


Education Departments' Superhighways Initiative

Group B: Vocationally-Focused Projects

Final Report

Computer Based Learning Unit School of Education
The University of Leeds

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Evaluation Methodology and Procedures

1. The evaluation procedures for the projects in Group B necessarily varied according to the context of individual projects, however the following general methodology was employed for all projects.

2. All educational institutions involved in the ten projects were visited by members of the evaluation team, though where a large number of institutions was involved (e.g. London Colleges Multimedia Initiative) a large representative sample was visited.

3. Data was obtained through the use of observation of teaching and learning, through semi-structured interviews with participants at all levels, and through the use of questionnaires using fixed and open-ended response items. Emphasis was placed on eliciting and representing the views of a range of those involved in each project, from learners to teachers and managers.

4. In addition, the evaluation teams analysed project documentation, students' work and minutes of management meetings and, where possible, a member of the team attended project management and steering group meetings.

5. Regular evaluation team meetings were held to ensure a commonality of approach and to inform and refine the methodology adopted and the evaluation foci as findings emerged.

4. THE BURNLEY LIFE PROGRAMME (LEARNING VIA INTERACTIVE AND FLEXIBLE EDUCATION)

Project context and description

4.1 This project is located at Burnley College, an FE institution close to the centre of the town. The College provides a variety of IT-related courses, amongst which are A Level, GCSE, GNVQ, National Diploma courses and an HND in Business Information Technology franchised from the University of Central Lancashire. The College is in strong competition for students from nearby FE institutions and it was as a result of initiatives to attract students that the Burnley LIFE (Learning via Interactive and Flexible Education) programme was developed.

4.2 The LIFE project is intended to unite further education and local secondary schools via a centrally-managed ISDN network which would exploit the educational potential of the latest video-conferencing technology and the Internet, and support telematics for student development, training and curriculum enhancement. To bear out this aim, each of the eight schools involved in the project is equipped with BT-Olivetti video-conferencing equipment and ISDN connectivity, as well as Internet links to the College and to the College's intranet, through the ISDN lines. To encourage schools to develop expertise in the technology, and also as a way of monitoring the usage of the technology (required as a condition of obtaining Single Regeneration Budget (SRB) funding), the College provides a Telematics Certificate which is accredited by NCFE (Northern Council for Further Education) and is awarded to any pupils and staff who are able to demonstrate appropriate competence over a wide variety of tasks specifically related to the use of video-conferencing technology and the Internet.

4.3 The video-conferencing links between the schools and Burnley College have been established over the past two years in eight local 11-16 secondary comprehensive schools. The Internet and College intranet facilities are a comparatively recent addition, and have been in operation only since October 1996. Consequently, there has been little time for developments to materialise significantly in the schools and, thus, the major part of this evaluation concerns the use of video conferencing.

4.4 Whilst the project stands alone, it is one of a suite of activities developed around the theme of the 'On-line College', which, for Burnley College, is a strategic response to new technological developments. The project is planned to run for approximately seven years from the time of its inception, with the schools' on-line development being the initial focus of activity. This will be followed by new courses and innovative curriculum development within the College, all formulated around the use of new technologies, such

as video conferencing and the Internet (and intranet), as vehicles for course enhancement, delivery and support.

Project objectives

4.5 The major purposes behind this initiative were:

- to introduce educational staff and students in the local area to the principles and operative applicability of the new communications technologies
- to strengthen links with local schools and so attract students to the college
- to make the college a centre of excellence for IT in the area which would, in turn, prove attractive to local businesses and help to foster the continued development of IT, both within the College and the local community.

Project location

4.6 The project is located within the Business Studies and IT department at Burnley College, and, by the time of the project evaluation, within the following LEA-controlled 11-16 secondary comprehensive schools: All Saints, Barden High, Gawthorpe, Ivy Bank, Mansfield, Towneley, Walshaw and Walton.

4.7 All the schools are within a short distance of the College and are feeder schools for post-16 courses at the College.

Technical issues (hardware and connectivity with Burnley College)

4.8 Figure 1 shows the connectivity which exists between the schools and Burnley College.

4.9 Connectivity is via ISDN2 lines for video conferencing and Internet usage. The hardware used on this project is exclusively Olivetti 486 Personal Communication Computers (PCCs) with BT VC8000 boards installed. For the schools, hardware has been generally installed in a convenient classroom, usually in the IT Resource area, but at one school, Ivy Bank, the installation is in the school library.

4.10 At Walshaw school, three ISDN points have been installed (there is only one ISDN line out of the school) which provides the school with the facility of moving the video-conferencing equipment to other sites within the school building.

4.11 At Burnley College, there are three video-conferencing units, identical to those used by the schools, but also incorporating echo-cancellation units which are required to overcome problems experienced with the sound. This hardware is located in the College's Learning Resources Centre. The use of

such a location is important since it ensures that trained staff are always available if support is required. Schools, local businesses and selected students outside the College, who are disabled or housebound for some reason, have Internet access provided by Burnley College on a dial-up basis, with passwords providing access to the College intranet service.

