


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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2. HIGHDOWN INFORMATION HUB PROJECT

Description of project

2.1 This project is based upon the notion that it should be possible to provide a useful information source able to be accessed by others connected to a cabled network. Highdown School is providing an information service through a fibre-optic backbone, ultimately designed to connect primary schools, a university, secondary schools, language facilities, and a wider connection to the community. It is the intention that an information menu will provide search facilities and access to a variety of other resources including the Internet, CD-ROMs and databases. The 'information hub' will seek to provide pathways to enable users to identify the types of information they require by categorising them in particular ways: those based upon a subject or form of content; teacher/learner resources, such as worksheets; and those offering direct support for pupils engaged in particular learning activities.

2.2 The Highdown Information Hub Project has been a school-led project, intended as a learning community development. The project is an ambitious one, and has involved wide development needs. The creation of a human network, i.e. the making of contacts and creation of communications with all potential individuals involved as ultimate users, prior to the existence of the physical network, has been significant. A physical network has been created by a range of commercial partners to enable fulfilment of the educational requirement specified, and a range of resources have been available for use, and others have been specifically developed on the Hub. The connection to homes and to two other schools has enabled a range of early uses and outcomes to be identified. The continuing wider community involvement is at early stages of development at this time.

Sponsors and other involved parties with a level of sponsorship

2.3 Highdown School is working with two other local schools initially, Ashmead School and Meadway School. Neither one is technically equipped to the same extent as Highdown School. The school is working with a number of companies in this venture. Telecential has provided the cable infrastructure. ICL has provided servers, PCs, and a range of system integration and support services. Microsoft is providing the software available on the system and is the lead company. Softvision has provided some video training support materials. Superscape has completed a 'virtual campus', to be provided as a front end for school-based materials. Berkshire LEA has not been involved directly in the project but, by February 1997, the project had been more formally connected to the idea of a Reading Learning Network, which operates a training centre in the Civic Centre. Currently, the school has contact with the electronic publishing arm of Heinemann, and Inter Aid, which will provide training for teachers. Highdown School personnel are currently authoring and producing a central information resource, for use within the school and in other schools and homes.

Size and type of institution

2.4 Highdown School is a comprehensive school in Reading, with some 1000 pupils aged 11–18 years. There are 55 teachers in the school.

Hardware and software used

2.5 The Information Hub under development is physically located in the Business Centre, a newly developed area, and is part of the wider network in the school with 85 networked PCs on an Ethernet system across the school. Of these computers,

three are Pentium machines. Most machines are DX2-66, but some are still DX33 or less. All have 8 Mb RAM and hard disk space ranges from 120 Mb to 450 Mb. There are 18 machines with CD drives. The Business Centre, with its two rooms and open study area, contains 36 computers. ICL servers, in Highdown School, form the central computing element. These servers, as well as the PCs in Ashmead and Meadway schools, and also some of the home PCs, have been provided by ICL on a loan basis. The interconnecting physical network for the Hub is provided by a classic cable TV network. There is a high speed backbone, a Fibre-Distributed Data Interface (FDDI), which is a ring network in the main school site, operating at 100 Mbps, linking a number of Ethernet networks each operating at 10 Mbps; individual PCs were connected onto one of the Ethernets. The backbone FDDI-Ethernet switches were provided by DEC, who had more recently joined the project. Connected to one of the Ethernet switches was a pair of Pentium-based ICL servers each with 2 GBytes of storage, running the Windows NT operating system. These servers store a considerable amount of applications software donated by Microsoft. Electronic mail, information bulletin boards, syllabus material and a variety of network-accessible applications are being explored as an ongoing part of the project.

2.6 The services provided via the network are:

- broadcast TV via a normal set-top box
- a Microsoft CD-ROM library
- Internet access through the World Wide Web, including use of e-mail
- access to the network from home and school
- planned access to the Hub for local business and the community.

2.7 The system operates using Microsoft Windows NT 4.0 School Server, which includes:

- Internet Information Server, for publishing Web pages
- Proxy Server, providing filtered access to the Internet
- Microsoft Exchange, e-mail facility
- Remote Access Connectivity through the NT Server
- Internet Explorer 3.0, for browsing the Internet.

Additionally, PCs run Microsoft Office, and a range of CD-ROM software including Encarta and Atlas.

External connectivity

2.8 Telecential has provided the cable infrastructure to the school, and to the two other schools and a range of teacher and parent homes. Some other links are provided to teachers and homes by BT telephone-line links. This latter dial-in access over the telephone network is provided by a bank of eight modems attached to one of the ICL servers, operating at 28.8 Kbps. In July 1996, an upgraded system structure provided fast speed and access via the high-speed fixed connection through Telecential to Internet.

2.9 For Highdown, external access at broadband rates is provided by means of a connection on one of the Ethernet switches to the Telecential regional network.

