10 PCs plus printers and supporting equipment is available for parents to develop their ICT skills. Staff from Bishop Auckland College lead sessions in the parents' room. This ensures that those with experience in adult learning are supporting the parents, while the nursery staff remain in their primary role of providing learning for the children. Parents are now progressing towards completing National Open College Network (NOCN) units on the application of ICT. Courses are also run for members of the local community, including adults with learning difficulties.

- **Development of the soft play area**

For pre-nursery children a small soft play area has been set up next to the ICT suite. This facility ensures that parents who also have children under nursery age are able to use the ICT suite knowing that their children are being entertained and cared for close by. For the children there are benefits too: they are able to use the facility prior to joining the nursery and see their older siblings in lessons, which helps to make them feel less daunted by the prospect of starting nursery school. At the same time, they see their parents engaging in learning, which reinforces positive messages about learning and shows them that everyone learns. NVQ Care students from Bishop Auckland College often supervise the soft play area, which provides them with work experience and assessment evidence opportunities.

- **Taking learning home**

The school identified the low-level language skills of some children as they started nursery school, to be a key issue. To encourage reading, listening and discussion at home, children now take home portable CD players, with CDs of traditional stories that they can share and discuss with their parents.

- **Celebrating success**

In the reception area of the nursery school is a large display screen, surrounded by a number of traditional display boards. The display screen is used to show multimedia presentations of children's work (some pieces done using ICT and others as scanned images of traditional work) which parents can view at drop-off and pick-up times. Parents are delighted to see this work and are encouraged to talk about it at home with the child. The screen is also used to display school information for parents.

Lessons learned	Issues to consider
• The use of 'low-level' ICT – CD players – has introduced an informal and enjoyable way of learning in the home.	• Can ICT be applied to situations and issues where it encourages parents to engage with the child's learning?
• Despite initial concerns among the nursery staff, developing ICT confidence in the parents has had a positive effect on the children, who now recognise learning as a lifelong activity.	• It is not only the transition from one phase to another that ICT can support, but also the broader issues of getting everyone engaged in learning. How can schools offer parents and other adults ICT skills and learning?
• Through screens and display software, ICT has opened up new ways of rewarding achievement and sharing success.	• ICT can often be a catalyst for change and can support the development of skills for life. How can ICT help to celebrate success, and what benefits might this bring?

ICT supporting transition: from support services to mainstream primary school

For children who have special social, physical and cognitive needs, it is vital to ensure that support is there at all stages to maintain the continuity of education from early years to post-16 learning. The transition from early years support to primary schooling can be as difficult as that from primary to secondary education. Even where a mainstream school includes a pupil who has complex physical and sensory disabilities, it may have very little experience of meeting such needs.

Moving on to primary school

David is a wheelchair user with very limited speech. His needs had been well met by his local children's centre, where he had access to a range of therapies. This ensured a very good start in developing his mobility, learning and communication skills.

It was proposed that he attend his local mainstream primary school, a small village school near Devizes with little experience of pupils with any significant special educational needs, and certainly not with the degree of physical disability and speech impairments that David presented.

At the age of four, David was referred to the Communication Aids Project (CAP) by his speech and language therapist. CAP assessed David's needs and supplied the specialist ICT equipment he needed – but this was merely the first step.

Linking together

Two months before David was due to start school there was a meeting to discuss how he and all his equipment would be included in class. The meeting included representatives of all the therapy services involved, advisory teachers, class teachers and support staff, plus David's mother.

David's story is a good example of how, with collaborative working, not only can the transition from early years support to mainstream primary be achieved, but also arrangements can be made for the pupil before the move takes place.

…equipment and building adaptations carried out, equipment provided and also training given to increase staff skills and confidence.

The early years service, the advisory services and the school all worked well together to ensure that David had access to the equipment he required when he started school. The barriers to inclusion were removed as far as possible: equipment and building adaptations carried out, equipment provided and also training given to increase staff skills and confidence. These efforts have ensured that David's inclusion has been a success.

For other case studies and more about the Communication Aids Project, see the CAP website [**http://www.becta.org.uk/cap**].