4.12 The main file server at the College is a Digital 64-bit Alpha UNIX system which runs the Digital Firewall protection software.

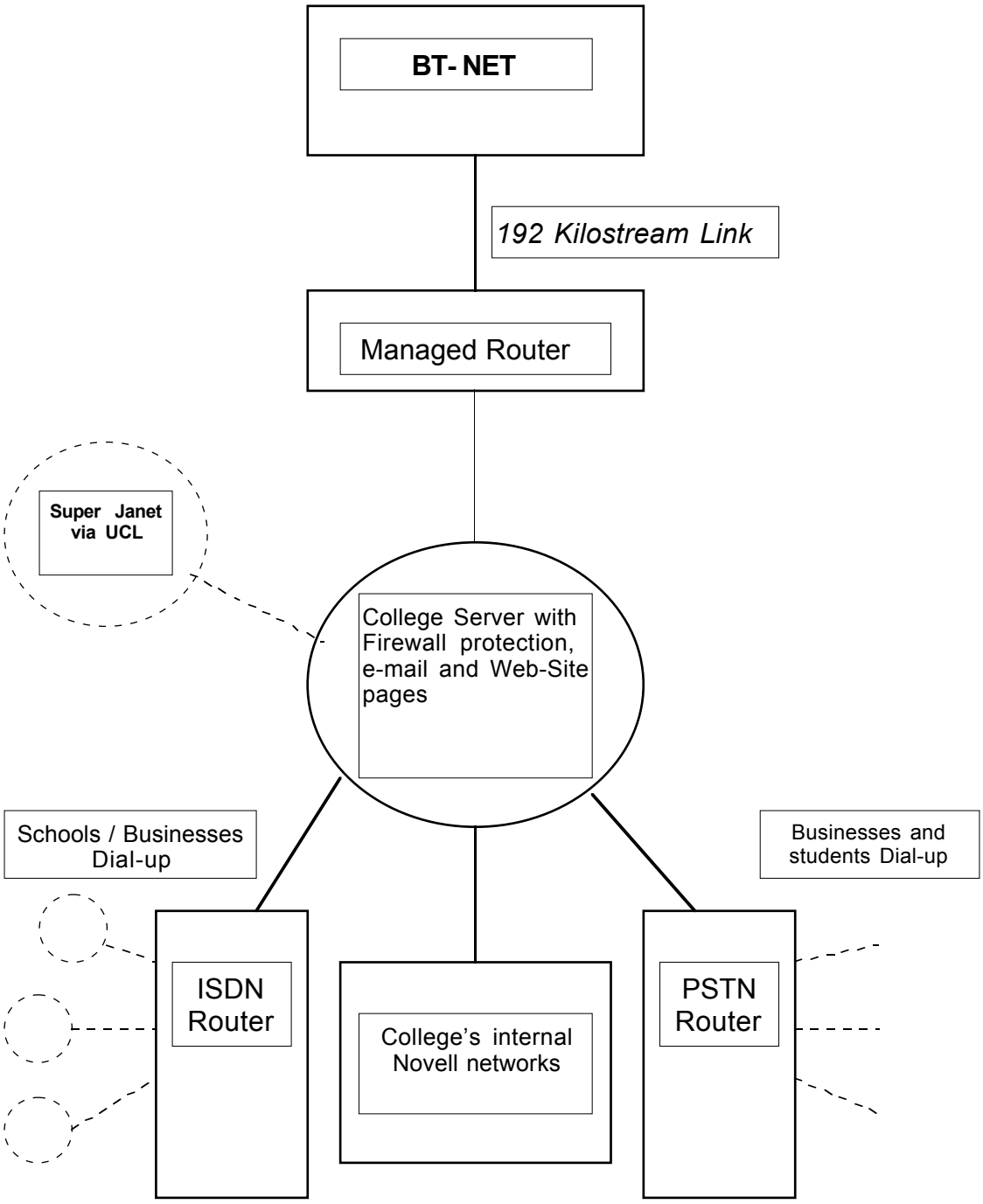
4.13 All eight schools have connectivity to the College and several have now set up their own Web pages. These are located at:

htpp://www/burnley.ac.uk/SCHOOLS.HTM

4.14 In terms of video conferencing, connectivity via the ISDN lines has been generally with local schools. Examples of such activities are discussed later in the report (see paragraphs 4.18-4.38), together with other issues related to video conferencing between institutions using other types of video-conferencing hardware.

Figure 1 Burnley College Internet/intranet and video-conferencing links

denotes public access, *denotes College-owned network*



Project evaluation

Project management and representation

4.15 The LIFE project is managed by a member of the Burnley College IT staff. Management meetings are held on a regular termly basis, with each school having one representative on the management committee. This representative is normally the Head of IT at the school. The manager of the LIFE project reports to the Burnley College 'On-line' Steering Group which is an internal senior management group for the College, and responsible for IT initiatives and policy. Management meetings are conducted on an informal, friendly basis and are generally well attended.

