



# **Education Departments' Superhighways Initiative**

Group D: Home–School Links

## **Final Report**

**Lancaster University Evaluation Group**

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## Evaluation methods

1. The evaluation reported throughout this group has been based upon evidence collected in a range of ways from a number of sources:
  - direct observations during site and school visits
  - discussions and interviews with project managers, school managers, teachers, pupils and parents
  - documentary evidence and materials provided by project managers and schools
  - analysis of ranges of pupil work
  - data collection from monitoring systems within some projects
  - data collection from questionnaires widely distributed to teachers, pupils and parents.

It should be noted that, where evidence is given from questionnaire returns, the number responding (for example 13 out of 23) indicates the number of positive responses from the total number of returned questionnaires. Blank responses are not included.

## Evaluation team

2. The evaluation team comprised:

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## **The Projects**

1. The three projects within this evaluation group were selected because they were, to greater or lesser extents, concerned with the use of communication technologies in the development of home-school links. Each project has been uniquely different with regard to its focus: one has been a largely technological trial with opportunistic educational development; another has been an ambitious development involving the width of aspects that need to be addressed in developing a learning community; the third has been a largely resource-based trial. One of the projects has directly supported the development of home-school practice, one was involved in the trial of a sophisticated technology within homes and schools, and the third was involved in educational trials of resources that could become available to homes as well as being used in schools.

### **Project D2.1: Acorn Home- School Links Project**

#### **Description of the project**

2. This project involved eight primary schools (one of which later withdrew owing to a priority to prepare for an OFSTED inspection), two secondary schools, a college of higher education, and 92 homes (33 with children of school age). All sites were within the city of Cambridge, and all schools were in the Cambridge Local Education Authority (LEA).
3. The project lead sponsor was Acorn Online (originally Online Media). Other partners involved in creating the technological structure were Cambridge Cable, ATM Ltd, SJ Research and ICL. Partners involved in creating the resource provision were the BBC, Anglia Multimedia, Channel 4, the National Oracy Project (NOP), National Westminster Bank, Tesco and IPC Magazines.
4. The resources available, programmes located on large video servers, were accessed by users through a normal TV running a device that enabled them to select a programme on demand, through a set-top box, controlled by an infra-red panel. The programmes ran through a sophisticated asynchronous transfer mode (ATM) cable system. In one school, a large server and authoring centre were established in order to develop educational resources for use on the system.
5. The focus of the activity was twofold. Firstly, schools and homes used the technology, and considered educational uses for the system. Secondly, two particular sites were developed as authoring centres, and produced resources for wider access.

**Aims and outcomes**

6. The originally stated intentions for the project were that learners would be able to 'use IT in the home environment in close association with school work. Use on-line services in both home and school environment. Undertake work in the home environment that is structured and enabled by and through on-line services'. These intentions were largely not met; uses in homes and school have occurred independently, so aims and outcomes concerned with working between home and school in close association have not been fulfilled.
7. The outcomes from the project have indicated the ways in which homes and schools have used the technology and resources available, and how individual authoring sites have developed materials for use on the system. It is clear from the evaluation that school users of an iTV system require a great deal of training input if the resource is to be used in any more effective ways than a video and TV. It has been shown that it is possible for an experienced authoring centre to develop resources that link multimedia resources, video, audio, graphics and text, so that they are able to be run reliably over a sophisticated network. The use of such resources has not been demonstrated within the time-scale of this evaluation.
8. Professional development need was tackled largely in institutions by raising levels of awareness across the staff, and sharing ideas and experiences in either formal or informal ways. Awareness raising was offered by the lead sponsor at the start of the project, and technical support was available during the project. Teachers within schools generally required more development training than was available.
9. There were no reported influences on administration, whether at teacher, institution, or a wider level. Some teachers were able to propose ideas of how the systems could be used to support administration activities in the future.
10. In one school, visual display and repetition of material supported pupils with special educational needs.

**Costs and cost benefits**

11. For a school wishing to gain access to iTV, the costs are likely to be fairly low. Access to a cable system, costs associated with the provision of access to the resources, and the cost of a set-top box are the main costs involved. If a school wished to become an authoring centre, there are considerable costs involved in the technological provision required, such as servers, the time required to author resources, and the development of the expertise in order to undertake authoring of multimedia resources.
12. No cost benefits arose from schools involved in the project. However, the exposure of the authoring centre to national and international observers was high, and much interest was generated by those visiting.