Individual homes may be attached to this network by means of cable modems that can access the 4 Mbps Internet feed, although users will share the bandwidth with others using dial-up access. Its successful operation with a large number of modems has yet to be tested. At present, three parental homes and seven staff homes are connected using cable modems, provided by Telecential. The Telecential network also links the other schools in the project to the Hub with 4 Mbps links: six PCs at Ashmead School and 15 PCs at Meadway School are connected. All end-user systems are standard PCs.

Age range of pupils, and number of teachers involved

2.10 Fifty-three homes in total are now on line. This number comprises 33 parents, with 45 children at home, three personnel in Reading Borough Council, and 17 teachers.

Background and experience of staff and institution

2.11 The beliefs behind IT integration and use in the school, and behind the project, have been stated by the deputy headteacher with responsibility for the project: that IT can be considered a core skill; that IT is a powerful tool that can support learning; and that the project, as a part of the school, should have a community focus, in order to serve the community.

2.12 IT development in the school has been through a series of past initiatives where the school has intended to work with the local community and with local industry wherever possible. This manifested itself 3 years ago in a successful £200,000 bid to the Technology Schools Initiative (TSI), using an industrial steering group to guide the project. It was decided at that time to buy PCs instead of Archimedes, and the TSI money was used to re-equip and refurbish nine technical rooms in the school. This included a general-purpose PC laboratory containing 23 machines interconnected by a local area network (LAN). These PCs were equipped with Windows 3.1 software, and Works, Publisher, Paint and Computer-Based Training (CBT) packages. A number of staff developed IT capabilities as a result of these initiatives. The other schools in the project have not developed staff IT capabilities to the same extent.

2.13 The intention was to have a cluster of PCs attached to each curriculum area. Subsequently, another 51 PCs were purchased for this purpose, mainly through sponsorship, and PC clusters were formed in the Business Centre, an Independent Learning Centre, and the Sixth-Form Library. The school became involved with Thames Valley Enterprise, and began working with the IT sector in the region, including the use of school facilities out of normal teaching hours for training purposes.

2.14 The origins of the Information Hub Project are to be found in a more recent bid, which was unsuccessful on geographical grounds, for Technology College status. From around May 1995, the school began its involvement with ICL, Microsoft and Telecential in the project that we now see in its early stages. The key to the Information Hub is the use of communications to form a distributed learning community.

2.15 Highdown School, the lead 'provider' school in the project, has a successful technological background. The other two schools involved currently, Meadway School and Ashmead School, have a more limited technological background, with IT provision and use limited to certain school locations. These schools are currently using resources made available through the project, but may also author material in the future.

Evaluation

Initial training

2.16 With a strong technological background, and with a focus upon home–school development, initial training has been focused on two main groups: the parents and teachers involved. The school has worked with parents since November 1995, and at that time some parents were complete beginners with regard to the use of IT equipment. By April 1996, at the internal launch of the project, parents present who were asked to indicate aspects of their computer use experience indicated that almost all were already PC users; about 25% were Windows '95 users; about 100% were previous Windows version users; and only two people were non-mouse users.

2.17 A range of software and resources available for use in the trial was demonstrated at the April 1996 launch to parents, pupils and representative teachers from all schools involved. Windows '95, Word 7.0 and the support available in the package, Excel, Publisher, and the prompts that the wizard offers, were all demonstrated. A number of videos were made available from Softvision, each about 3 hours in length, and each dealing with different aspects, such as printing and saving, which could be borrowed from the school. Uses of the Internet were demonstrated, including the means to access data through a browser. Sites shown included Alta Vista, Yahoo, Web Crawler, Lycos, Deja News, RMPLC(Educ) and Campus World. The use of placemarkers, a list to keep notes of pages contacted, was demonstrated, and how it was possible to maintain a contact list. How favourite places could be held and stored for ease of access was demonstrated, as was the use of help menus.

Technical and educational training

2.18 Training has been available in a range of forms for staff and parents. For example, one member of staff on the senior management team considers herself to be a willing learner, interested in the use of IT but not particularly computer literate. She has had a PC at home since the end of April 1996. To support her own use of the technology, she attended a weekend course run by BT. She acknowledges the great deal of support provided by the IT co-ordinator. She has also used some of the support videos available. She has found use of these difficult with not having a video alongside the computer. When moving between the two, she finds it is possible to forget what has been learned. She finds the videos very comprehensive, and was able to use Windows '95 within 2 hours of starting to use the video.

2.19 The results from questionnaires circulated to all teachers involved in using the Highdown Information Hub, currently from teachers within Highdown School only, indicated forms of training used in the school. While awareness raising was the most widely reported means of training provided for these teachers, the range of forms used included that of on-hand support, specific training sessions, and support materials, in the form of videos and help sheets, which some teachers have individually referred to as being particularly important for their own development needs.

2.20 Most teachers (seven out of 10 responding) felt that the amount of training provided was less than that ideally required, but the rest felt that the amount was about right. Teachers reported gaining training through a number of sessions, and through on-hand support, but also through single-day events or sessions, and through the use of support materials.