4.16 In the setting-up of the project, negotiations were held initially with the respective Heads of IT at the schools concerned and not with the headteachers of the schools.

Project activities

4.17 In this section, the activities relating to video conferencing at each of the schools are presented, with lesson observations, and comments and opinions from teachers who have been interviewed. This section, thus, provides a comprehensive picture of how the project has been received and how it has developed. The final part of the report summarises the major teaching and learning issues which have arisen (see paragraphs 4.72-4.82).

Video conferencing at Burnley College

4.18 Burnley College has a strong IT department and, as such, there are a plethora of activities which are under way, but, for the most part, these do not concern this evaluation. However, several applications of video conferencing are of note:

- A project was funded by BT for £19,000 to explore the feasibility of using video conferencing on a furniture technology course related to the design and manufacture of furniture, with a partner institution in the University of Trolhatten-Udevalla in Sweden.
- Careers interviews have taken place via video conferencing between the careers adviser at Burnley College and pupils at several of the project schools. This has proved to be particularly successful for both the pupils and the careers adviser. It has obviated travel costs to the schools by the adviser. The careers adviser has had documentation readily at hand and has been able to quickly contact College staff to answer any queries, and the pupils have gained valuable experience in using the video-conferencing technology in a relevant context.
- A small-scale research project at Burnley College involved the distribution of previously prepared questionnaires which were

distributed to schools and completed using the 'text-talk' feature of the video-conferencing software.

- Video conferencing has been used with pupils with hearing impairment, for developing communication skills.
- Video conferencing has also been used for the assessment of NVQ Levels 2 and 3 courses in Tourism by employees of Global Travel.

The Telematics Certificate

4.19 Partly to encourage the schools to use the video-conferencing facilities, and to provide pupils and staff with a suitable qualification, Burnley College instituted an NCFE-accredited Telematics Certificate which is awarded for what can be termed 'a broad level of Information and Communications Technology (ICT) competence'. In order to gain this certificate, students have, as one facet of the syllabus, to demonstrate their competence in video conferencing by being able to use all four features of the video-conferencing software (video conferencing, text-talk, whiteboarding and sharing an application), as well as correctly dialing up another user (which is usually Burnley College) who will monitor the sequence of procedures and record the outcomes. All schools visited during the evaluation have had pupils who are currently undertaking this course as part of their normal IT activities.

4.20 The administration of the Telematics Certificate is organised through Burnley College, which keeps a record of all the pupils' activities and, thus, there are no administration requirements which are the responsibility of the schools.

4.21 An overall target of 60 pupils per term (that is 10 pupils per school when this was agreed) had been set for the Telematics Certificate. This target was set by Burnley College as an indication of how the College would monitor the use of the video-conferencing equipment. This was a requirement when the bid for the money from the SRB was made and it was then agreed as an adequate way of measuring the take-up of the video conferencing. Once Internet connectivity is established, the pupils can top up their certificate with the Internet part and they will then get the NCFE certificate.

4.22 The Telematics Certificate has been an undoubted success and is now available to all full-time students, who see it as a valuable paper qualification which indicates a standard of competence in IT, specifically in the fields of video conferencing and the use of the Internet. An indication of the success of the certificate can be seen from the enquiries which the College has received from other FE institutions and the piloting of a franchising of the course contents to 30 other FE colleges in the UK. In addition to these developments, the course is offered to local Small and Medium-sized Enterprises (SMEs) and larger organisations at a cost of £40, which includes a textbook and notes on how to access the College intranet, with unlimited Internet access as well as access to the College Chat-line. To date, some 120 students from 70 SMEs have enrolled on the course.

Activities at Towneley School

4.23 The video-conferencing equipment is sited in the computer studies room, a well-furnished room equipped with 18 networked Archimedes computers.

4.24 Video conferencing is not integrated into the curriculum. The experiences which the pupils have acquired have been through the Telematics Certificate work, in addition to occasional impromptu usage.

- The school obtained the video-conferencing equipment and the ISDN-line connection approximately 15 months ago. Soon after, the school became connected to the Internet through membership of BT Campus World. As a consequence of responding to a request to contribute to discussion on the environment, the school was invited to a live video-conference session which was to be broadcast by the BBC during May 1995.
- Video conferencing has also taken place between Year 10 pupils and pupils at Stronsay School in the Orkney Islands. The Year 10 pupils at Towneley have made friends with several of the pupils at Stronsay and used the video cameras to show each other around their school (within practical limits). Unfortunately, the video-conferencing equipment has now been moved from the Stronsay School to another remote school in the Orkney/Shetland area.
- One of the set books in GCSE English Literature for 1996 was *Kes*. The husband of one of the teachers at Towneley High School is a falconer and has a kestrel. The bird was brought into school to show the GCSE English Literature class and the session was video conferenced live to a corresponding class at Barden High School.