## Project D2.2: Highdown Information Hub Project

### **Description of the project**

13. The lead school involved within this project is a comprehensive secondary school, and currently there are two other local secondary schools involved, as well as the Borough of Reading authority. There are 53 homes involved in the project, comprising 33 parents, 17 teachers, and three personnel from Reading Borough Council. All sites involved are currently within the borough and town of Reading.
14. The project lead sponsor has been Microsoft. Other technical sponsors have been ICL and Telecental. Training support has been provided by Softvision, and recently Inter Aid has agreed to provide support also. Resource support has been provided additionally by Superscape and Kodak.
15. The linking technology used has been based upon a cable system, with additional telephone links. The lead school has housed a 'hub', where resources are being developed, and accessed across the intranet within the school itself, within the other partner schools, and within the homes involved. Access is through standard PCs, using cable modems and, in some cases, telephone modems. The hub offers resource access to a range of specifically developed material, as well as to a range of Microsoft resources including CD-ROMs, and to the Internet.
16. The focus of the activity has been wide. The lead school and its partners have been involved in the management and development of the early stages of a learning community. The activity within the lead school has been to create a hub of useable resources; the activity within this school and the other linked schools and homes has been to use these resources for appropriate educational endeavour.

### **Aims and outcomes**

17. The stated aims of the project were 'to demonstrate that the quality of education for young people and adults will be enhanced and value added by access to a well-organised information database made available through a broadband cable network'. While still at an early stage of development, the project has maintained its focus upon its aims and objectives, and within the time of this evaluation, the aims that could be reasonably expected to have been attained have been met.
18. The project has demonstrated that it has been possible, within the time-scale, to create a hub upon which a learning community could develop. Furthermore, it has demonstrated that management with a wide range of partners involved can lead to successful outcomes, where pupils in schools are gaining identifiable learning benefits, and where parents are also able to identify the benefits of the system. Pupil attainments have been shown to be enhanced in some cases by the uses of the resources, home involvement has been shown to have supported student learning, and pupils and parents have been shown to have been supported at home in educational endeavour by the system.

19. Professional development has been tackled within the project for teachers, pupils and parents. Creating involvement has been a key element within the professional development of all groups: teachers have been involved in both creating and using resources; pupils have been involved in classroom and home activities; and parents have been involved in resource identification and development, as well as use. Training has been tackled using a variety of means, including video support, awareness raising, and on-hand support.
20. Teachers are beginning to use the system to undertake class and school administrative tasks at home. The further use of the project is being discussed with Reading Borough Council, who plan to involve all their schools with links to the system. These would include links for administrative purposes.
21. Individual cases of educational outcomes for pupils with special educational needs at this time have not been identified. However, pupils with special educational needs have accessed the system readily, and resources have been identified that are appropriate for individuals. Examples of enhanced motivation arising from access and use have been reported.

#### **Costs and cost benefits**

22. A school wishing to develop as the centre of a hub would require a range of direct support in order to enable this to happen. The school involved has had a great deal of direct and indirect support from a wide range of sponsors. Without this support, the direct costs would be high. Costs would include those required to cover networking, computer hardware including servers, software, resource development, time to undertake management and development, and training. The school is within a newly established unitary authority, and this creates the potential for the school and LEA to consider the ways in which hub developments relate to the likely needs of both institutions.
23. Schools involved in this project were able to gain significant benefits from access to the considerable experience and expertise of a wide range of personnel in industries and other schools. A range of parents have reported their greater involvement with the school and the education of their children. It is recognised by pupils, teachers and parents that the resources available through the project would have been difficult to gain in other ways, and that the access has provided cost benefit to them.

#### **Project D2.3: Superhighways in Education Project**

##### **Description of the project**

24. This project involved three secondary schools: two mixed comprehensive schools in Basildon, and a girls' grammar school in Maidstone. Recently six homes have become involved in the project.

