Multimedia Portables for Teachers Pilot

Project Report

Evaluation conducted by the School of Education, the University of Nottingham

BECTa

DfEE

Portable Multimedia Computers

The Summary document of this report is available on the World Wide Web:
http://www.becta.org.uk/projects/mmportables2/evaluation/

Executive Summary

Description of the Project

Early in 1996 the Department for Education and Employment (DfEE) asked The National Council for Educational Technology (NCET, now BECTA) to manage a £5m pilot which sought to develop teacher competence and confidence in the use of IT. Phase I of the pilot ran from January 1996 to July 1997, Phase II from January 1997 to July 1998.

Under the first Phase, approximately 1150 teachers in 575 primary and secondary schools in England were provided with a multimedia portable computer with connectivity together with two Internet subscriptions, core software and a number of CD-ROM titles. Four different computer models were procured, with a variety of subject-specific software along with two Internet subscriptions, to enable an investigation of the range of features each provided (see Annexe 6). NCET managed the procurement, delivery and demonstration of the equipment, the process for nomination and identification of participants, the support and follow-up of participants, and the evaluation of the project. The selection process provided a population with a normal distribution of confidence and competence and a gender balance. Following a restricted tendering process, NCET appointed an evaluation team from the University of Nottingham led by Professor Colin Harrison to conduct this independent evaluation.

Implementation

The delivery of each machine was accompanied by a three-hour demonstration which aimed to acquaint the user with the capabilities of the system, including an overview of some of the CD-ROM titles and making an active link-up to the Internet. NCET contracted for each machine to be demonstrated to a minimum of two teachers and all deliveries and demonstrations were completed by 30 June 1996.

Aims

The aims of the project were to:
*   increase teacher confidence and competence in the use of IT resources
*   promote learning in the pupils taught by the teachers taking part in the pilot

by providing a varied group of teachers with personal computers which supported multimedia and communications.

Background to the evaluation

The evaluation strategy aimed to make use of three sources of data:
*   the NCET database which held records on the teachers and their schools, including self-ratings of initial confidence and competence with IT

Executive Summary

- a detailed questionnaire administered at two points, 3 months and 8 months into the academic year
- case study data based on interviews with 60 participating teachers.

The proportion of teachers returning questionnaires was very high (93%), making the evaluation data highly reliable. The gender balance was almost even with 52.9% male. Secondary schools were the largest group in the project (83%), followed by primary (11%), middle (4.2%) and special schools (2.5%). The main environment variable was the computing platform provided. The proportion of computers distributed to teachers was as follows: most were PC machines (C1/Leo 29.5%, Toshiba 30.2% and Akhter 31.9%), with the remaining 8.4% of teachers receiving Apple Macintosh.

Project outcomes

The evaluators found, based on data from over 1000 teachers from across the spectrum, that:

- a very high proportion of teachers (98%) made effective use of their computer
- teachers' confidence and competence changed for the better
- teachers felt that their knowledge of IT had increased 'substantially'
- teachers changed their ways of working
- teachers' enthusiasm for their work increased
- there were positive benefits for teaching and learning
- there were wider benefits, for students and for other teachers.

The teachers' assessment of competence in IT improved significantly over the period of the Pilot. Teachers' confidence in using computers increased significantly, although it is worth noting that the teachers' assessment of their confidence was often lower than their self-ratings of their competence. The graphs below illustrated the change in competence and confidence.
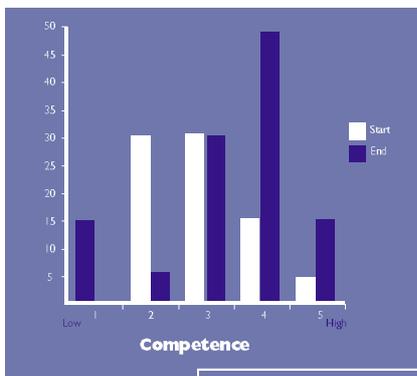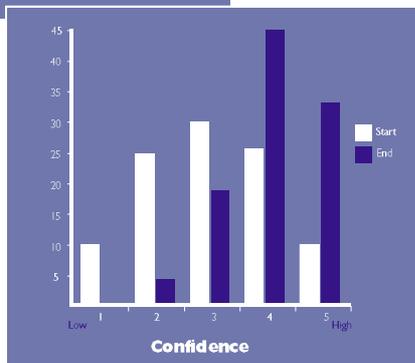