Activities at Barden High School

4.25 The video-conferencing hardware is located in a spacious classroom which is used for Design & Technology (D&T). The equipment is situated in one corner of the room, which also houses about 16 other PCs. The decision to use the D&T room was taken so that there would always be pupil supervision; the school library, an alternative location, being supervised only on a part-time basis.

4.26 Video conferencing has been used only by the Mathematics and D&T departments. It appears that no other departments have expressed an interest in the use of video conferencing, but it is difficult to ascertain how much this is due to the other members of staff being disinterested, to the equipment being located in a D&T room, or to the availability of the facility not being advertised. From discussion with staff, usage is of the order of approximately one hour per week.

4.27 Apart from a 'one-off' video-conferencing session with Towneley High School on *Kes*, there have been no other examples of curriculum usage, other

than in IT lessons for the purpose of obtaining the Burnley College Telematics Certificate.

Activities at Ivy Bank School

4.28 Ivy Bank was one of the last of the initial seven schools to be equipped with video-conferencing equipment by Burnley College. The facilities have been at the school since September 1995.

4.29 At Ivy Bank, the video-conferencing hardware is located in the library. This has been a deliberate policy decision, since it was felt that, by locating the facilities in a central resource area, they would be more accessible to other staff. Also, there is an IT/Library assistant who has been trained in the use of video conferencing and is on hand to help with any problems which may occur. This means that pupil use is always supervised.

4.30 Video conferencing is used on a regular basis, about two hours per week, by pupils in the IT department who are undertaking their Telematics Certificate from Burnley College. The Telematics Certificate has been an important focus for video conferencing at Ivy Bank school, in that it has become a useful measure of achievement for the pupils and an incentive for them to acquire recognised IT skills. Without the Telematics Certificate, it is likely that the video conferencing would be seen to have very little use at Ivy Bank. Although to acquire the Certificate the pupils have to demonstrate their ability to use the Internet (this was not available to them at the time of the evaluation visit), they are given recognition of their achievements and these, as has been previously indicated, may be topped up at a later time when they are able to have Internet access.

4.31 The only other department to use the video-conferencing facilities has been the English department which video conferenced with some other schools for the purpose of completing a questionnaire. The questionnaire responses were recorded from vision/audio and not from using application sharing.

4.32 There are some interesting points which arose from an observed lesson.

- There are clear advantages to siting the equipment in a room which is not used as a classroom, but for which access is particularly easy.
- The method of use, whereby the class is involved elsewhere with their activities, the pupils selected for video conferencing moving quietly to the video-conferencing room and, then, under supervision, undertaking the tasks which had been set, appears to work particularly well.
- Having a technician/assistant to help with the video conferencing frees the class teacher to continue with his/her work.

Activities at Gawthorpe School

4.33 The video-conferencing equipment is housed in the school computer room, which is bright and well-equipped with a Windows NT network.

4.34 Apart from one connection to an organisation for the deaf in Manchester, the only other connectivity reported has been to other schools in the Burnley LIFE project. There has been little evidence of any cross-curricular usage of the video-conferencing facilities.

Activities at Mansfield School

4.35 The computer suite has 21 free-standing 486 machines, one of which has a high-speed modem (28.8 Kbps) connected to a Packet Switched Telephone Network (PSTN) telephone line and to the Burnley College video-conferencing machine with its Integrated Services Digital Network (ISDN) connection. Thus, the school has two computers capable of providing Internet access.

4.36 The school has completed some video conferencing with other local schools, but the main use of the machine is for participating in a live TV programme broadcast on Talk TV called *F2F* (*Face to Face*) available on Sky/Cable Channel 21. The format is that a small group of students are e-mailed/faxed a topic during Friday, and then asked to discuss and respond while on-air later on Friday afternoon. The Uniform Resource Locator (URL) for the show is http://www.talktv.co.uk/prog03.html.

Activities at Walshaw School

4.37 The video-conferencing equipment is housed in a corner of one of the IT rooms. However, there are two other ISDN connection points in other rooms. This allows the video-conferencing equipment to be taken to other rooms if the IT room is required for a lesson. Problems over monitoring/supervision of usage preclude the location being changed to, say, the school library, which would provide better access.

4.38 Video conferencing is used very intermittently at Walshaw. It is not integrated into the curriculum and it would appear that there are no current plans for this to occur. Examples are given below of some of the activities in video conferencing which have occurred at Walshaw School:

- an aerobics lesson from Burnley College, which was arranged as part of a 'Red Nose' day set of events to raise money for charity
- a group of German Students who were at Walshaw on an exchange visit had a video-conferencing session with language students at Burnley College
- usage by Year 10 pupils who are following the Telematics Certificate course.

