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Summary

Key benefits include:

- improved communication between school and home
- the extension of learning to the home
- deeper involvement of families in learning
- increased motivation of students using portable computers.

Teachers can maximise the impact of ICT and home-school links by:

- finding out the extent of pupils' access to ICT at home
- providing support for home use of ICT
- giving a prompt response to electronic communications
- exploring the use of ICT in homework.

What the research says about ICT and home-school links

This briefing is based on an analysis of available research about the use of ICT with home-school links. It summarises the key findings and suggests resources for further reading.

How may ICT be used in home-school links?

There is no single definition of what we mean by using ICT in home-school links, but the literature on this subject generally falls into one of three main areas:

- Electronic communication between school staff, parents and students
- Remote access from home to school records and curriculum content
- Allowing learning to take place in the home as an extension of the school environment.

In the literature, the term 'home-school' work is sometimes substituted for 'homework' to reflect the fact that students may be able to continue work at home which they started in the classroom. There are various technologies which can support this. The main ones are portable computers, wireless networks, school intranets and online curriculum materials. The Government has encouraged more links between home and school, including those enabled via ICT, on the basis that such links deliver improved academic standards, greater parental involvement and support for the school. But to judge whether ICT-supported links have the potential to enhance teaching and learning it is necessary to examine the available research evidence.

Key research evidence about home–school links and ICT

On the basis of Becta's analysis, home–school links supported by ICT can have positive effects in the areas outlined below (there are references for further reading supplied alongside most of the findings).

General benefits

- Improved communication fosters development of the relationship between school and parents
- Work can be transferred between home and school with more flexibility and fewer disruptions (DfES/Becta, 2001)
- Students may be motivated by the introduction of autonomy into their learning when using portable computers at home and school (Passey, 1999)
- Greater involvement by parents with homework allows more ambitious tasks to be set by the teacher (Duffield in Kafai *et al.*, 2002).

Benefits for students

- Students using personal laptops which provide them with extended ICT access at home and school have shown exceptionally advanced ICT skills and a truly discriminatory use of ICT resources (DfES/Becta, 2001)
- Those unable to attend school regularly may still receive tuition through tools such as video conferencing and other forms of online communication
- Access to curriculum resources via the school website supports a continuity of learning between home and school (Chaboudy, 2001)
- Students who feel uncomfortable with face-to-face interaction can exploit alternative opportunities for communication from home via email and chat rooms (MacMahon, 1993)
- Access to a project task from home gives students the chance to deepen their

understanding and become a class expert in an area of study (Bruckman, 1997)

- There are improved rates of homework completion when assignments are on the school intranet and available to parents (MacMahon, 1993).

Benefits for teachers

- ICT-based administrative systems such as digital attendance registers and electronically stored records can be made accessible to connection from home, supporting improved communication with parents and children (DfES/Becta, 2001)
- Email allows more frequent and reliable communication with parents, making it easier for the school to get greater involvement by parents in matters of school governance or when seeking advice and support (Blanchard, 1998; Chaboudy, 2001)
- Taking advantage of home access to ICT gives teachers more options when planning assignments, including allowing for students to continue classroom work at home and having access to school intranet or Internet resources (Duffield in Kafai *et al.*, 2002)
- Teachers supplied with portable computers for use at home and school find that they can make increased use of ICT for lesson preparation, communications, and class presentations (DfES/Becta, 2001).

Benefits for parents

- Collaboration between parent and child using a school intranet from home can improve their relationship (Passey *et al.*, 1997)

- Home access via ICT to school information brings parents into closer contact with school, encouraging them to feel that they have a role to play in their child's education (Passey *et al.*, 1997)
- Access by parents to common data on a school's intranet leads to a better relationship with other parents (Passey *et al.*, 1997)
- A home–school link which is enabled by ICT may lead to significantly increased family involvement with their child's school work and, following this, improved student engagement with their learning (Fishman, 1998)
- Email access to teachers provides more opportunities for communication, especially considering the restrictions on personal access arising from teaching time (DfES/Becta, 2001).