2.21 Parents involved who were connected in their homes also indicated the forms of training they had received. Parents indicated the range of forms of training in their responses, without particular emphasis being placed upon any one of these. The

forms reported were awareness-raising, use of support materials, on-hand support, and specific training sessions.

2.22 While a number of parents indicated that they would have liked more training (10 out of 17), seven indicated that the amount provided was sufficient for their needs. In one case, a parent indicated that the amount provided was far below that required. Clearly, particular cases may require particular levels of support if provision is to be equally accessible and usable by all concerned.

2.23 Parents indicated that they had received a varied amount of training and support. Many parents indicated that they had received either none at all, or about 3–4 hours. Some indicated more hours of training (up to 8 hours).

2.24 Pupils involved who were connected in their homes (45 in number) also indicated the forms of training they had received. There was no single dominant mechanism of support indicated. Pupils are gaining support both in school from teachers and other pupils, and at home from parents and from others. These would be characteristics that one might expect to identify within a 'learning community'.

2.25 The variety of forms of support appear for many pupils (17 out of 21 responding) to have provided an appropriate level of training. A minority of students (three) reported that they felt that the training was insufficient for their needs.

Management strategies

2.26 This project was devised by the school and they have retained considerable management involvement even though they have brought in as partners among the largest and most dynamic information technology and communications companies in the country. Important features of the management approach seem to be:

- strong support from the headteacher
- a deputy headteacher who has prioritised time, within that available, to manage the project
- previous experience of introducing major technology projects to the school
- an open attitude towards involving commercial and other school partners
- an enthusiastic technology teacher taking responsibility for the network
- the involvement of volunteers to support teachers in finding helpful material on the Web
- not being overawed by commercial companies, and having them located within 15 minutes drive of the school!
- involving the school manager at an early stage to provide management support
- establishing a project management board with the commercial partners to oversee the implementation of the technology and software and overcome technical problems
- opportunities for teachers to be trained and additional encouragement by wise allocation of two portables to teachers under a separate DfEE

project, the Multimedia Portables for Teachers scheme (see Report F2.3).

2.27 Companies involved have contributed a great deal of external expertise and experience. For example, ICL has contributed a range of system integration and support services, including technical project management, and technical design, implementation and support services.

2.28 The intentions and means to involve pupils, teachers, parents and the wider community have been considered and addressed within this project from its inception. In overall terms, the management approach taken by project managers has been to create:

- a network of people with a common interest and agreed concerns of outcomes
- a physical network based upon the needs and intentions of this human network
- material and ideas for uses that agreed groups of individuals can focus upon for agreed purposes.

External

2.29 The project management team, who meet every 4–6 weeks, have addressed to date a range of issues, including managing staff understanding within Highdown School itself, managing the involvement with other schools, managing the parents who will be involved, managing the awareness and involvement of governors, and managing the pupils who will be involved, who will also provide material to go onto the Hub.

2.30 The development has been managed through a project board, including the deputy headteacher of the lead school and company representatives.

2.31 The school has managed involvement with parents, some of these being experienced IT users and others not. Expectations of this group have been managed, including putting into place some self-help groups and awareness raising in anticipation of the project being implemented. While parents were fully informed about the project from its inception, a discussion with four parents in July 1996 indicated that they were not fully aware of the nature of the project until the Microsoft launch. From the beginning of the project, the school has placed considerable effort in involving parents, by holding meetings, open evenings and encouraging participation. By July 1996, parents were working in groups on particular areas or tasks. One group was working in the area of special needs; another with support groups for training and the support needed when developing materials; another with Berkshire Careers; and another with Berkshire Community services, led by the local vicar.

2.32 Evening meetings have formed a significant role within the management system and structure adopted with parents. One evening meeting with parents observed was attended by 16 parents, five staff and one industrial sponsor. As a part of the evening session, parents accessed information and material on mathematics on line in the Business Centre. Parents were offered tasks during the holiday period to support the initiative, such as helping the geography department to identify lists of useful sites, and supporting the head of mathematics with the development of mathematics work.

Internal

2.33 Internal school management in Highdown School involves a range of personnel who carry a range of responsibilities with regard to the project. A deputy

headteacher carries the main responsibility, but the other deputy headteacher has also had involvement. The IT co-ordinator has a key role in resource development and support terms. The school manager is responsible for all non-curriculum activities in the school, and for finance and fund-raising.

2.34 There is an internal IT development group, initially comprising the deputy headteacher, the IT manager and 14 teachers representative of faculty and pastoral areas. As the development has progressed, so the constitution of this group has increased, as more teachers have become involved in being trained.

2.35 Involvement of teachers across the school has been key to curriculum developments within the project. From 55 staff in the school in total, 20 are directly involved in the project. By November 1996, the IT Working Group was working with all subject areas across the school. At that time, teachers were beginning to see opportunities that the Hub might provide, and they were being creative in their ideas about its use and potential involvement. Curriculum activities were at that time mainly occurring in English and Geography. The GNVQ work developed was considered significant, as this had been undertaken as a joint development opportunity arising from needs in all three schools.