Summary

Curriculum applications

4.39 In each of the six schools visited during the evaluation period, the predominant use of the video-conferencing hardware has been to enable pupils to gain their Telematics Certificate. This has been particularly successful and has been a significant motivational factor in developing the pupils' IT competencies, as well as providing them with a recognised award. Outside these activities, there has been only occasional usage which would directly impinge on to the normal school curriculum, for example GCSE English and the study of *Kes,* involvement in a national televised discussion, and the completion of a questionnaire. There has, thus, been little impact of the video conferencing on the rest of the school curriculum. The reasons for this are not difficult to find and have been reiterated by several of the staff who were interviewed.

- Since there appears to be no directory of schools with video-conferencing facilities, how does a school find out about possible contacts?
- There are difficulties over timetable arrangements, where the equipment is located in a frequently-used classroom and with other schools which may have to disrupt an existing timetable in order to ensure some form of compatibility.
- There is a need to have a suitable purpose for video conferencing that is curriculum-led, rather than simply video conferencing because the school happens to have the equipment available.

4.40 It is also interesting to note that, in all of the schools visited, there was only a modest indication of the integration of IT into the curriculum and, thus, there would be little experience in the schools of cross-curricular IT applications. Hence, the introduction of such aspects of technology as video conferencing and the Internet would have had little chance of success without some determined staff-development activities or strong support from the senior management teams in each of the schools.

Class organisation and access

4.41 From the lessons observed, and from discussions with staff, it would appear that the organisational framework to support video conferencing in the classrooms is one of withdrawal of a small number of pupils during an existing (usually IT) lesson. Such an organisational framework is determined by the nature, availability and accessibility of the hardware. With the type of video-conferencing hardware which each school has received, only small groups of pupils can be accommodated at any one time and this precludes whole-class usage, unless portable cameras and large-screen output displays are available.

Location of hardware within a school

4.42 Apart from one school, at which the location of the video-conferencing equipment was in the library area, all other schools have located it within a classroom, which has usually been in the IT area.

4.43 Classroom location, whilst having advantages in terms of easy monitoring and access by students in the class, does in many ways work against other forms of curriculum usage, in that rooms have to be booked, timetable arrangements made and there is the general requirement of organisational difficulties to be overcome before other (non-IT) curriculum usage may occur.

4.44 Location in a common area, such as a library, whilst overcoming the room-changing problem, does require additional staff with IT competencies for it to operate smoothly, since small-group/individual usage presumes that the pupils can be left to operate the hardware on their own, or, as the case at Ivy Bank school, under the supervision of a member of the non-teaching staff.

4.45 One school has produced an interesting solution to the accessibility problem by wiring three rooms to the ISDN link, thus enabling video conferencing to take place in any of these selected classrooms.

The Internet

4.46 As was indicated previously, the major part of this evaluation has concerned the use of video conferencing and there has been little evaluative discussion on the use of the Internet because of the comparatively recent introduction of this facility in the schools. However, several schools have clearly started to use the Internet and they have their Home Page displays linked to the Burnley College Home Page.

Administrative use

4.47 The administration of the project and the Telematics Certificate is undertaken by Burnley College. Other than this application, there is no administrative use made of the video-conferencing equipment.

Staff development

4.48 Burnley College provides technician assistance (through visits) for the customisation and setting up of the equipment on the school sites. Additionally, schools are provided with an illustrated booklet, *Video Conferencing: A User Guide*, which explains in detail how to use the equipment and software. There has been no separate course directed at video conferencing and its use in the curriculum.

4.49 With the advent of Internet access by the schools, a two-evening twilight training course was mounted by Burnley College. This course focused on the procedures for information retrieval and the setting up of Home Pages, and was attended by several IT teachers from the schools in the project.

4.50 There has been no direct staff development undertaken at the schools as a way of developing expertise or raising awareness in the use of video conferencing across the curriculum. Nor were the staff involved with the project given any extra time for the purposes of developing initiatives with their schools. These factors may be reflected in the only modest curriculum usage of the video conferencing. What staff development has occurred has been as a result of individual staff interest and through the use of personnel at Burnley College being involved in a 'schools' IT day'.

Staff support

4.51 At most times, help is available via the video-conferencing link with the College, and three learning resource officers have been trained in the use of video conferencing and in the solving of common faults and difficulties. Any problems which require technical assistance are dealt with either by the technical staff at Burnley College or through the schools' normal repair arrangements.

4.52 Generally, the support procedures appear to work well, provided that no major technical problems occur. However, once a hardware problem does occur, then the experiences at two schools would indicate that the repair procedures should be examined more closely.

4.53 An illustrated termly newsletter, *Telelink*, is produced by Burnley College and is distributed to all the schools involved in the project. This publication provides useful news and information about developments which are occurring both locally and nationally which may be of interest to the schools, as well as keeping everyone up-dated with additions to the ISDN and telephone lists, and e-mail addresses.

Technical issues: connectivity, reliability and software

4.54 Connectivity is via ISDN2 lines and, to date, there have been no major problems which have arisen.

4.55 However, there are difficulties related to sound quality of the video-conferencing units. There are two related problems.