25. The project's lead sponsor was Research Machines (RM). The other partner involved has been Telewest.
26. The resources available, remote CD-ROMs, Internet access, and cable TV channels, have been made available to the schools involved via the cable system through cable modems. The remote CD-ROMs have been held on a server in Basildon at Telewest, where cable TV channels have also originated. Originally, the Internet access was provided from RM, but the point of access has recently been moved to Telewest.
27. The focus of the activity has been the use of resources available via the cable system within learning activities in the schools involved.

### **Aims and outcomes**

28. The stated aims of the project were 'to understand the likely eventual practicality and usefulness of educational systems developed using experimental broadband technology combined with existing school networks'. The central aim of the project was to consider the use of remote CD-ROM access and Internet access by secondary schools. So far, the use of remote CD-ROMs has been considered, and while there has been an overall lack of use in the schools, some sponsors are actively considering the possibility of providing access to remote CD-ROMs. The aims of the project have been met.
29. Educationally, a great deal has been learned about the management and use of these resources within schools, and within classrooms. Particularly, the means by which any school might gain access, and might need to develop use of the resources, has been highlighted by the experience of the schools involved in this project. While sponsors have taken a non-interventionist approach, this has meant that lessons about the possibilities of situations where large amounts of support are not provided can be learned and considered for the future. Enhanced educational attainment has been identified in some cases where resources are used to support cognitive processes such as comparison, analysis and synthesis.
30. Sponsors have been responsive to the technical needs of the schools involved, and have also supported the schools in their own professional development training. Awareness raising, hands-on sessions, and paired development within departments have been the key ways in which schools have tackled their needs. Increasingly, more departments and more teachers have become involved in the use of resources in the schools.
31. The project did not in any school focus upon the administrative use of resources, but upon curriculum use. However, two of the schools are becoming more widely involved in the use of administrative packages to support teachers and pupils.
32. There were no notable outcomes associated with pupils with special educational needs, but teachers are indicating that pupils with particular needs are able to access the resources as readily as others. The need for appropriate language levels for pupils with special needs has been identified by a range of teachers involved.

**Costs and cost benefits**

33. The costs associated with undertaking a development of this type are concerned mainly with the development of an appropriate physical network within the school; the connection and access to resources via a cable or other link; the software required to access the resources; the deployment of appropriate levels of computer equipment in appropriate areas; staff development and training; maintenance and upgrading of equipment; and time for teachers or support staff to identify useable resources and the ways in which they might be used.
34. Staff within schools were able to gain access to expertise and support from personnel external to the school. It is recognised that the access has provided additional resources for the school, which could not have been either gained or funded in any other ways.

**Cross-Project Observations and Recommendations****Teaching and learning issues**

35. The resources used to the greatest extents within these projects have been Internet-based resources and e-mail.
36. Teachers judge the usefulness and useability of resources in a number of ways. However, access to resources is no substitute for the need for teachers to be creative in their approaches and uses of such resources. Where educational benefits have been identified, teachers are using on-line resources alongside others in integrated ways, rather than using them as a substitute for other resources, or as glorified worksheets.
37. Effective learning outcomes and improved attainments are reported and identifiable in some teaching and learning situations, and some uses are pointing towards some significant potential shifts within teaching and learning. Increased attainment is associated with the use of resources available via communication technologies to enhance cognitive learning processes such as integration of ideas, comparative analysis, reasoning and synthesis.

**The technologies used**

38. All projects have used a cable network for access to resources, but one has used a sophisticated ATM cable access.
39. There have been two main forms of resource used in the projects: programmes that run in sequential form, such as broadcast TV and radio programmes on demand; and resources that can be manipulated, such as Internet-related resources and CD-ROMs. The Internet has provided access to materials from three main sources: business, commerce and industry; the academic community (very largely in higher education); and individuals and groups concerned with a particular social focus (which includes pornographic material, and ways of restricting access to it).

While teachers use these resources in many instances creatively and effectively, limited availability of material developed specifically for primary and secondary education is reported widely, both via iTV and the Internet.

### **Access and equity**

40. To provide access for all to communication technologies, and to the resources they offer, will be likely to incur considerable costs. The least expensive means of those evaluated in these projects would be through an iTV route, but this provision could severely limit the ways in which resources could be manipulated by users, for example not having the facility to print off material. While equity of access is an important point to consider, and while libraries and community areas clearly have a role to play in helping to address such issues, as, indeed, could schools themselves, equity of use should be considered alongside this. Equity of provision of access will not automatically ensure equity of provision of use. It will be important that equity of access is coupled adequately with support, if use in particular or appropriate ways is to be a desirable outcome.

