

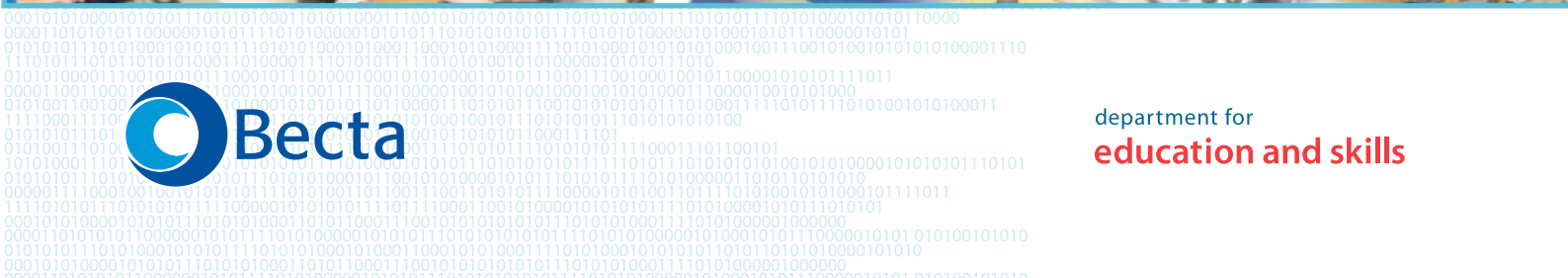
Handheld computers in schools

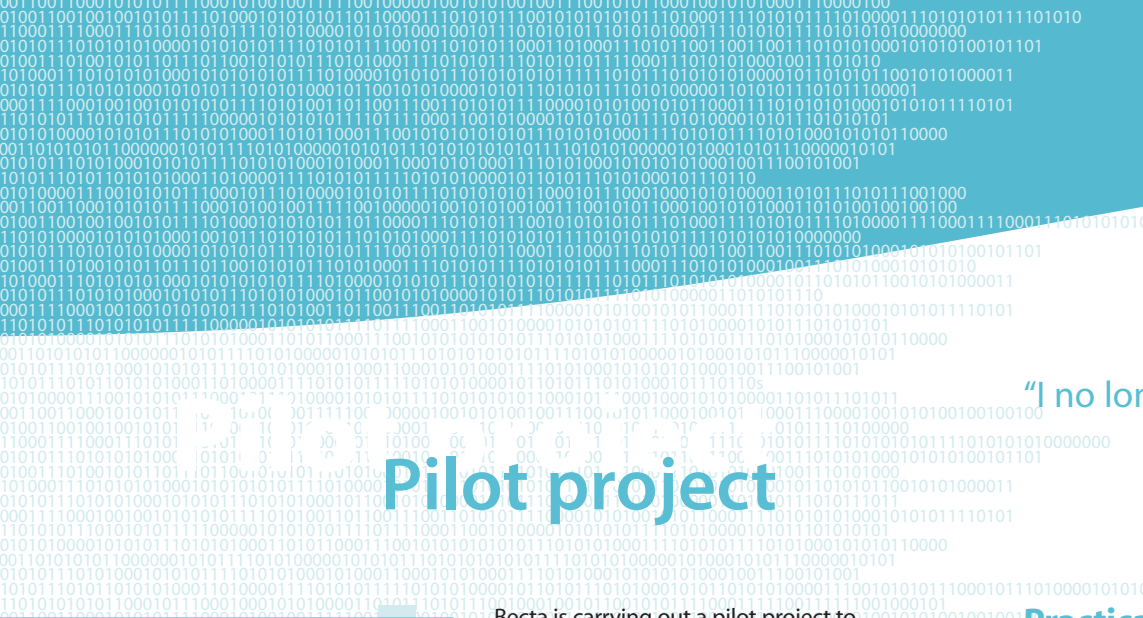
managing your work supporting teaching and learning

Handheld computers could bring important benefits to schools, by assisting administration, supporting classroom management and enabling personal and group learning. These devices are sometimes described as 'personal digital assistants' or PDAs in a business context. There are also 'personal learning tools' developed for educational contexts, and now mobile phones which offer similar functions.



department for
education and skills





Pilot project



Becta is carrying out a pilot project to evaluate the use of PDAs in schools for managing teachers' work and supporting teaching and learning.

Some 30 assorted schools in England have been given a selection of devices to evaluate. The first phase of the project concerns senior management teams focusing on how the devices support their work. The final phase of the project involves a small number of schools being equipped with the devices for the majority of staff and having access to class sets for supporting their teaching. A number of accessories are also being evaluated. Altogether, 150 teachers are using the devices in the project and six classes have been equipped.

Becta will publish a full report on the findings of the pilot project and display examples of how schools are using handheld computing at the Education Show in March 2003.

This leaflet highlights results from a survey carried out as part of the project and some initial reactions by users in schools.

The sections of the leaflet are:

- Practical issues: advantages and disadvantages
- Managing your work in education
- Supporting teaching and learning
- Sources of further information

"I no longer write a diary!"