Factors for effective use

- There is an audit of home computer ownership and use (DfES/Becta, 2001)
- Measures are put in place to ensure out of school access to ICT for all (DfES/Becta, 2001)
- Technical support is available out of school hours (DfES/Becta, 2001)
- There is teacher and parent training in ICT and the development of home–school links (Becta, 2001)
- The aims and objectives of having home–school links are agreed and understood by all (Becta, 2001).

About Becta's 'What the Research Says...' series

This series of briefing papers is designed in particular for teachers, ICT co-ordinators and school managers, in order to provide an initial idea of the available research evidence for the use of Information and Communications Technology (ICT) in schools and colleges. We welcome feedback and suggestions for further titles in the series (contact details can be found at the end of this briefing).

ICT and home–school links in practice

At Parris Wood Technology College in Manchester, the school network has been made available remotely via the website, the intranet, or a direct connection from home to the network server. An explicit target in the school development plan was to increase online curriculum content. However, it was clear that steps would have to be taken to enable students without home computers to access this developing curriculum. A home computer loan scheme was established following a survey to establish the extent of home access to computers and the Internet. Pupils and parents were offered the use of 'thin client' terminals for home use, while the school's PTA agreed to meet the cost of Internet connection for families with financial difficulties. ('Thin clients' are low specification, and in this case reconditioned machines, a fraction of the cost of a standard computer, but sufficient for connecting to the school network.) The terminals have been delivered to homes, set up and maintained by technical staff. For students still without home access, school ICT facilities are available before and after school.

In addition to costing less there are other benefits in using thin clients. This approach ensures that filtering systems in place at school also apply to student use of the Internet from home. All school software is available from home, and if necessary, the school can upgrade the thin clients remotely.

Plans for the future at Parris Wood include giving parents access to records on students' attendance, assessments and homework.

A presentation on developments at Parris Wood was given at an Expert Technology Seminar held by Becta in 2002. See http://www.becta.org.uk/page_documents/corporate/events/parrswood.pdf.

Explanation of Findings

As with ICT more generally, direct causal effects are not always easily identifiable. Drawing clear conclusions on the effects of ICT from the range of research evidence and reports available can be problematic. Much of the limited research into specific ICT-supported home–school links focuses on different aims and incorporates various technologies, for example portable computers, and the links are just one element of what the technology may offer.

Home use of ICT

As levels of home access to ICT rise, the type of use made by students is the subject of increasing study. The latest Young People and ICT survey revealed that 81 per cent of households with children aged 5 to 18 had access to a computer in the home (DfES/Becta, 2002a). A strong relationship exists with social grade, however, with those in a lower social class and with no educational qualifications being the least likely to have access. The same survey also found that 56 per cent of young people used the internet at home. There seem to be significant levels of computer use for schoolwork, with 90 per cent of those at Key Stage 3 and above who used a computer at home, reporting that they used it for schoolwork. The survey confirmed the findings of ImpaCT2 that most students spend far more time using ICT at home than at school. Students perceive that they have greater autonomy to explore ICT at home, and use the Internet in a discriminating way (DfES/Becta, 2002b).

The differences between home and school use can cause tensions when students become frustrated by the restrictions on ICT use at school. A recent US study investigated the disparities in internet use by students at home and school (Levin & Arafeh, 2002). At home large numbers were making extensive use of the internet for a variety of education-related purposes. At school they were discouraged from using the internet by barriers such as slow access, crude filtering systems and the uninteresting nature of many internet-based assignments. As a result, those students with extensive internet skills acquired at home came to school with expectations, experiences and skills not recognised in the classroom. The

authors dubbed this mismatch between home and school use 'the digital disconnect'.

The Notschool.net project represents an initiative where home use of ICT is the sole medium of education for students excluded from school (Duckworth, 2001). It is remarkable in demonstrating the potential of an online community to re-engage students in learning. In this scenario, there is an emphasis that the community is not remotely linked to school, but it may be possible for schools to learn from the successes of Notschool.net when creating their own online communities.