- When video conferencing is taking place within a classroom, the background noise, even from an orderly class environment, is sufficient to disrupt the quality of the sound and necessitate that the 'hands free' option is not used. The use of an echo-cancellation device controls this problem, but, so far, this has been installed only at Burnley College and not at the schools. An echo-cancellation unit costs £350.
- Additionally, it was noticed that, in some of the lessons which were observed, there would be occasional sound break-up, although the picture quality remained good. It appeared that this effect occurred only at the school end of the link and did not occur at Burnley

College. Whilst this was only mildly disconcerting to the users at the time, it could become irritating, particularly if conversations were under way with students abroad, and the quality of the sound was then an important and necessary feature of the communication. Discussions have been held between the evaluation team and the technical staff at Burnley College, and it can only be reported that this effect is not always present and does not occur if echo-cancellation equipment is in place at both video-conferencing sites.

4.56 The Olivetti software used for video conferencing has run without any difficulties being reported. A new version (2.5) will run under Windows 95 and the College will upgrade all the video-conferencing machines involved in the project in the near future. Currently, there are three variations of this software being used in the project:

- video conferencing only (Windows 3.1x)
- mix and match (Windows 95 for Internet and Windows 3.1x for video conferencing)
- Windows 95 only with the latest upgrades of software.

Costs and cost benefits

4.57 The project has received funding from the Single Regeneration Budget programme amounting to £19,000 capital expenditure and £15,000 revenue (which represents about 30% of the total costing of the project, including the Internet service) over a three-year period. Other funding has been supplied by Burnley College. The funding provides the equipment for video conferencing in the schools, the ISDN2 installation charges (but not the line-rental costs which are met by the individual schools), and the setting-up and administration costs. Walton High School, the last school to join this project, estimated that they would not be able to meet the proposed ISDN line-rental charges and negotiations are under way with ten local businesses which, it is anticipated, will each contribute £100 on an annual basis and, in return, will be allowed access to the video-conferencing facilities out of school hours. Such practical support can only help to promote links between the school and the community.

4.58 Current line-rental charges invoked by BT depend on which option the school will take from several which are available. However, for the duration of most of this evaluation the line-rental charge levied by BT was of the order of £84 per quarter. This would imply running costs slightly in excess of £330 annually, plus the costs of the connect times, which are charged at twice the normal rate as there are two lines (ISDN2). Thus, for the schools involved in the project, given the amount of usage indicated in the report, their overall telephone charges should amount to no more than £500 for the operation of the video-conferencing links.

4.59 Internet connectivity is provided free of charge to the schools by Burnley College.

4.60 The project also has some hidden costs, which are less easy to measure, in terms of the time and energy which the Project Director has had to expend on the project, by being responsible for its overall administration.

4.61 The benefits which have arisen from the video conferencing have been confined to the development of the pupils' IT skills and this factor, motivated by the acquisition of the Telematics Certificate, is particularly commendable. In terms of cross-curricular use, the benefits have been less apparent.

4.62 Other benefits have occurred in several ways. School staff have had their own IT skills improved, particularly where INSET courses have been arranged. The project has received recognition at local and national level, and this has succeeded in raising the profile of Burnley College amongst the community, so much so that recruitment from the schools involved in the project has increased by over 50% (in excess of 100% from two schools) since the project started. The Telematics Certificate, which was developed as a method of monitoring usage and competency of the video-conferencing facilities, has received considerable recognition, and a further 30 institutions will soon be franchised to operate it, using materials developed and available on the intranet at Burnley College.

4.63 Thus, significant benefits have occurred, possibly not in the ways in which they were anticipated, but nevertheless in meaningful and, in some cases, measurable ways which would outweigh the costs involved. Such benefits are likely to increase, as the Internet facilities become more widely used by the schools and the consequent cross-curricular IT work is developed.

Progress and achievements related to the project aims and objectives

4.64 The previous section has, to some extent, indicated many of the achievements of this project, in terms of developing the IT skills of the pupils and those members of staff involved. Achievements in other areas of the curriculum (that is non-IT-related) have been less pronounced, since there has been only occasional usage of video conferencing other than by pupils wishing to achieve their Telematics Certificate.

4.65 The effect of the project on the College has been quite significant. It has certainly developed an expertise in this aspect of telecommunications and video conferencing now occurs in a variety of forms, some of which have been indicated earlier. Such applications have a sound basis in pedagogy and make educational sense for the use of video conferencing. New developments, which are due to occur during 1997, include the use of video conferencing to provide assessment of an NVQ course in Tourism for a national chain of travel agents, with the course itself being available over the College Network.

4.66 Perhaps the two most impressive achievements have been in the growth of the Telematics Certificate, which was pioneered by the College as a direct result of this project, and in the effects on the recruitment to the College from the schools. Both of these are quantifiable and indicate a measure of success to the project.

4.67 In terms of this evaluation, the project objectives have been achieved, more so in some areas than others, but it is likely that the strong links which have been established with the schools, and the excellent Internet facilities which are provided free of charge by the College, will lead to increased usage and to consequent improvement in both IT skills and expertise amongst school staff, thus enabling these facilities to be integrated into the curriculum of the schools.

