


Education Departments' Superhighways Initiative

Group C: Teachers' Professional Development

Final Report

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The Projects

1. Two projects dealing with teachers' professional development were accepted for inclusion in EDSI. These were the CLASS Project in Northern Ireland, and the Teachers Managing Learning (TML) project in Cambridgeshire. These projects contrasted starkly in every respect, as is shown in Table 1 below.

Table 1 A comparison of the CLASS and TML projects

	CLASS	TML
Project leaders	CLASS team	Cambridgeshire LEA team
No. of schools	4	300 in Phase 1, 12 in Phase 2
Superhighways component	Video conferencing	Video conferencing (Internet and WWW)
Focus	Impacting on school management	Impacting on the school curriculum
Sponsors	CLASS, NICLR, ICL, SIMS, BT, RTU, Coopers and Lybrand	LEA (BT minimally) and the County Department of IT
Superhighways role	Means of providing professional development	Subject of professional development

2. The projects as a pair did offer an opportunity to view the potential role of superhighways technology in teachers' professional development, both as a means of delivery and as an agent for change in administrative and curriculum-related aspects of the work of the school. However, it should be noted that these projects only begin to address a small sector of the possible uses of superhighways technologies in the domain of the professional development of teachers. Training of teachers, both in terms of their own use and understanding of superhighways technologies and related issues for use of these technologies in schools, will clearly be essential to the 'roll out' of any successful strategies identified by EDSI.

Project C2.1: Class Project

Description of the project

3. The CLASS project explored the application of an interactive multimedia CD-ROM and video conferencing via ISDN2 lines to provide an independent training

module in the use of computerised management information systems (CMIS). Four secondary schools in Northern Ireland took part and a total of 28 senior and middle managers engaged in the training programme. The project was successfully completed by a partnership of public and commercial organisations, including the CLASS organisation, NICLR, SIMS, ICL, BT, RTU and Coopers and Lybrand.

4. ICL provided each school and the tutor centre with a Pentium multimedia computer running Windows 3.1 and VC8000 card with Teamvision software on each machine. A Call Port¨ external audio system was installed after initial system testing. BT installed an ISDN2 line in each school and training centre.

Aims and outcomes

5. All of the aims set by the project team were achieved. In particular, the project was found to provide an efficient and effective platform for flexible in-service provision for the acquisition of skills and knowledge, empowering schools to manage some of their own professional development needs cheaply and with minimum disruption to pupil learning. Other significant organisational benefits for schools were identified, conducive to improvements in the quality and range of influence of school-based decision-making. However, because the aspiration to co-ordinate the delivery of a Windows '95-based upgraded CLASS system in parallel with the EDSI CLASS project was not realised within the evaluation time-scale, it was not possible to observe any improvements in the effectiveness of educational processes in the four schools.

6. There were some significant technical problems, which caused intermediate delays, but were all successfully overcome. This highlighted the need for high-quality technical support when introducing technology-rich training programmes of this kind.

7. The project successfully employed a strongly controlling management strategy, making full use of high levels of motivation among participants and a capability to deliver equipment and support by members of the partnership. Internally, participating schools were encouraged to assume ownership of the training task and to be accountable, through externally administered tests, for its effectiveness. This proved to be a significant contributory factor in the project's success.

8. A programme of training events revealed that designing multimedia training applications for professional users should, as far as possible, simulate actual operating conditions and be closely relevant to users' practical interests and needs. Hands-on experience should be incorporated in the training programme, which should be provided as close as possible to the time when the system may be actually used in school. Significant opportunities for school development and inter-school networking were identified.

9. The pedagogy adopted in the CD-ROM package was structured around three component procedures, which supported the development of knowledge, the acquisition of skills and further study through a reinforcement-feedback loop.