Lessons learned	Issues to consider
• To ensure smooth transition from one phase to another, early planning is essential.	• ICT plays a major role in enabling learners with special needs to access the curriculum. Do your schools know what is available to help their pupils?
• Close collaboration not only between the early years service and primary school staff but also with a range of therapists was the key to assessing and addressing David's needs.	• How can transition be eased between each phase of education and the next? How can ICT improve liaison between schools?
• There was also emphasis on giving all school staff confidence in using specialist devices and in supporting a pupil with complex needs.	• How can partnership working between education and health professionals be promoted so that they can share their expertise?

Developing a community of learning and learners

Chafford Hundred Campus Business and Enterprise College in Thurrock is a learning centre for the whole community, with a nursery school, a primary school, adult education facilities and a public library as well as a secondary school. Its aims are to enable children and adults in the community to learn how to learn, to share learning opportunities with the wider community and, using innovative curricula and teaching methods, to build a school of the future.

Continuity of learning is achieved through an integrated curriculum and an 'open all hours' community-based approach to learning. Each Year 7 pupil is in a mixed-ability 'home group', where he or she spends over half the week with one teacher. In Years 8 and 9 the core curriculum reduces gradually as options increase, allowing the personalisation of learning to match individuals' needs and talents. At Key Stage 4 there is an individualised timetable based on twelve choices from a large range of courses, many of them vocational.

Each Year 7 pupil has a handheld computer (PDA), each Year 8 pupil has a laptop and pupils in Year 9 and Key Stage 4 share desktops and laptops, which they use when needed. Lesson plans, teaching materials and pupils' personal learning plans are available to pupils in class and at home through the managed learning environment (MLE).

Parents have password-protected access to their child's files. They also have access to information regarding their child's attendance, targets, progress data and behaviour record. Parents are thus able to have close involvement in their child's learning.

Using an MLE and a wireless network, and allocating technology to each learner, mean that learning can continue in the school library, after school, in clubs and activities, at home or in the workplace. Many staff, pupils and parents use email for instant communication, and also share access to pupils' work and learning journals via the MLE.

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Lessons learned	Issues to consider
• Creating a central MLE, which integrates all aspects of learning rather than using several different systems, has been a key factor.	• Using different ICT systems involves much re-learning and duplication of effort. How could an integrated learning system save effort and increase efficiency?
• Giving pupils greater access to ICT can increase motivation.	• Desktop computers are not always the best solution. Could laptops, tablet PCs and PDAs offer more flexibility both for staff and for pupils?
• It is important to continue to underpin electronic communication with traditional communication methods such as newsletters.	• 'High-tech' solutions enable pupils and parents to access learning materials and progress data – thus encouraging closer home–school links. Can 'low-tech' solutions offer these facilities, too?

Learning beyond the classroom: hands-on art

Students from Warren Comprehensive School, Barking and Dagenham, benefit from using wireless palmtop or handheld computers to access learning materials as part of a joint partnership project between the school, Dulwich Picture Gallery and software design company StreetAccess.

As part of the ICT Test Bed project, the partnership has successfully established a series of interactive trails throughout the gallery. While visiting the gallery, pupils can access lesson materials prepared by their teachers and the gallery educators, which put the painting, artist and subject matter into context on the spot. The students have personal control over how they investigate the pictures and can choose which pictures or themes to study in the gallery.

Pupils perceive the learning as individual and personal, which makes them feel more motivated and involved in their work.

Pupils are also posed a series of questions while viewing each work, asking them to comment on the paintings they have seen. The responses they key into the palmtops are saved on the StreetAccess website [**http://www.streetaccess.co.uk**], from where all their work is accessible from any computer – at school, at home, in a public library or in an internet café.

Back at school, pupils can visit the gallery website and refer to their notes and other internet material when writing assignments. The simplicity of the software has been a key factor in the success of the project. Pupils have responded enthusiastically to its use and have been able to work at their own pace. Pupils perceive the learning as individual and personal, which makes them feel more motivated and involved in their work.

At the gallery pupils also benefit from practical art lessons, which have supplemented and enriched the palmtop computer trail experience.

Teachers at Warren Comprehensive School have been astonished at the ease with which the pupils began scrutinising the paintings using their palmtops and sharing their excitement with their peers.