2.36 The success of the management approach and systems within Highdown School had been recognised by Meadway School, who had replicated the management systems for their own internal development.

Obtaining and installing equipment

2.37 In March 1996, the project was in early stages of physical development. The cable had just been connected to the school, to the Business Centre, and the provision was due to be extended into other rooms around the central area. The switch-on date for Highdown School was planned for 19 April 1996, when there would be connection to the Business Centre through the IT manager's office, connection to other schools and 14 homes on line (all teachers). While this deadline was met, the complete Telecential cable connections to the school were not completed until June 1996. Some parents were still not connected by October 1996, and staff changes within Telecential had meant that establishing physical links and connections had been delayed. By November 1996, the last few homes were being connected.

Implementation at project and institutional levels

2.38 Some school-generated material and the information Hub structure had been developed by the IT Manager in the school by March 1996, much of it in his own time. Materials on the Hub at that time included a school home page, prospectus, data relating to school pupil examination results, a school calendar, a school magazine, and a subject index including notes on some tasks in some subject areas.

2.39 By November 1996, the IT co-ordinator was able to demonstrate the menu system he had developed for use on the Hub, the exact form of which was determined by the type of log on, i.e. pupil and teacher log ons provided a different front-end menu. The log on and subsequent access for parents provided a link to the school prospectus, and then to school work.

2.40 By February 1997, the Hub pages had been developed further, and a range had been modelled by pupils involved in the project. Although the material is not yet available via the Internet, the home page had been developed to enable either visitors to enter or members to enter. Visitors are able to enter a range of areas, including Highdown link, gallery, event calendar, virtual campus, examination results, prospectus and sixth form. The Highdown link contains pages that show a visit from Lord Henley, the French exchange, work experience, and a video crew

arriving at the school. The gallery contains pupil work, which includes poetry pages, items on the Romans, art, animals, Wales and Avebury. Members who can gain access are able to access subject material, which includes material for art, careers, English, geography, Italian, history and GNVQ. The careers area, for example, contains sections on teachers' careers guidance, Kudos, a software package which offers ideas about possible careers based on question responses, action-planning materials for pupils, and e-mail links to careers officers or experts. A range of subject staff have been responsible for a range of developments, many of which have been directly connected with production of subject material.

2.41 The means of authoring materials for use within classrooms has been considered by school project managers and teachers to have been a significant feature of enabling enhanced educational provision. Materials were created by teachers, support staff and, increasingly, by pupils, using a range of software including Notepad, Internet Assistant for Word and Front Page. The facility to inter-relate and integrate materials from Internet, CD-ROM and more traditional packages such as word processors, has been considered by teachers to enable them to meet the needs that they have had for those specific material uses within the classroom. This integrated approach to authoring is considered to have been at the heart of the successful use and outcomes from such resources.

Creating cross-institutional relationships and support

2.42 Highdown School has been involved in developing links with other institutions. Meadway School is a local secondary school that is becoming increasingly involved in the Highdown Information Hub Project. Staff who are involved in the project spent a half day at Highdown School. The headteacher, deputy headteacher and cross-faculty representatives, including PE, are considering actively the possibilities that the Hub will provide. The deputy headteacher is considering timetable needs in order to assist the development of the project, and the school has held an inaugural meeting about the project. The deputy headteacher indicated that the school is considering the curriculum materials that are and could be available on the Hub. He indicated that there is some overlap of needs with Highdown School, in the area of GNVQ Leisure and Tourism.

2.43 The head of English at Highdown School had run some English INSET with teachers from the other two secondary schools in the project by February 1997. She had also begun working more widely with teachers in Berkshire schools at that time.

2.44 Links with the local community have been largely developed through a link representative with the Reading Learning Network. Plans for community development via the Reading Learning Network are based upon development of:

- awareness, through hands-on workshops purchased from ICL, with 1000 people per year going through courses run at no cost, four times per week, and helping individuals to create business plans to meet targets
- access to a physical network, with partners, for example Highdown
- content, through working with groups on materials that have purpose and that are recognised as being needed to populate the Internet with local material.

2.45 The council will fund voluntary groups and small businesses to be involved in the Reading Learning Network. Certain social groups are being targeted, and opportunities will be provided for their involvement. By November 1996, the Reading Learning Network had a community centre 'access point', a drop-in centre

with five PCs, developed from an EC Single Regeneration Budget (SRB) grant. It was intended that this centre should serve the local council community, and help people get back into the job market. The Reading Learning Network has run Cyber Workshops in the Town Hall, and these are free for the unemployed. By February 1997, the school was working directly with Reading Borough Council on a 3–5 year plan, considering the commercial viability of the Highdown Information Hub development with regard to all homes connected in the borough. Such a scheme was being costed at that time, with a view to linking all borough schools within the new unitary authority (45 in total, mostly primary). In this way, the Hub could be considered as a central resource for the new unitary authority in Reading.