Practical issues: advantages and disadvantages

For more detailed information please refer to the Becta information sheet on handheld computers (see Further Information at the end of this leaflet).

Electronic diaries and organisers are available from a range of manufacturers, but the focus of this project is on devices which offer a significant number of facilities in addition to the basic diary, contact list and note-taking functions.

The main groups of handhelds now available use either PocketPC from Microsoft or Palm OS as operating systems.

All these devices include an address book, a to do list, a calendar and other organiser features. Data is entered via a touch-screen and stylus or through a small keyboard attached as an accessory. It is also possible to share data with a desktop or laptop computer or other handheld devices through a cable or via wireless links. Data can be 'beamed' between devices by an infrared link. All have a facility to synchronise (sync) data and documents with information held on a desktop or laptop computer, allowing diaries, tasks and contacts to be easily shared. Most of these handheld computers will also share word processed documents, spreadsheets and presentation slides. Most will allow the reading of ebooks and viewing of video sequences or listening



“My deputy and I know that our diaries are in agreement! The contact list is very quick to access, and I find this very useful.”

to audio data, some also have a microphone to record dictated notes, and at least one device has an integral camera.

It is possible to extend the functions of these devices through a range of accessories and add-on cards to allow connection with the Internet, reception of satellite positioning data (GPS), connection to data projectors or to use them for data logging and so on. Some devices can connect to a wireless Local Area Network (LAN) giving mobile access to the school network and Internet. Some handhelds can also become mobile phones through an add-on card. Alternatively, some mobile phones are now including similar functionality.

Advantages

- Portability
- Size
- Instant on (no start-up time)
- Cost (relative to laptop computers)
- Battery life (relative to laptop computers)
- May be used outdoors.

Disadvantages

- Small screen
- Possibly not robust enough for schools
- Lack of technical support

- Data loss due to battery problems
- Problems with linking to networks.

Managing your work in education

These devices have been designed to support business users organising their work so they offer many advantages in similar situations in education. In particular, leadership teams have reported great benefits in using this technology to manage their work. Users were asked to keep logs of their experiences and these have been summarised by researchers.

The first phase reported that:

“Most felt that the device had benefited them in terms of time saved, increased efficiency and better planning of appointments....The most praised feature [of the PDA] was the beaming of information between staff, that saved duplication, time, and allowed all staff to have the same diary and list of appointments.”

Favourable comments made by users included:

“I no longer write a diary!”

“I take notes in a meeting then edit and transfer to [desktop computer] files. Excellent!”

“My deputy and I know that our diaries are in agreement! The contact list is very quick to access, and I find this very useful.”



"I beam appointments between the PDA and the Heads, and between the PDA and my mobile phone." (School administrator)

"This facility is an add-on to the existing wireless networked laptops at the school... the portability has been a distinct advantage."

There were also some problems encountered:

In common with most ICT innovations there needs to be good support and training available for the majority of users to successfully integrate the technology into their work. Where this was not available there was limited implementation of the technology.

The most common difficulties experienced were in setting up the synchronisation of PDAs with standalone or networked computers. There were also problems with loss of data due to batteries losing their charge.

Managing the Classroom

At this stage of the project, schools are in the early stages of using the technology in the classroom. When PDAs were used in the classroom it was usually by teachers organising their administration rather than to support their teaching directly. Schools are beginning to use handheld devices for registration purposes and other record-keeping activities. Some teachers are devising their own ways of doing this, but there are companies providing software

solutions which will integrate registration and other record keeping with the school administration system.

Teachers have found that the devices can help them to manage organisational tasks in class:

"I'm 100% convinced that it has enabled me to become a far more effective teacher...I always had pretty poor organisational skills. If there was a deadline to lose, I lost it. If there was an important phone number that I'd need in the future...it would need to be tattooed onto my body. Thankfully, those days are gone. Now I know where every last detail of my life can be found."

"One aspect of my school life has actually changed beyond all recognition....the way that I set and collect homework...Using my PDA, I now keep a class list together with a record of the work set, date set and date of completion."