Lessons learned	Issues to consider
• The use of personal, small-screen technologies does not mean that learning is solitary: students shared their learning and the ICT acted as a catalyst for communication.	• Innovative ideas can often feel technically daunting. Working with others can not only spread expertise but also increase confidence. Are there partnership opportunities in your local area that you could develop?
• The ICT-enabled delivery of questions and support materials offered the learners a more active route to learning in a traditionally passive environment.	• ICT does not have to be restricted to the desktop computer or to the school. In this ICT-rich society, are there other interactive learning opportunities for using a wide range of technologies?
• Being able to access their responses to questions and resources via the internet meant that the learners could continue their gallery learning experience in the classroom and at home.	• What other learning gains might there be from informal learning opportunities beyond the school?

Moving on: continuing education for Travellers

Leicestershire, Leicester City and Rutland LEAs have been exploring the potential of ICT to support one of the most transient and diverse groups of pupils – Travellers. In Leicestershire the Traveller Education Service (TES) worked alongside the county ICT team and the East Midlands Broadband Consortium (EMBC) to set up a data card pilot project to support and motivate travelling pupils, through ICT-based distance learning, in order to maintain continuity and raise achievement.

Ten children across all key stages on roll in nine county schools were selected to take part in the project. Using laptops and GPRS (general packet radio service) data cards, these mobile learners were linked to the internet so that schoolwork could be exchanged electronically. They were also supplied with combined printer/scanner/photocopiers, USB memory sticks and digital cameras.

Traditionally, children have continued their learning while travelling by using paper-based packs produced by schools working in partnership with TES support teachers. Using ICT is a new approach that substantially improves the effectiveness of distance learning. Following training for pupils, staff and parents, children use the laptops to access their work via project folders through the EMBC portal or the school intranet.

ICT has enabled more timely and in-depth interactivity between pupils and staff and has therefore enhanced the continuity of learning. Where continuity has been maintained, there have been higher levels of pupil motivation and evidence of greater achievement. ICT has enabled email communication between school and friends, thus maintaining a sense of belonging and partnership, and also bridging the gap between learner and school. Other evidence from the project shows that faster feedback from teachers in response to the work submitted increases the level of motivation and self-esteem of pupils, and this was achievable through the various technological tools.

As a result of this project, the children are now accessing the curriculum, recommended websites and software at the same time as their peers working in school. Their teachers monitor their progress closely and address the needs of each child as these arise, while parents support and respond enthusiastically – which has also improved their own ICT skills.

> ICT has enabled more timely and in-depth interactivity between pupils and staff and has therefore enhanced the continuity of learning.

Lessons learned	Issues to consider
• The time needed to prepare online material has been an issue, but an increasing amount of curriculum material is available online.	• Online learning materials serve a special role for pupils who are out of school or who, as Travellers, are often on the move. Are all your schools aware of what is available for pupils such as these?
• It is hard for Traveller children to feel engaged in a community when they are constantly on the move; a virtual community allows for continuity wherever they are located.	• ICT creates opportunities to engage not only pupils but their families, too, in active learning. What facilities does your LEA offer in this area?
• Home–school links are particularly important where pupils are so mobile, so ICT offers a valuable medium for communication and support.	• There are close links between ICT use and pupils' motivation, self-esteem and achievement. Does your LEA provide opportunities to re-engage learners who feel excluded?
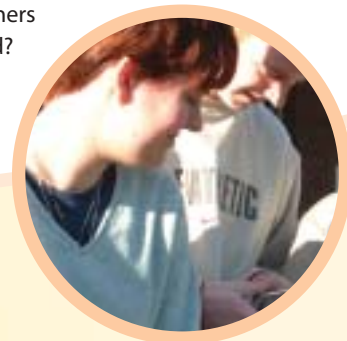
Enabling learning outside school: facilitating curriculum continuity and inclusion

In the statutory guidance on *Access to education for children and young people with medical needs* (2001), the DfES estimates that each year there are 100,000 children in the UK in need of education out of school. Children who have medical conditions, pregnant teenagers, those with school phobia and those who have been excluded are just some of the groups who often become disadvantaged through curriculum discontinuity and social isolation.

The Nisai-Iris Partnership is a membership organisation of LEAs working collaboratively to enhance and extend opportunities for children and young people who are unable to access full-time schooling. It evolved from pioneering work in Warwickshire LEA in conjunction with Nisai Education, an e-learning consultancy. In turn this LEA-wide development has led to the Nisai Virtual Academy (NVA), a virtual school offering access to the UK core curriculum for children anywhere in the UK.