### **Project management and wider human networks**

41. Many teachers are enthusiastic about projects of this type, but, in a climate where enthusiasm is generated, disillusionment can occur if concerns and problems are not managed appropriately.
42. Formidable obstacles have often been overcome in managing the development of these projects, and the significant time invested by those involved has led to beneficial outcomes when the partnership between public and private sector interests has been considered. Where successful outcomes have been identified, the management and development of three successive networks has been considered: the human network of partners and potential users; the physical network on which the human network will interact; and the resource network to be used by interested groups and parties concerned.

### **Partnerships between industry and educational institutions**

43. Commitment from both industrial sponsors and staff within schools has been extremely high, and the EDSI projects within this evaluation can be considered to have met one of the intended objectives of encouraging companies to test new communications technology applications and their associated economics in the home-school context.
44. The type of involvement of schools has varied across projects and within projects. One school has largely led one project, while others have been led by the companies involved. Two schools have authored significant material, while others have used resources that have been accessed directly.
45. Schools within the projects in this evaluation group have taken two different developmental stances to the opportunities provided: 'evolutionary involvement'; and 'revolutionary acceptance'. Those schools who have succeeded to the greatest

extents have been those who have taken the initiative, and have become fully involved in planning their own evolutionary development with their partners. Those schools who have been confronted by the need for 'revolutionary acceptance' have not succeeded to the greatest extent: indeed, they have appeared often to reject the opportunity, or have felt under-used or under-valued.

46. The self-sufficiency of projects at this stage varies. One project will require increased company participation if it is to succeed beyond the point currently reached; another will rely upon continued and developing partnerships; the last will depend largely upon continued individual school involvement.

#### **Future directions for suppliers**

47. Mass production of books on line is unlikely to lead to successful educational outcomes or positive benefits at this time. Using on-line resources as a means to access worksheets has not been shown to lead to positive learning gains.
48. Suppliers face the issue of defining exactly what it is that is being supplied: if it is resources, then these are likely to need to be led by user suggestion; if it is curriculum enhancement, then this is likely to need to be coupled with the means to address teacher support and development in order that embedded resources can be used appropriately.
49. Suppliers also face issues concerned with copyright, intellectual property rights (IPR) and licensing. Major issues of this nature will need to be resolved if materials and resources are to become available and useable for educational purposes.

#### **Future directions for education services**

50. The evaluation outcomes suggest that the position from which education originates is likely to become more varied in the future. The fact that in one of these projects a school could become a central resource hub for an authority highlights the question of where educational provision will in the future be centred.
51. The status of education may be raised to increasing extents by the potential and outcomes of the developed use of communication technologies. The demands and expectations upon pupils and upon schools could become higher. This could lead to a perceived enhancement of the status of education, but clearly there are associated issues of what effects this might have upon pupils in the future. The fact that parents can become more involved in supporting their children at home, and can more directly contact teachers, and view what their children are or should be doing, raises issues about their role, the role of the child, and the perceptions that they have of education.
52. The sheer range of those who are likely to be potentially affected by the advent of use of resources via communication technologies is staggering. For example, architects and those who build or modify schools will need to take account of

networking provision needs in all rooms; caretakers will need to consider the security of schools when they are potentially open over much longer periods of time; meal providers may well find that they are asked to provide breakfasts and evening meals as well as lunches; curriculum policy makers may well need to consider how to integrate new approaches into curriculum documentation; authors may well need to consider whether they produce materials that are designed for communication technology use as well as in book form; parents might need to consider how they will provide support for their children when the timing of school activities becomes more varied.

53. The effects upon individual schools are likely to be markedly different over the next 10 years. Some schools will develop and use communication technologies widely; others will not be able to take advantage of such resources, for a variety of reasons. This is likely to create two main effects: a diversity across schools with regard to their uses and practices with communication technologies; and a series of issues and questions for those who have to manage and handle this diversity. Any concept of the 'national' school is likely to become blurred as diversity bites, in terms of how teachers approach teaching and learning, and in terms of how schools organise and structure themselves.