Further training and support

2.46 The IT co-ordinator has provided ongoing support to parents. He has written instructions for parents on using connections, which he piloted on some staff. He used some time on Mondays as a regular drop-in time for parents who had problems, for example with missing printer drivers.

2.47 Within the home, parents have provided support for pupils using the Hub. Parents commented on aspects of this provision via questionnaires. From this group of respondents, it is the fathers who both use the Internet most at home (10 fathers, two mothers, three equally), and who provide most support at home for use of the Internet (nine fathers, four mothers, one equally).

2.48 Parents indicated ideas about the ways in which they felt they were supporting their children. Parents are indicating that their roles at home with their children are very largely active rather than passive. Parents are clearly involved in providing supportive environments and facilitating use and actions, such as finding useful ideas, when their children use the Internet.

2.49 About equal numbers of parents are indicating that they have either supported other parents or families in their use of the Internet (six out of 14 responding), or have themselves been supported in their uses (eight out of 15). There are clearly implications here for the ways in which support can be mutually provided, and the confidence with which parents feel that they can support others.

2.50 Within the school, on-going support has been provided also through the services of, initially, a voluntary worker, working with teachers in order to support some of the processes needed when producing materials. By November 1996, this person was employed on a 4 days per week basis during term-time as an IT support technician, searching for useful sites on the Internet, and creating a page of links for particular subject areas on the Hub.

Maintaining equipment

2.51 A network manager was appointed in July 1996. This appointment was seen as a priority for the needs of the initiative. His role was to provide technical support for the network on a day-to-day basis, but also to work with teachers in producing materials and identifying useful sites, working with parents, and with the other two schools. Unfortunately, the new appointee stayed only a very short time before leaving the school. This event could have blown the project seriously off course. The school reassessed its needs, drew up a job description for a slightly different post, and has moved forward on that basis. From January 1997, a new appointment was planned, and from February 1997 the network manager was providing a range of support within the project.

Implementation at classroom level

Raised standards, value-added and improved quality of work

2.52 This section (see paragraphs 2.53–2.64) reports on findings and evidence identified by a qualified OFSTED inspector, following a series of visits to Highdown School.

2.53 All teachers interviewed shared the common belief that IT is a core skill and has uses both in the teaching and learning of all subjects. Classroom observations, discussions with pupils and teachers, and analysis of work reveal that this has been developed in different ways, and that this depends upon the knowledge, expertise and enthusiasm of the teachers concerned.

2.54 In English, the teacher has defined clearly the skills required for learning, and the expected learning outcomes. The assessment criteria for the work are shared with pupils. Year 9 pupils were asked to complete an assignment based on narrative writing. The aims of this assignment were to produce an original piece of writing based on the novel *Walkabout*. Pupils were required to write an extra chapter that included an understanding of the culture and issues facing Aborigines. The computer rooms were booked for 2 days per week for 2 weeks and pupils were able to carry out research using the sites identified by the teacher. The material was read and crucial features and phrases were identified. These were extracted and placed into the pupils' own files. The chosen material was synthesised and used to support the writing of individual assignments (National Curriculum English, Level 7).

2.55 The teacher was very aware that it would be easy to simply supervise the pupils rather than teach directly. Pupils worked independently and the teacher used this opportunity to support pupils individually to extend their thinking and develop their skills.

2.56 The resulting work was of a very high standard. There is evidence of pupil achievement well above the levels expected for their age. Pupils' work showed understanding of a range of texts by the selection of key points, and responses clearly indicated an appreciation of different effects being achieved through linguistic, structural and presentational devices. Teachers and pupils agreed that the high standard of work was due in part to the quality of information available on the Internet Web sites. For those pupils who are on line at home, they agreed that they had spent more time on homework because it was so interesting. One pupil who spent most evenings working on the Hub felt that highly developed skills for skimming and scanning text had resulted.

2.57 There is evidence of some outstanding non-fiction writing from Year 7 pupils. Based on the topic of animals, pupils have researched their chosen species through identified Web sites and in some cases used e-mail to correspond with experts. Projects seen match Level 8 National Curriculum English, with writing being coherent with clear points of view.

2.58 In geography and careers, there is evidence of Information and Communications Technology (ICT) resources being used to support individual needs. In geography, differentiated tasks using real data and up-to-date information are set. Whilst the quality of the tasks set is high and ensures that work is more closely matched to individual needs, the preparation of such work is extremely time-consuming for the teacher. Individual support for pupils in careers guidance was observed with pupils working on the Kudos program, which has a direct link to the careers office.

2.59 In one lesson observed, the approach to using the resource was quite different. Pupils were asked to answer questions from a worksheet using the Web sites identified on a particular subject topic. The teacher spent 15 minutes talking the

pupils through gaining access, and spent the majority of time supporting pupils in using the resource. At least 25% of the class were proficient in using the resource, as many had experience through their English lessons. Those pupils were very adept at finding the relevant information, and retrieval of factual knowledge was effective and efficient. The questions posed on the worksheet did little to develop subject understanding. For a minority of pupils, retrieval of factual knowledge was less effective. It was noticeable that the pupils who had poor reading skills simply wrote down the beginnings of sentences that appeared next to the key word or character identified in the question. For example, in response to the question, 'who was person *x*?', a pupil wrote about a personal feature of the person.