Chart 1.1: Gains in teacher competence and confidence over the project

Usage figures were high, with over 98% of the teachers using the computers successfully and 95% of teachers using the computers for teaching activities. The evaluation measured the teachers' successful use in relation to a number of elements of the package. These increased steadily through the life of the project and the final figures are illustrated below.
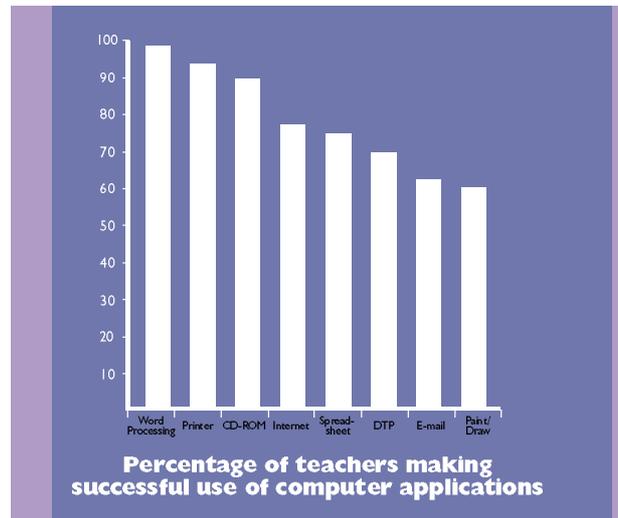

Chart 1.2: Percentage of teachers making successful use of computer applications

There were overwhelmingly positive responses to questions on whether the equipment had made a difference to participants' professional life and the value of the time invested on the project. Some 95% of teachers reported that the project 'has allowed me to develop my teaching' and 96% felt that 'money spent on this provision was worthwhile'.

How teachers used their computer

Portability was a very significant factor in teachers making full use of the computer's potential. As Chart 1.3 shows, teachers used the machine at home to continue work from school, for planning and delivering their teaching, and for administration. Teachers gave a great deal of their own time to learning more about the potential of the computer, and nearly all became more confident in using the computer in a variety of ways in school, and in a variety of locations, including the classroom. Time spent on what teachers regarded as 'personal' projects had positive benefits for their professional development.

Teachers made effective use of the full potential of the computer. A very high proportion made use of desktop publishing software and integrated packages such as Claris Works and Microsoft Works. Over 94% of teachers attempted to use the CD-ROM, and 91% were successful, a high figure given that only 92% of the computers were supplied with CD-ROM. Most teachers used a variety of software, though it was difficult to generalise about their usage since this was dependent upon the personal and professional contexts of each teacher. The degree of computer literacy of many teachers increased exponentially, to the extent that even relatively inexperienced teachers were quickly able to use their computer's power to evaluate a variety of software packages, and to filter, import and export information in order to better suit their own curriculum purposes.

The majority of teachers took some time to become confident and proficient in using e-mail or accessing the Internet, but by the end of the
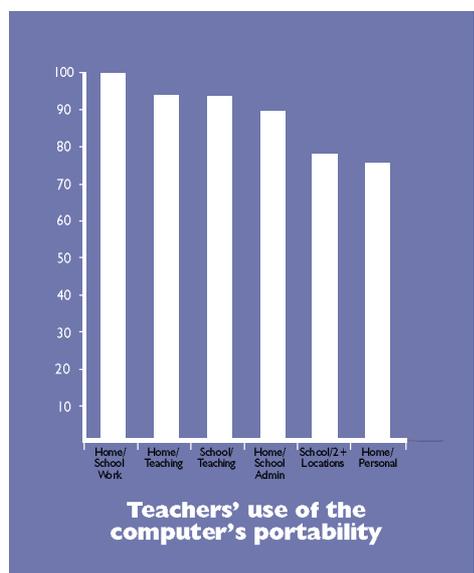
Executive Summary

Teachers' use of the computer's portability

project most were aiming to develop their use of these facilities, especially in accessing material for lesson planning and for students. Most teachers made some use of the Internet services from AOL (America On Line) or RM-IFL (Research Machines – Internet for Learning), generally to search for information on particular subjects.