Project replicability

4.68 This is a small project resourced by a grant from SRB funds and Burnley College. Such finance has enabled eight schools to be provided with low-cost video-conferencing hardware and ISDN connectivity, which has also enabled Internet usage to take place. Having a small number of schools involved has meant that the project is manageable and capable of being supported without it becoming a drain on the resources of the College. It is important to note that the Internet access is provided free of charge to the schools through connection to the College server. Thus, whilst it is likely that the project could support a few more schools (if further finance was available), to extend it beyond, for example, a further 10 schools would involve logistical problems which would demand a different infrastructure to provide the equivalent level of support to that currently enjoyed.

4.69 Since the project started, the financial costs have been considerably reduced for the purchase of the video-conferencing equipment, indeed a PCC with similar VC board would now cost no more than half the price of the equipment which was installed initially. This would imply a considerable reduction in the set-up costs for a similar project.

4.70 The benefits for the schools are clear. Most schools would probably welcome such resources, unless their finances are so constrained that they are unable to afford the running costs. The costs for Burnley College are, however, much higher and for any replication or expansion these would have to be borne in mind when compared to the successful outcomes which the project has generated. Perhaps the raised profile of Burnley College and the strengthened links with the local community have been appropriate rewards for the financial outlay, and the time and efforts of the College's staff.

4.71 In brief, the project is replicable, rather than capable of being significantly extended, albeit with different models in terms of the financial support. However, given an appropriate financial base and a willingness to co-operate, similar facilities could be provided by other FE Colleges to local schools.

Commentary and recommendations

4.72 This is a tightly-focused project which is efficiently managed. It is a project which is gradually developing and, now that the Internet facilities are available to the schools, the curriculum applications should follow. The educational value of video conferencing has been clearly demonstrated by the College, with the involvement with Sweden, the use by students with hearing impairment, and the 'on-line' NVQ assessments as obvious examples. The introduction of the Telematics Certificate, which has been a necessity to generate some momentum in the project, has had a significant impact on the College, with all new entrants able to access this award. All but one of the schools visited have included this as an aspect of their IT course for Year 10 and Year 11 pupils. This certificate has been received enthusiastically by the pupils and the schools, and has gone a significant way in developing the expertise of both staff and pupils in video conferencing.

4.73 However, apart from the use of video conferencing for the Telematics Certificate, there have been few other activities related to the use of video conferencing in the curriculum at the schools.

4.74 This lack of integration into the schools' curriculum is the result of many factors, each of which has had an effect on one or more of the schools involved in this project.

- The video-conferencing equipment is located in a room which is already being heavily used for teaching, and this results in difficulties over room bookings and alternative arrangements having to be made.
- A partner school/institution is required for video conferencing. Apart from the schools involved in the project, and Burnley College itself, at the time of the evaluation there was no directory of other schools which had similar equipment, although one is planned to be held at the NCET Web site.
- Video conferencing needs careful planning, as timetables have to coincide, and rooms and pupils have to be available. Thus, there must be a very strong curriculum requirement, together with an understanding or appreciation of possible learning enhancement which video conferencing will bring, before teachers will consider making the necessary efforts which are required in order to make this a successful activity.
- For many teachers, the National Curriculum requirements are paramount and they are unwilling to devote considerable time to the setting up of an activity for which, to them, the pedagogical value might first appear limited. This is particularly apparent with pupils at Key Stage 4.
- The equipment which has been installed in the schools in the project is compatible with other equipment which uses the VC8000 board,

but not with other equipment, such as PictureTel, if anything more ambitious than 'see and speak' is envisaged.

- The video-conferencing equipment suffers from problems with sound break-up, which necessitates the purchase of echo-cancellation units, an added expense for the schools (or College).
- Only small-scale applications can take place with the equipment which has been installed; for example there was no moveable camera which would enable class lessons to be shared between the schools and no large viewing screen.
- Whilst staff development has been undertaken at a technical level, in terms of courses for the IT staff, there have been few, if any, internally-organised, awareness-raising courses by the schools, and, as a consequence, school staff were left with little understanding of the possible ways in which such technology could contribute to their curriculum needs.
- In the majority of the schools, few cross-curricular applications in IT had been developed. Thus, video conferencing and Internet access had been placed in some schools which were themselves possibly inadequately equipped (in terms of staff awareness and IT experience) to take advantage of, or to exploit, such facilities, except in limited ways.
- Without the necessary 'championing' of IT by a member of the senior management, there is a greater probability of initiatives, such as video conferencing, receiving only lukewarm support from other members of staff.
- Time needs to be made available, to the Head of IT or whoever is responsible for the introduction of the new technology, to ensure that other staff develop their own awareness of the educational value and implications of such hardware. It is not something which can be done as well as carrying a normal workload in a very busy school.