2.60 The teachers responsible for GNVQ and art and technology are keen to initiate new instructional methods that make the most effective use of the new technology. In the case of GNVQ, the teacher reports a change in style with less didactic teaching and more individual tutorial work that is much more structured to support independent learning. The structured approach being developed by this teacher closely reflects the approach developed by the English teacher. Learning outcomes are identified, content to be covered is specified, assessment criteria are explicit, and study skills are identified and supported.

2.61 The art and technology teacher is keen to exploit the Hub to support more contextual and critical studies. He has explored suitable Web sites and there is some evidence that these are being used effectively in school at present. In technology, he is keen to extend the learning opportunities within Superscape when designing virtual reality environments. He suggests that virtual reality can offer something that textbooks cannot. He indicated that it will have advantages over multimedia forms because it need not be linear. Multimedia routing can be considered to be two-dimensional, while virtual reality environments can be considered to be three-dimensional in terms of routing and of exploration.

2.62 To date, there has been limited involvement of special support staff and pupils with special educational needs, although there is tremendous enthusiasm and interest from the staff and parent group. There is no evidence at present to suggest that the Hub has made an impact on disaffected pupils. Some teachers do report that for those pupils with limited concentration spans, the use of the Hub has encouraged more sustained work over a period of time.

2.63 The provision of information technology resources across the curriculum and their use to support learning has received a great deal of attention in terms of management from a whole-school perspective and at classroom level. Support staff employed to assist teachers are effective in supporting learning.

2.64 The school has invested a great deal of time and energy in developing the Hub. It has achieved success in some aspects of learning. The school is keen to build on the good practices already developed, and to explore issues relating to teaching and learning. This is an important aspect of the project's development. It will address issues to ensure the systematic teaching of research skills and IT-handling skills, which will give direction to future curriculum development. This is likely to make teaching more effective and help to raise pupil attainment. Such development has cost implications for the school, however.

Specific gains related to home–school use

2.65 The development of the home–school dimension has been a major one for this project. Parents have reported on their perceptions of outcomes after a short period of access to the system. Most parents (13 out of 17 reporting) indicate that they believe that the use of the system has been of particular benefit to them. For example, parents have reported:

- e-mail has increased social and business links
- that the Hub keeps them up to date with school work, as it gains more pages
- children can work at school and home on the same document.

2.66 Parents have indicated how they believe opportunities have been provided for their children. Most parents (11 out of 17) indicate that the use of the system has enabled learning to occur at different times than would otherwise have been possible. Parents have reported on the benefits they feel they have received as parents. Most parents (13 out of 17) report that they feel that the Hub has helped their needs as parents. Only two report that this is not the case. When asked in what ways parents felt it had helped, they indicated some significant outcomes, for example:

- using the Hub had helped their relationship with their children, as they assisted each other on the system
- access to common data had improved their relationship with other parents
- the Hub had brought them into closer contact with their children's school, increasing understanding of materials and methods of teaching, and improving personal acquaintance with staff, etc.
- they now felt they had a role in their children's education, both specifically and in general.

2.67 Not only are educational benefits reported by some parents, but also enhancement of personal relationships and development of parental roles within the family. Most parents believe that the use of the system has had an effect upon their home lives, and some parents indicate that the use has affected their personal relationships with their son or daughter. When asked in what ways, parents indicated, for example:

- 'we talk to each other more'
- 'they are a little more independent; I feel less helpless when unable to provide needed information from my own knowledge or books, etc.'
- 'she asks for our help'.

2.68 The reports from this group of parents point to some educational benefits, but there are some significant social benefits being reported at this stage. When a parent indicates that 'she asks for our help', there is a clear indication that not only is a daughter encouraged to seek help, but that the parent is encouraged with this development, and perceives this as a positive move in personal relationships within the home.

2.69 At this stage, some 6 months into use, many parents are reporting that links between the home and the school, and the school and the home, have been supported through the use of the system. About half of the parents also report support in linking with the wider community.

2.70 At this stage, many pupils report that they have felt that the use of the system has helped them to do their school work at home (14 out of 21), that they were able to learn in different places to those normally available (18 out of 21), and that they were able to learn in different ways (14 out of 21). Some also reported that they felt that the system had helped them to organise their work better (although 11 out of 17 indicated that this was not the case).

Evidence of increased motivation, and enfranchisement of previously disaffected learners

2.71 Teachers have reported via questionnaires on outcomes with regard to autonomous learning. Four teachers indicate that the use of the Hub has facilitated autonomous learning, and five indicate that it has to some extent.