The figures for successful use of electronic mail (62%) and the Internet (76%) were fairly high, but reflected the fact that technical difficulties with telecommunications caused problems for some teachers. The percentage of teachers making successful Internet connections rose steadily during the lifetime of the project and many examples of the innovative use of World Wide Web resources were encountered.

Support and training issues

There were a number of issues reported: over 70% of teachers encountered either general problems in getting started and using their computer, or early problems which were then overcome. Just 4% said that they had encountered major problems which persisted.

The support which teachers received at the time of installation/set-up was (in the view of the evaluators) an important condition for the project's success. Teachers had varied perceptions of the relative importance of different sources of support. A majority (55%) rated the initial support as 'good' or 'excellent'; other highly-rated sources of support were colleagues in the school, either the NCET project partner (57% 'good' or 'excellent'), or another colleague (65% 'good' or 'excellent').

Sources of support which were judged to have been invaluable by many individual teachers were the informal help of 'someone in your family', or 'a friend or acquaintance'. These sources of support did not receive high average ratings (since they were not available to and used by all teachers), but there was a strong correlation between this type of support and those teachers whose initial confidence and competence were low.

Benefits to pupils

The most significant benefits to pupils were indirect, through the teacher's more expert use of tools for creating high-quality classroom materials and improved access to resources.

During the time of the project, however, teachers became increasingly willing to experiment in using the computer with small groups, especially with CD-ROM programs. Initially, primary and special school colleagues were more willing to do this than secondary and middle school teachers. Teachers of older students were more willing to explore the possibilities of using e-mail and the Internet, provided that suitable constraints to prevent inappropriate use were in place.

Gender differences

It was clear from the questionnaire results that in certain areas female teachers made more progress than their male counterparts. In some areas, in particular the use of the portable for teaching, females moved ahead of males over the life of the project. In other areas, including the use of the computers for administration, although female teachers did not end the project ahead of their male counterparts, they had made significantly greater gains.

What were the conditions for success?

In the evaluators' view, four conditions contributed to the success of the project:
- Initial and immediate success with the technology, through the mandatory hands-on demonstration and the provision of user-friendly hardware and software
- Personal ownership and exclusive use over an extended period
- The portability of the equipment so it could be moved between work areas and between home and school
- Formal and informal support – the combination of the ownership and portability provided teachers with the flexibility to access a greater variety of support from peers and other sources.

What factors impeded successful use?

In general, the project was felt by the great majority of teachers, and by the evaluators, to be very successful. However, some problems were encountered which impeded the progress of a number of teachers:
- Initial and/or sustained hardware problems
- Low confidence, particularly if it was associated with poor in-school support and an absence of an informal out-of-school support person or network
- Failure to receive promised release time for INSET
- Internet access which was restricted by telecommunications problems including lack of ready access to a phone line, log-on or password problems, technical problems, lack of availability of support.

Conclusions

In the view of the evaluation team, the Multimedia Portables for Teachers Pilot has been very successful in leading to a significant enhancement of the IT skills of the great majority of teachers who took part.

A very high proportion of teachers (98%) made effective use of their computer. Teachers' confidence and competence changed radically for the better, and most felt that their knowledge of IT had increased 'substantially'. Many teachers made fundamental changes to their ways of working, their enthusiasm for their work increased, and there were positive benefits for teaching and learning, as well as wider benefits for pupils and for other teachers. As one team member wrote after a case study visit: 'The portable computers have made a transformative difference to the teachers, at a personal and professional level'.