#### **Costs and cost benefits**

54. Costs involved for schools fall into a range of categories. Schools will need to consider the ways in which they wish to use the technologies, as well as the ways in which they might gain access to resources, to judge the most cost-effective solutions.

#### **Implications for the curriculum, present and future**

55. The outcomes reported in this document all rely upon early evidence gathering, collected at very early stages of use. While some outcomes are significant, they raise the need to consider carefully issues of sustainability and generalisability for projects.
56. Corporate knowledge has in the past been defined by a school, and by individual teachers. Teachers have been aware of the corporate knowledge they have needed to handle and to view, and pupils have been aware of what corporate knowledge they have needed to acquire and demonstrate. The resources available via communication technologies are offering new ranges of non-corporate knowledge. This non-corporate knowledge is neither accounted for within the current curriculum, nor is it a feature that teachers in general have experience of handling.
57. The use of communication technologies is already creating a shift in those schools involved in this evaluation towards more project-based learning activities and experiences. The curriculum as currently created is not based upon a project-orientated approach, but upon a subject-content approach. If the use of communication technologies is to be developed more widely, either teachers will need to use their initiative and creativity to develop activities to suit these new

resources, or the curriculum may need to be developed so that such activities are able to be viewed more readily through the requirements and advice made available to them.

### **Professional development**

58. Schools will need to consider a range of issues with regard to the introduction of communication technologies within classrooms. Management support will be needed to create time, opportunity and access. These provisions will need to be integrated with appropriate levels and forms of staff training and development. Such training will need to cover operational practice, pedagogical and curriculum practice, and multimedia handling and authoring. The effectiveness of uses of communication technologies will undoubtedly depend upon appropriate professional development targeted at particular groups, which addresses key needs and issues. The four groups likely to need particular professional development are:

- managers
- co-ordinators
- teachers
- those involved in providing INSET.

59. There are implications for teacher training, both in terms of initial teacher training and continuing professional development, to integrate appropriate practice into courses and training: the ways in which adoption of resource use requires shifts in teacher thinking; in the need for developing appropriate policy within school; the means to develop successful teaching; and the background needs for management.

### **Administrative applications at individual, school and local levels**

60. Teachers who are beginning to use communication technologies at home are beginning to plan lessons, make lesson notes, and undertake curriculum, classroom and school administration at home. However, the time demands upon teachers can be large. The need to account for this time demand undertaken in places other than schools, may well need to be considered by those designating terms and conditions of employment, since these do not currently directly address this scenario.

### **Home and community use**

61. Not only will schools need positive support from school management and senior staff to develop use in ways similar to the projects reported here, but they will also need to consider their needs in terms of the individuals or groups to be involved with the wider communication networks they are developing, including parents and the community.

62. The projects reported here have approached home-school links in different ways, and have reached different stages with regard to their development and practice. Early evidence from one project indicates that there may be significant benefits for parents when they become linked, via communication technologies, to the school and other personnel. There are major implications for future and further developments in this direction, for parents, pupils, teachers, schools and policy makers.
63. Home-school links are not a new concept. Parent-teacher associations, parent helpers in schools, teacher tutors in homes, and homework for completion outside lesson and school times are not new ideas. What communication technologies offer to the home-school link dimension is the development of new practice, the practice of parental support, the practice of involvement, and the practice of delivery, to extents that have previously been more limited. Parents can now view at home what pupils should be doing, they can support their children in their educational endeavours, and they can enable the delivery of certain courses or elements of courses within the home environment. In particular, communication technologies bring educational support into the home and transport the educational support normally available in schools into the home, to enable some parents to become involved educationally, and to strengthen educational support for their children to greater extents.

**Special educational needs**

64. Within this group of evaluations, the use of communication technologies to support pupils with special educational needs has not been high. However, some particular uses have been identified, for example where repetition of material and the highlighting of material through visual means can support pupils with particular needs. Also, teachers have recognised that while pupils with special educational needs may need material appropriate to their language skills, they have not appeared to have had any difficulty in accessing the systems and resources. Some schools are considering the ways in which communication technologies can support the delivery of the curriculum to pupils who have particular medical or physical problems.