The strategy was further supported by coupling the CD-ROM package to a video-conferencing facility. This facility was used effectively by CLASS for internal project evaluation and testing of trainees in their acquisition of skills and knowledge. The CD-ROM provided an effective teaching environment. All participants successfully completed the training programme and were generally positive about their multimedia learning experiences. The facility's capability to promote staff and organisational development was less fully utilised. A number of insights were obtained regarding necessary conditions for successful training programmes aimed at professionals and using an independent mode of learning, notably in respect of their internal management, the requirements of a satisfactory learning environment and individual patterns of study and learning.

Costs and cost benefits

10. In terms of the efficiency and cost-effectiveness of this independent mode of training, direct savings at the school level, arising from greatly reduced tuition, travel and teacher substitution costs, together with minimum disruption to patterns of pupil learning, make this a highly attractive option. Estimation of the indubitable economies would need a re-examination of the role and nature of in-service training.

11. Qualitatively, teachers highly valued being able to take control of their own learning, especially when so closely related to their specific organisational responsibilities, and this produced an extended training day from 8.00 am to 6.00 pm. Individual learning experiences could then be shared with other colleagues, as part of their collective responsibility for particular organisational tasks. From the school's perspective, the approach was found to promote a more extensive and equal distribution of corporate skills and provided a common platform amongst staff from which to develop a school-based strategy for self-development. Opportunity costs were incurred through teachers engaging in training during school time. Extensive use of this training pattern will require schools to produce a negotiated professional staff development model.

Project C2.2: Teachers Managing Learning Project

Description of the project

12. The Teachers Managing Learning (TML) project in Cambridgeshire involved a collaboration between three LEA agencies and the County Department of Information Technology to provide an opportunity for every school in the authority to have an 'awareness of superhighways technology' training session in which the relevance of these technologies to future school and curriculum development would be aired. There was no charge to schools for attendance at these sessions; the agencies absorbed the considerable cost as they viewed the exercise as one in which they would invest in order to generate new business among their schools as raised awareness led to a need for further staff training.

There was an expectation that these sessions would lead to some schools opting to pursue these developments actively, including them in their school development plan and buying in the help of LEA support staff to assist in the related staff and curriculum development which would result. This would then form Phase 2 of the project.

Aims and outcomes

13. The project succeeded in its primary aims to provide all schools with this first-stage training opportunity, which over half the county's schools took up. There was a high degree of satisfaction with the sessions attended, and most schools sent senior management and information technology (IT) specialists. The attendees recognised the value of the largely new information they received, and offered the view that the technologies they experienced would have relevance to their schools in the next five years. These included e-mail, World Wide Web (WWW) access and video conferencing. Moreover, a majority of schools expressed a desire to join the second phase of the project.

14. Phase 2 of TML involved inviting all schools in the county to purchase LEA support for a variety of training and development options relating to the development of teachers' skills in various aspects of superhighways technologies, and their integration into the curriculum. These ranged from using WWW resources in the classroom, through authoring Web pages to using video conferencing. However, the second phase of the project has yet to take off. Some 12 schools have expressed interest in the opportunities offered, but as yet no firm commitments have been made.

15. It is important to view the TML initiative in the broader context of the county as a whole. Running in Cambridgeshire, in parallel, there have been two initiatives to put an information and communications technology (ICT) facility into every school, and provide free access to the county bulletin board. The County Department of IT runs this service at no charge to the schools. Through it they can use e-mail to handle routine administrative communication within the county, access standard e-mail and have full Internet access. Where schools have a contract with certain local cable companies for their telephone services, calls to the bulletin board are free. Cable service is only available in urban areas of Cambridgeshire. All county schools are now using this service at some level for administration. Thirty-three schools are using it for WWW access. In the case of schools that sent staff to the training sessions, this use has begun since they attended the sessions.

16. The exact impact of a broad-stroke approach to teachers' professional development can be difficult to assess accurately. Certainly, in terms of equity of access to a training opportunity, all schools irrespective of size, location or available budget were given a chance to update themselves on the role of superhighways technologies in schools. There is evidence that some of the schools who did not avail themselves of this opportunity are already active ICT users, via the bulletin board and in some cases through other service providers.

There is, however, no way of knowing how far this use impacts on the curriculum in any of the county's schools.