4.75 The termly newsletter which is produced by Burnley College is colourful, useful and informative, and serves as a vehicle to outline the successes of the project, as well as keeping users appraised of current developments. The production of the newsletter is the responsibility of the Project Director. Perhaps it would provide a stimulus to the project if this responsibility was shared amongst the school representatives, with a requirement that each issue should feature developments at the different schools?

4.76 The installation and support service provided by Burnley College is generally satisfactory. When new equipment is installed, a brief instructional session is held for members of staff who will be using the equipment, and users are then provided with a well-written and informative booklet describing how to use the facilities. Any additional help concerning the

operation of the video-conferencing equipment is available at the College and is provided by the library staff. Since the equipment belongs to the College, any technical problems become the responsibility of the College. On the two occasions on which a serious problem did arise, it was evident that the procedures for effecting the repair were not followed, perhaps through the areas of responsibility being insufficiently clear to the school involved or to the College.

4.77 There has been little staff development occurring *within* the schools concerned with this project, although INSET days have been held. Prior to the launch of the Internet facilities, two twilight sessions were given at Burnley College for the IT staff from the project schools. This course focused on the search procedures involved in the use of the Internet and on the creation of the schools' Home Pages for the College's WWW site. There has been little emphasis on the pedagogical uses of the Internet and it is this aspect of staff training which is important if this initiative is to be developed. New technology cannot be incorporated into the curriculum of a school by simply placing it in the school. Teachers need to be given guidance and encouragement, not only in terms of the practical and technical aspects of use, but also in the adoption and development of applications. Appropriate courses, which emphasise the pedagogical uses of the technology, need to be given, or at the very least a support group of interested and committed teachers formed whose remit would be to develop curriculum aspects within the schools. With such new technology, where such experience is particularly limited, then it is important that some form of mechanism whereby ideas can be pooled and experiments tried and disseminated is provided. Unless this is coherently structured into staff development in the schools, then the perennial problem of 'solutions looking for a problem' will arise in the minds of staff and IT will again be seen as some sort of necessary adjunct which has to be included into lessons, rather than being an integral part of them.

4.78 In terms of teaching and learning issues, the project has been responsible for the development of specific skills, particularly amongst the small group of pupils who have taken the Telematics Certificate. This has had a strong motivational effect, and, although limited in scope, has provided a useful and accepted qualification for the pupils to achieve. As the project progresses, and particularly with the advent of the Internet in the schools, it is likely that IT skills will be developed further, and, indeed, also amongst the staff, as curriculum uses are introduced. One restriction which certainly constrains teaching styles concerns access to the facilities, because, with almost all of the schools involved, there is only one PC which is connected to the ISDN line and, consequently, teaching is always restricted to small-group or individual work.

4.79 As yet, little use has been made of the video-conferencing facilities for administrative purposes, although the progress of the pupils seeking the

Telematics Certificate is recorded at the College. Video conferencing, with compatible equipment, does support the transfer of files and application sharing, and one possible additional use would be for information sharing, for example about pupil progress, attainment and performance, through this medium.

4.80 The equipment which has been used for the video conferencing has been generally reliable in operation and there have been no major problems reported. Considerable problems have occurred, however, with the quality of the sound, and these have been resolved only by the acquisition of echo-cancellation equipment. Such problems would preclude any small group-working, for example in modern languages, where sound quality is particularly important. The picture quality has been acceptable when compared with other low-cost video-conferencing equipment, but it is still below that of, for example, the quality of Moving Pictures Expert Group (MPEG) decompression. However, for the applications used in the schools, it has proved quite adequate. There is, perhaps, the inevitable problem of incompatibility between different systems and, as a consequence, video conferencing between institutions which have different equipment may be undertaken only at the 'see and speak' level (H320, the lowest level of video conferencing which allows only 'see and speak' and not file sharing or whiteboarding).

4.81 In terms of costs, the project has been particularly acceptable to the schools involved. They have not had to finance the hardware, and their only financial costs have been in the ISDN line charges and the telephone-connection charges. It is estimated that these would be of the order of £500 annually, considering the amount of use which has occurred. However, this is likely to increase, particularly when the Internet usage develops, but it is felt that, with the increase dependent upon local telephone charges, the usual school bill would amount to less than £1,000. Of course, this does not envisage any day-time video conferencing to mainland Europe or the USA. It should be noted that one of the project schools has had difficulties in finding the necessary finance to support its current work and has secured the help of local businesses, which, in return for supporting the school, have the video-conferencing facilities for their own use outside school time. This is an interesting way of helping to defray costs and at the same time strengthening community links.

4.82 The project has generally been successful and the major objectives have been achieved. The standing of the College and its relationships with the local schools have been developed considerably by the activities associated with this project. The project is clearly capable of replication, providing sound financial support is available, together with willing and enthusiastic staff to organise and monitor progress. There would, however, be difficulties associated with extending the present project to more schools, as this would demand a different infrastructure to enable the project to succeed, with a

much greater allocation of staff time and resources; something which would need careful consideration before being undertaken.