...the DfES estimates that each year there are 100,000 children in the UK in need of education out of school.

The Nisai Virtual Academy caters for a range of children whose education has been discontinued, as well as for gifted and talented pupils who need extra educational challenges. The Academy's tutors host interactive live lessons via the internet, where pupils communicate and collaborate with their tutor and other remote pupils in an interactive classroom. The material is vividly presented and, without losing sight of the National Curriculum, gives children the opportunity to do further research. The children can see their teachers online, put up their hands in class to ask questions and communicate with their tutor and each other during the lesson.

Each pupil is given a personal learning area on the NVA secure website. Here the tutors post assignments for pupils to complete and return for marking. These assignments have not only been designed for children out of school, but are tailored to match the needs of each individual. The personal learning area also allows tutors and pupils to leave messages for one another.

Since pupils are often unable to attend school to sit examinations, these are invigilated at home. All the live lessons, including all voice and text communication, are recorded and made available via the NVA website, so that education providers, pupils and parents can view them at a later date. This is especially useful for revision purposes and where pupils with medical needs have been too unwell to participate in the lesson at the time.

Lessons learned	Issues to consider
• For children with long-term illness, special needs or a history of exclusion, e-learning can maintain a regular level of education in their own environment.	• Recent legislation has increased the duties of schools and LEAs to provide for all pupils. ICT offers an alternative to home tuition. What is available in your area to enable and support this?
• Pupils enjoy the lessons because they perceive that they are receiving 'one-to-one' teaching at their own pace. It can be done at any time of the day and it enables each pupil to progress at an individual rate.	• Setting work for pupils out of school can be a heavy burden for teachers, and may be duplicating effort if pupils can access learning materials online. Do your schools know what resources are available?
• Interactive technology offers a link with classmates and teachers that prevents pupils from losing academic ground and enables them to keep in touch with their peers.	• E-learning, e-assessment and e-portfolios are increasingly used to benefit all pupils, but especially those out of school. How can you enable pupils being 'educated otherwise' in your area to access a wide curriculum?

Flexible, accessible and online: the 'not school' approach

Notschool.net is an online project that explores ways of re-engaging young people for whom traditional learning solutions have failed. A key aim of the project is to provide an attainable and affordable solution to disaffection from learning. Notschool.net explores the notions of curriculum, content and approaches to delivery in a context outside traditional educational environments and assesses those aspects of its development that have successfully re-engaged these young people into learning. Currently 18 LEAs, each with a cohort of around 60 young people, are participating in the project.

Notschool.net is an online learning community – it has no physical presence. Multimedia is used to present content and to stimulate thinking in a variety of ways, recognising that individuals have different learning patterns. The intention is to remove the pressure of taught courses, which have a fixed chronology, and replace them with opportunities for the students to personalise their own learning. As Notschool.net has developed, user-generated content has become a significant feature: young people have created a wealth of materials, constructing their own areas of interest in an environment where participation is encouraged from all.

During the period of initial research, Notschool.net emerged as a place where children's constructivist characteristics could be recognised, encouraged and respected. Significant learning gains were identified where content aroused learners' interests. The project was shown to have become a catalyst for collaboration, dialogue and exchange.

Evidence from this research suggests that the use of ICT greatly increases the potential for continuity by allowing learners not only to study when they wish to during the day, but also to target their own curriculum pathway in both the short and long term. Where creativity through the use of ICT is fostered in a secure virtual learning environment with a positive ethos, learning gains by previously disaffected and excluded young people are significant and their level of achievement is high.

There is evidence to show that a strong sense of community engages the learner and, further, that this sense of community serves to define a range of user-led and peer-generated content with common characteristics. Given the right mix of opportunities to set their own agenda in something that interests them, along with appropriate support and access to the necessary tools, previously disengaged young people can perform outstandingly.