17. TML Phase 1 is viewed by the LEA staff involved as one component of a broader plan that will have a wide-ranging impact on the county's schools over a period of years. The fact that it has not led to direct impact on curriculum use of superhighways technologies within the time-scale of EDSI has not been surprising for the support staff involved. They are aware that schools work on a medium-term development plan model, with demands on budgets for resources and professional development carefully prioritised and committed at least a year in advance. The lack of response to an immediate offer of development of the use of superhighways technologies must be viewed against this background. There are already indications that some schools wish to pursue this as part of their plan for 1998-99, and to work with the LEA to do this. Interestingly, these are all schools who already have work under way that involves active use of external sources of information in curriculum work, and who wish to improve their methods of access to these sources. There are indications that schools who do not currently actively use communications with organisations or individuals outside the school by more traditional methods are unlikely to rush to do so using superhighways technologies. A view is emerging that 'outward looking' schools who regard the wider community as part of their school's resources are more likely to adopt ICT.

Cross-Project Observations and Recommendations

18. Though attempting primarily to assess the efficiency and effectiveness of computer-based learning in meeting the professional development needs of teachers and schools, some more profound and underlying issues were highlighted. Positive indications regarding the potential value of computer-based multimedia in promoting development were obtained.

19. A project's model of change and manner of implementation strongly influenced the nature of the outcomes and the success with which they were achieved. The CLASS project targeted schools that appeared to possess the organisational qualities likely to benefit from multimedia independent learning systems on computerised management information systems. This model depends on the external agency having sufficient influence to draw schools into the project and to supply significant levels of resource and support without cost to the school. In the case of TML, the LEA support services took the view that they needed to offer something to all schools in the authority, in line with other initiatives in this area. As a result, they relied on schools opting in to the project and allocating their own resources to it. This 'thin layer' approach ensures equal access to new technology, but cannot have the same degree of impact on any one school as the targeted model favoured by CLASS.

20. Implementation seems likely to be more effective when a centrally-funded agency, with a recognised relevant expertise and track record, constructs a

developmental strategy based upon prior analysis of school needs. A schedule of deliverable outcomes, with schools working in partnership with capable commercial and professional organisations that identify clear and feasible expectations of each other's achievement, is then more likely to succeed.

.21. The CLASS project offers an interesting model for ICT-supported individualised learning as an effective means of providing 'point of need' professional development for teachers. This contrasts with the TML model, where one-off sessions were offered to schools on prescribed dates, with no prior knowledge of the state of readiness of the school or the availability of its staff.

22. In the case of use of ICT for curriculum-related work, it seems that schools who have already established an outward-looking approach to resourcing the curriculum are more likely to embrace superhighways technologies to enhance and extend this activity.

23. Each teacher in the CLASS project preferred the encountered school-based, independent learning model to a traditional centre-based model. There were several significant reasons given to substantiate this preference, which appeared to fit within the two categories of 'individual' and 'organisational'.

24. The CLASS change strategy appeared to promote effective change by adopting a 'pressure and support' hypothesis, whereby both the individual and the whole staff in schools are stimulated and sustained in 'change' activities by a combination of internal and external pressures and forms of support.

25. Programme design must quickly stimulate motivational factors. As the intrinsic value of the training programme becomes apparent, the pressure mechanisms may reduce considerably. If, however, the support systems are reduced, motivation declines.

Administrative issues

26. Most secondary and many primary schools in the UK have some form of CMIS to assist with education administration. Supported by a pupil database, the system of integrated modules is able to automate a wide range of school administrative tasks, such as pupil and teacher records, assessment records, examination entries, pupil profiling, curriculum modelling and financial accounting. In addition, the system will also include generic software, such as word processing and spreadsheets, suitable for supporting both office administration and teachers' needs.