2.72 Teachers have reported more specifically about their observations of increased motivation resulting. It should be noted that the definition of 'disenfranchised' might vary from individual to individual, but five teachers have indicated that they feel that the use of the Hub is at least helping to some extent to motivate pupils. Teachers have commented also about motivational effects being sustained. At this stage, more teachers (three in number) are reporting that they believe that there will be a sustained motivational effect of the use of the Hub upon pupils than those that are not (one in number). These reports are supported by those from parents. About half of the parents have indicated that they believe that the use of the system has had a motivational effect upon their children, and almost all of those reporting positive motivational effects also report that they believe that such motivation will last.

Learners with special educational needs

2.73 Teachers have reported on their use of materials with pupils with special educational needs. Most teachers (eight out of 10) indicated that they had not used particular materials to support pupils with special educational needs. Seven teachers indicated that pupils with special educational needs had been able to access the Hub. When asked in what ways the Hub had benefited pupils with special educational needs, teachers indicated:

- speed of learning can be tailored
- initiatives such as taught spelling improved motivation.

Development of information-handling skills

2.74 Teachers have reported on the ways that pupils have used resources in their lessons. The responses from these teachers largely indicate that uses of the Hub materials with pupils have been focused. Uses for personal research, homework, answering specific questions, and display work all indicate a focus for the material used. However, pupils who have used the Hub in this way are gaining operational skills in terms of the use of the computer, the software and access to the network.

2.75 Teachers report that they have involved pupils in choice of material to access, or chosen it for them. This is likely to lead to focused use of material. Teachers have reported on the abilities of pupils to select materials. Teachers are divided in their views of whether pupils have abilities to choose material of appropriate content and depth at this point in time (two out of 10 indicate that they can, and two that they cannot).

Changed teaching styles, and fundamental new skills

2.76 While most teachers felt that their teaching styles had not changed as a result of using the Hub, they felt they had been supported in their own professional development. These views are supported by external observations also. When asked what information-handling skills they felt they had developed, teachers indicated their information-handling skills in terms of their abilities to use particular types of software package, but, significantly, a number indicated their abilities to work across and between a number of packages in order to transfer data for particular purposes or reasons. Most teachers (nine out of 10) reported that they feel that they are now working in different ways. When asked in what ways they were working differently, teachers stated, for example:

- 'I can take my office home - this may not be all good news!'
- 'I do nearly all my own typing - I rarely handwrite because now I "think" better on the computer'.

2.77 Many parents (11 out of 17) believe that teachers are already asking pupils to undertake some things in different ways as a result of the presence of the system.

How information was used

2.78 In many cases, teachers indicated that they had found at least average amounts of relevant material available on the Hub for their curriculum needs. Pupils reported on their perceptions of relevance also. Most pupils (17 out of 21) report that material available has related easily to other school work.

2.79 Pupils were asked how they found relevant material. Pupils reported that they used keywords and guidance for searching for appropriate material to greater extents than routes suggested by teachers.

Access and equity issues

2.80 Access for teachers at home enables them to undertake a range of administrative and preparation tasks. Teachers report a variety of uses of the Hub at home, for lesson planning, making lesson notes, for school or class administration, and for keeping records, but few teachers have at this stage used the Hub to link home and school records (only two out of 10).

2.81 Teachers reported that the use of the Hub is facilitating pupils in terms of when they can work, where they can work, and how they can work. Clearly there are implications here both for teachers and how they handle these changes, but also for society and parents generally, in terms of what expectations are being raised by these possibilities.

2.82 Many teachers feel that the Hub has helped to link homes, schools and the wider community (seven out of 10). Teachers report that they have been supported in links made to other teachers, parents, outside agencies and pupils. Pupils also reported on how they had been supported with linking to others. About half of the pupils reported that they felt that the use of the system had helped them link what they did at school with what they did at home, and vice versa (11 out of 21). Some pupils also indicated that the use of the system had helped them to contact other people, helped them contact other pupils, and, in a few cases, teachers.

Gender issues

2.83 Teachers were asked whether the Hub was used by boys and girls equally. More teachers (four out of 10) indicate that girls and boys use the resources equally than do not (two in number). However, one-third of the teachers reporting believed that there was unequal use. Teachers were asked about the ways in which boys and girls used the Hub. Teachers reporting are divided in their views of whether girls and boys have used the resources in the same ways (three indicate use in different ways, and two not). Where teachers report differences, these are attributed to the types of resources accessed, and the frequency of access.

Services and applications

Frequency and type of use of facilities, and usage times, on and off line

2.84 At this stage, most use of the Hub by pupils with home access is occurring at home (16 pupils out of 21 reporting) and during break and lunch-times (13 out of 21 reporting), i.e. traditional times between arriving and leaving school.

2.85 Pupils reported in a polarised way that they used the Hub, indicating either use in a few lessons only (16 out of 21) or almost every day (13 out of 21).

2.86 The pattern of ways in which information is used by pupils follows largely that reported by teachers, but more pupils indicated that they have used material for background information (nine out of 21), and less by proportion for answering specific questions set by the teacher (five out of 21).