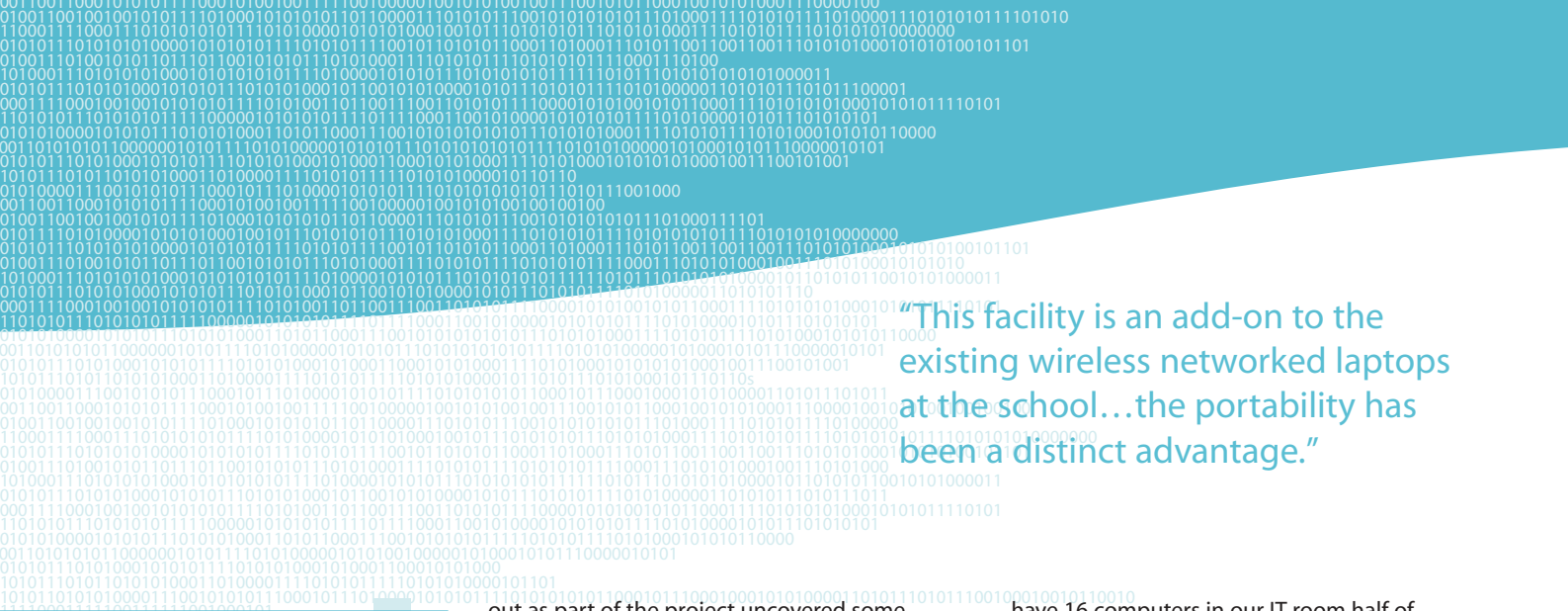
"Microphone – this feature is extremely useful and has become part of my daily routine. When I am on my way home in the car I will use this as a [dictation machine] and record messages and tasks as I think of them. Then when I get home I transfer them to the task element."

Teaching and Learning

Some teachers have begun to explore the potential of the devices for teaching and learning. The preliminary research carried



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out as part of the project uncovered some use of PDAs by pupils in this country and more extensive use in schools and higher education in the USA. There are some schools which are exploring how PDAs can support inclusion to help pupils who need support to access learning; for example, by linking icons to sounds for pupils with impaired speech (see the Further Information section at the end of this leaflet).

"I have made use of ebooks. Children find it fascinating when I read to them from my PDA. ...this is one area of PDA life where I can see real potential. Imagine having a class of PDA users. You could 'beam' them a piece of work/text together with a short questionnaire to test their comprehension."

"We went into the school garden with the PDAs and made notes on the colours, sounds and sights of autumn. As we only

have 16 computers in our IT room half of the class then used them to write out their poems with clip art for a class book. The other half typed them into the PDAs in [handheld office software] and will transfer them to [word processing software] on the laptop, adding clip art and print them off. This will be quicker than waiting a week for our next lesson in the IT room."

Difficulties with PDA use in classrooms

One of the biggest problems is in organising the battery charging of a class set of PDAs. Synchronisation of data with desktop computers is also a problem.

Schools will be exploring the most effective ways of dealing with these issues in the next phase of the project, to be reported in full at the Education Show.



Further Information

Becta http://www.becta.org.uk/technology/infosheets/index.html	Information Sheet on Handheld Computers – July 2001	UK
TES www.tes.co.uk	'Handheld ways to improve literacy', September 2002 'Take the tablets', September 2002 'Glasgow handheld pilot proves a hit', October 2001 'Palm PCs to replace laptops', July 2001	UK
www.electronic-school.com	'Getting a handle on handhelds', 2001 http://www.electronicschool.com/2001/06/0601/handhelds.html	US
http://www.techdis.ac.uk/PDA/	Usability and Accessibility of PDAs in Education	UK
http://www.learningatyourfingertips.com/	PDA project at Philip Morant School, Essex	UK
http://www.palm.com/education/	Palm Education	US
SRI International Report http://www.palmgrants.sri.com/	Palm Education Pioneers Programme – March 2002 Evaluation Report	US
http://www.iconspeak.co.uk/	Adapting PDAs for people with impaired speech	UK
Personal learning tool	http://education.ti.com/uk/product/cdl/voyage200.html	UK
Education Week on the Web http://www.edweek.org/	'Handheld Computing: New Best Tech Tool, or Just a Fad?', September 2001	US
TechLearning – http://www.techlearning.com	'A Report Card on Handheld Computing' Jean Shields and Amy Poftak	US

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