27. The impact of CMIS on a school's administrative teacher-support needs depends, in the main, upon the quality of forward planning the school itself makes for the introduction of the system, and the frequency with which the system is used. In the best possible cases, where the school engages in systematic advanced training and planned integration, co-ordinated by a school information management officer, schools have reported considerable benefits from CMIS. These benefits include the streamlining of office procedures, improvement in efficiency, speed

and accuracy of administrative routines; reduction in clerical staff time, forestalling the need to appoint additional clerical staff; the delegation of routine administrative tasks from teachers to office and ancillary staff; improved financial monitoring and budgeting procedures; designing, costing, producing and distributing the school timetable; and reduction in the cost of producing information and statistical returns for external bodies. In most instances, CMIS has enabled the school to meet its original administrative demands but it has also allowed the school to carry out new tasks, such as providing each pupil with a printed personal timetable.

28. The Cambridgeshire bulletin board project, which ran in parallel with the TML project but was not part of the EDSI evaluation, provided all schools in the LEA with an ICT channel for exchange of information between the CMIS and the LEA, as well as general dissemination of information relating to LEA support services, such as INSET course provision. This is an example of the strategic role that narrowband communications can play in school administration.

29. CMIS systems are large and complex integrated software applications, requiring significant staff development to realise their potential. The CLASS project offered an effective model for such professional development using video conferencing to support the use of an interactive CD-ROM based self-study training programme. This skills-and-knowledge based training, an important element of teachers' professional development, formed an essential first step in the eventual implementation of the CMIS. The ultimate objective is to improve school effectiveness, in terms of both school administration and education management, through improved decision making based on better information provision via the CMIS. However, as all those involved in education change realise, the transition from knowledge and skills acquisition to the implementation of sustainable change in school practices is complex and by no means guaranteed. It usually requires further support and training. This next stage of the CLASS project, by necessity, will take place beyond the time-scale of the EDSI evaluation.

Project administration

30. The CLASS and TML projects offer an interesting contrast between what may be termed 'hot-spot' and 'broad-based' school development. Both projects were conceived and managed by local government agencies. In CLASS, the agency, assisted by significant investment from commercial and public partners, invested human and capital resources in a small number of targeted schools. In TML, the agency was concerned to raise the level of awareness across the LEA in some 300 schools. Key school personnel were targeted in each school, irrespective of the state of readiness of the school. It proved impossible to attract the level of sponsorship that would be required to make a significant impact on services, hardware or software provision to such a large number of schools. Furthermore, the schools themselves reported that they did not have sufficient funds available

from existing budgets to support the installation or use of broadband ICT, or the necessary professional development required.

31. Both projects illustrate the ability of local government agencies to provide the professional development that schools require for effective ICT use. However, their ability to provide equality of access to such support for all schools will ultimately rest on the availability of funding for services, hardware, software and training, and effective targeting of those resources. Existing school funds will always be insufficient to meet all competing demands. Under local management of schools (LMS), local government agencies can only advise on the school development agenda. If schools are to meet the current demands for implementation of ICT, they will need a clear message from Government that this is an imperative. This raises the need for an open debate on the value and appropriateness of ear-marked funding for ICT and associated professional development of teachers.

Implications

32. For successful school-based development, timing and reception conditions for the introduction of the training programme are crucial. It is possible, with due caution, to identify certain key characteristics that appear to be correlated with the successful application of multimedia-based independent learning programmes for purposes of individual professional and organisational development. There are a number of suggestions regarding the design and delivery of this professional development model on a wider basis that are likely to improve the chances of a successful outcome:

- prior needs analysis underpins the training programme
- an effective technical support system is available, with high-quality technical and advisory support provided
- a video-conferencing system is on line to provide help, and the remote tutor engages the learner in developmental questions leading to actual school uses
- multimedia learning systems need to be robust, user friendly and highly interactive, with practical content
- a video-conferencing system is used to test teachers on acquired skills, and the test results are used for the accreditation of teachers
- the teachers' professional development should be managed at school level, with attention paid to auditing and supporting individuals
- the staff development structure is actively supported by the headteacher and co-ordinated by a senior member of staff
- staff development time is allocated to individual teachers

- the school allocates an appropriate, dedicated learning environment
- training is perceived as directly linked to school improvement.