2.87 Most teachers indicated that they use the Hub at least once a week on average. Teachers accessed the Hub on a variety of occasions, including during the evenings, at weekends, during holiday times, and after school, without any particular emphasis on one of these times. Most teachers spend about 1 or 2 hours on average on the Hub when they access it (eight out of 10 reporting).

2.88 Parents were asked where equipment was located in order for them and their children to access it. Most parents report having the system in a communal room, but some homes have systems in bedrooms, studies or in an entrance hall.

2.89 Many parents indicated that they used the system mainly at weekends (12 out of 17) or in the evenings (12 out of 17). A minority reported use during the school week (three out of 17). Most access times were reported by parents as being between 30 and 60 minutes (10 out of 17). However, there were some report times of only a few minutes (six parents), some more than 60 minutes (five parents), and others up to 30 minutes at a time (five parents). Most parents reported use of the system almost every day (13 out of 17). A few reported use about once per week (three parents), while only one parent reported very occasional use.

2.90 Most pupils reported that they used the system almost every week (14 out of 21). Few, at this stage, used it almost every day (only three), or only irregularly (only one). Most pupils reported using the system in evenings (13 out of 21) or at weekends (13 out of 21), but many reported use after school (eight pupils) and during holiday times (seven pupils). Most pupils reported using the system for less than an hour on each occasion (11 out of 21), but many reported using it for about 1 hour (seven pupils). Only a minority reported using the system for periods longer than this (two pupils).

2.91 E-mail had been used by teachers, parents and pupils within this project. Use reported had been to engage direct contact with other individuals. Parents and teachers sent e-mail messages at a variety of times, mostly in the evening and at weekends, but also in the day in a number of cases. Frequencies of sending messages appears to be linked more at this time to age category. Parents and teachers show polarised patterns with regard to use; either they report low usage of e-mail or high usage. Pupils, on the other hand, display a usage pattern that tends around use about once per week or at more frequent levels.

2.92 Equal numbers of parents and teachers reported problems with connection as reported no problems with connection. Parents generally judged the use of e-mail to be at least ‘useful’. All parents reporting e-mail use reported this facility as being useful (five out of 17) or very useful (10 in number).

User friendliness

2.93 Teachers reported their experiences of user friendliness of the system. All teachers reporting indicated that the Hub was at least what they would regard as being averagely user friendly (six indicated very user-friendly, and four averagely so).

2.94 Parents reported on their experiences of user friendliness of the system. Having used the system for about 6 months at a maximum, most parents reported that they

feel that it is at least to some extent user friendly (15 out of 17). However, two parents have reported that the system is not at all user friendly.

2.95 Parents reported that available information that had been authored by others was sometimes usable by them (six out of 17), some reported it was easy to use (four out of 17) but an equal number reported that it was not easy to use. The vast majority of parents (15 out of 17) reported that they found Hub screens attractive, but one parent thought that they were not.

2.96 Only in a minority of cases has undesirable material been identified on the system, and only in two cases did parents report that they had taken action to protect their children from such material. Currently Microsoft is addressing the issue of security in two ways, firstly by using Proxy Server software, which restricts searches on the Internet, and prevents access to sites that are already known to be undesirable, and secondly, by using the PICS rating system within Internet Explorer, which only allows access to sites with particular PICS ratings. It is reported that this system does limit access, but is dependent upon sites having Platform for Internet Content Selection (PICS) ratings. Currently, however, neither the number of sites with such ratings is known, nor is the effectiveness of the system known, either by commercial or educational groups.

2.97 Pupils were asked about how easy they found it was to use information on the system. Almost all pupils reported that both the system and the information available are easy to use.

2.98 Most pupils reported that the visual material is appealing (13 in number), some reported that this makes it useful (six pupils), but a minority indicated that it is either not useful or annoying (two pupils). This is perhaps influenced by the fact that certain proportions of pupils relate better to textually based material rather than that presented in any other form.

Cost issues

2.99 Internal equipment in the Highdown Information Hub Project is based upon an Ethernet network, with other schools and homes connected via cable modems, stated to be likely to cost less than £200 to £400, but excluding the PC, or via dial-up access. This uses standard technology, with low-range pricing, flexible enough to include homes outside the cabled area. While there is a large range of software running on the Highdown Information Hub, and it is easy to use and has a low price, it has limited interactivity, being confined to one medium. The major costs of a project such as this are likely to be in terms of time used for management, authoring, training and support, and network management. Partnerships with appropriate companies to support and provide in these ways are likely to be fundamental to success unless costs can be met in full for such needs.

Aims and outcomes

2.100 Within the Project Implementation Proforma, 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’.

2.101 The project is still at an early stage of development, making it difficult to judge certain outcomes. This is certainly true when the project is at the stage of consolidating home–school links and school–school links further, and considering potential wider community development and potential roll-out models. Nevertheless, 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.

2.102 The Highdown Information Hub Project has reached the stage where it continues to develop, but will continue to require the input of all partners and perhaps more partners if it is to reach fruition. Currently, considerable strain is being placed upon the lead school, but, at the same time, the involvement of the lead school remains vital to continued success.