Digital divide issues

Before encouraging students to use computers at home, schools should be aware of the existence of inequalities in access to ICT. The correlation between access to ICT at home and socio-economic background means there is a risk that social disadvantage is increased. Other factors than ownership also influence access, such as family rules about computer use, and location of equipment. Consequently teachers often feel reluctant to suggest home use of ICT, but there are measures a school can take to alleviate inequalities. These include laptop leasing, school loan schemes and obtaining special funding. It is also worth identifying where else ICT can be used outside schools, in addition to maximising access to the school's own facilities. Statistics provided by the e-Learning Foundation suggest that only 5 per cent of schools currently make their ICT facilities available for use outside school hours (see www.e-learningfoundation.com). Funding from the DfES to support this may be available under the Extended Schools programme.

About the research literature

Two DfES-commissioned reports into this theme appeared in 2001 (DfES/Becta, 2001 and Becta, 2001), and commented on the paucity of specific research in this area. Two years later this remains the case. Consequently, studies from the US such as that evaluating the Buddy Project (Rockman, 1995), and work by Passey which was primarily aimed at studying the impact of portables (Passey, 1999), remain amongst the main sources.

The technology to support home–school links in many exciting ways may exist, but there is inevitably a lag before good practice becomes established. The case studies of schools carried out in 2001 (DfES/Becta, 2002) feature home–school initiatives in their earliest phases, and it would be valuable to examine subsequent developments.

Recent literature appears to be more focused on the home use of ICT without considering the issue of links with school. Such literature often involves a concern over whether home use really does support learning, or actually has a disruptive influence on what happens in the classroom. The style of learning arising from the use of ICT at home is indeed of interest, as are children's perceptions of differences between home and school use, but it is unfortunate that ICT-supported links with school are not being explored at the same time.

Key areas for further research

- What are the effects of ICT-supported home–school links on teaching and learning?
- What factors promote the success of ICT-supported home–school links?
- How can home and school uses of ICT be brought closer together?

Key questions for schools

- What do you aim to achieve through developing home–school links?
- Do you know how many of your pupils have access to a computer at home?
- Is funding available to extend this?
- Are you prepared for greater communication with families?

Bibliography and further reading

The research referred to in this briefing represents a selection from the growing field of ICT research related to ICT and home-school links in particular, and should not be regarded as a definitive list of the 'most important' research in this area.

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Becta's ICT Research Network

If you're interested in research on the use of ICT in education, you can join Becta's ICT Research Network.

The ICT Research Network seeks to encourage the exchange of information in order to inform the national agenda and professional practice.

Membership is free and is open to:

- teachers
- ICT co-ordinators
- ICT advisers
- school managers
- researchers
- policy makers
- research sponsors
- industry.

The Network provides an opportunity to:

- exchange information on current research
- develop partnerships
- discuss priorities for further investigation
- focus research on issues of importance to practitioners and policy-makers.

They can do this via:

- an email discussion list
- publications
- conferences and events.

More information on Becta's ICT Research Network can be found at: <http://www.becta.org.uk/research/ictrn/>

Alternatively, send an email to:

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www.becta.org.uk/research

About Becta

Becta is the Government's lead agency for information and communications technology (ICT) in education and supports UK Government, national organisations, schools and colleges in the use and development of ICT in education to raise standards, widen access, improve skills and encourage effective management. Becta works in partnership to develop the National Grid for Learning (NGfL) strategy.

About the ICT in Schools Programme

The ICT in Schools Programme is the Government's key initiative to stimulate and support the use of information and communications technology (ICT) to improve standards and to encourage new ways of teaching and learning. The enormous potential of ICT means that for the first time it is becoming possible for each child to be educated in a way and at a pace which suits them, recognising that each is different, with different abilities, interests and needs. The challenge over the next four years will be to successfully embed ICT in every facet of teaching and learning where it can have a direct impact on raising standards of attainment. A vision for the future of ICT in schools can be found in the paper *Fulfilling the Potential - Transforming Teaching and Learning through ICT in Schools*, available on the DFES ICT in Schools website <http://www.dfes.gov.uk/ictinschools/publications/>

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