Lessons learned	Issues to consider
• While it was envisaged that ready-made learning resources would be provided, a significant development has been the creation of user-generated learning content and learning spaces.	• ICT can reinforce and/or replicate the sense of community that learners gain from belonging to a school. Are you providing opportunities for informal peer-to-peer communication through ICT, as well as formal communication between tutor and learner?
• ICT can remove obstacles and other perceived pressures: here it was used successfully to remove the constraints of time and place.	• When learners are significantly dislocated from the school environment, ICT can draw them into learning by engaging with them in areas of personal interest and strength. Are you offering disaffected pupils the chance to re-engage through ICT?
• ICT can provide skills, tools and support. In this situation it gave ICT-skilled learners opportunities to communicate and develop strength in a positive and non-threatening environment.	• ICT can provide an extended and flexible learning support service, but can also place heavy demands on tutors. Do you have LEA-wide services that you could use to support your own provision?

Extending the school's engagement with the community and beyond: issues to consider

ICT can remove barriers, such as those between formal and non-formal education, the institution and the community and the teacher and the learner. Becta believes that, appropriately applied and supported, ICT has the potential to:

- provide opportunities for young people to work collaboratively, within and beyond their own institutions
- allow parents, carers and others to actively engage with and support children's learning, becoming in effect 'co-workers' in the child's education

- extend access for young people excluded from, or not attending, school and have a positive impact on their attitudes and engagement
- bridge the gap between the formal place of learning and home, offering a seamless continuity of learning

Sound planning, including early community consultation and involvement, is key to extending and deconstructing the boundaries of learning.

The following issues may be helpful in assisting schools to move forward.

Is everybody here?	Issues to consider
- Non-traditional learners – who are they?	- Access and facilities for those with special needs
- When will they want to attend?	- Specialist ICT devices or software to support sensory or physical disabilities
- What skills and knowledge will they want to learn?	- Mechanisms for reaching groups for whom English is not their first language
- How will you reach the 'hard to reach'?	- Strategies for attracting those who feel excluded
- Are there any groups who are not represented?	- Continuity for those who attend sporadically
	- Opportunities to personalise learning

Is it a safe environment?	Issues to consider
- Do all learners feel welcomed and safe?	- All ICT equipment must be safe to use
- Is there an integrated approach to acceptable use policies?	- All learners need to know about internet safety
- Is your equipment secure and your network safeguarded?	- Networks and data must be secure and equipment insured to extend school use
- What happens when things go wrong?	- Technical advice and support and a framework of acceptable use and safety policies are essential
- Is the technology regularly updated to match safety and health needs?	- Adequate monitoring, tracking and filtering solutions need to be tailored to user requirements

Who will make it work?	Issues to consider
- How can you involve staff in new ways of working?	- Extending the school day gives rise to staffing issues
- Is staff training in ICT a priority?	- Volunteers may be a vital component – but they need training and support
- How do you share good practice?	- Mentors offer valuable support
- How will you support outreach centres and staff?	- Technical support must be accessible
- What happens when things don't work?	- Celebrate success – for everyone

Further sources of information

Access to education for children and young people with medical needs, DfES website
http://www.dfes.gov.uk/sickchildren

Becta 2003: What the research says about home-school links
http://www.becta.org.uk/page_documents/research/wtrs_icthome.pdf

Becta's view: Personalising learning with ICT
http://www.becta.org.uk/corporate/publications/documents/personalised_learning.pdf

Becta's view: The 14–19 agenda
http://www.becta.org.uk/corporate/publications/documents/Becta_view_14-19.pdf

Communication Aids Project (CAP)
http://www.becta.org.uk/cap

Dulwich Picture Gallery trail
http://www.warrenschool.net/files/video/DulwichPictureGalleryTrail.mpg and
http://www.dulwichpicturegallery.org.uk/uploads/Digit.pdf

E-Lamp: the E-Learning and Mobility Project
http://www.shef.ac.uk/inclusive-education/research/ researchprojects/elamp2.doc

E-Safety: developing whole-school policies to support effective practice
http://www.becta.org.uk/publications

Extended Schools' ICT toolkit
http://www.teachernet.gov.uk/wholeschool/extendedschools/ICT

ICT Test Bed Project
http://www.becta.org.uk/icttestbed and
http://www.becta.org.uk/research/research.cfm?section=1&id=3439

NGfL Inclusion
http://inclusion.ngfl.gov.uk

Nisai-Iris Partnership
http://www.nisai-iris.com

Notschool.net
http://www.notschool.net

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Becta is the Government's key partner in the strategic development and delivery of its information and communications technology (ICT) and e-learning strategy for the schools and the learning and skills sectors.