


Education Departments' Superhighways Initiative

Group E: Higher and Professional Education

Final Report

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Notes on the evaluation

1. The evaluation was conducted in three parts:

   Part One – Investigation of current courses using semi-structured interviewing and observation

   This phase of the evaluation involved observing all live-links sessions over a period of 3 months. The evaluator carried out informal interviews and group reflections with all the tutors and trainees taking part. The views and experience of staff at the College, including the technical and support staff and those designing and administering the courses, were also very relevant to this evaluation. Formal interviews with a range of College technical and administrative staff were also carried out.

2. *Part Two – Exploration of live links for skills training and application in surgery using structured interview by telephone*

   This second phase of the evaluation involved preparation of a telephone-interview schedule based on the results of the first phase interviews. Five tutors of the courses, 10 of the consultant surgeons and 10 specialist registrars who had attended them, were interviewed in depth. The interviews focused on the contextual and pedagogical factors associated with learning from live links and, crucially, applications of this learning to surgical practice.

3. *Part Three – Extension of live-links technology and applications*

   The integration and extension of live-links technology with other technologies for more effective learning, and its use for other audiences, were explored at all stages of the evaluation. Conclusions and indications are presented and discussed.

Project E2.1: Live-Links Project for Surgical Training

Description of the project

1. The focus of this report is on the use of live television links between an operating theatre in a regional hospital and the central teaching establishment in London at the Royal College of Surgeons. The live links at the college consist of a fibre-optic line to the Royal London Hospital and a dial-up 2Mbps Mercury Switchband link to four other hospitals. The system provides one-way video and two-way audio into three rooms in the college. Two are teaching rooms, holding 30-40 people, and the third is a large lecture room, seating up to 300.

2. The technology is used as part of training courses, usually on 'keyhole' surgery, for novice, intermediate and experienced surgeons.

Aims and outcomes

3. The aims of the project were to provide:

   - insights into the clinical applications of skills being learned during the courses by means of simulations, thus assisting in the transition from simulation into clinical practice
   - access to specialist teaching for a higher number of trainees
   - enhanced learning from the opportunity for participants at all levels to interact with the operating surgeon
   - better views of operative techniques than are frequently available locally
   - Master Classes where experts can present advances to their peers
   - minimal disruption to the clinical environment.

4. The results of the evaluation show that these aims have been largely met:

   - the technology is robust, appropriate and well supported
   - the educational value of the application of the technology is confirmed by trainees, tutors and the college
   - the system has raised the profile of the Royal College of Surgeons as a leading educational provider in surgical education.

Training

5. Although the college does believe that there is a need for formal 'teacher training' for more effective use of the technology, the current lack of such training does not

seem to have a detrimental effect on the performance of teachers and learners at this level.

Funding

6. The start-up costs of the project, including five years rental of the fibre-optic line, were approximately £200,000 with running costs of £41.40 + VAT per half-hour for the Switchband link and £2,000 pa for the Mercury Switchband link rental. Grants were received for the set-up while running costs are met from course fees. The margins are very tight. There is no offsetting reduction in costs elsewhere to the college. It is an additional service. The system now runs on fees generated from courses. There are limits to the pricing the market will bear which allows the college little room for manoeuvre in terms of development of the system or integration of further hospital sites. Opportunity costs are to the surgeon tutors who offer their time free of charge.

Administration

7. The system does not put any organisational or cost burden on any agency other than the college. There are currently insufficient staff to use the material generated from live-links sessions to produce other educational materials such as videos and CD-ROMs. There is also some controversy about what type of material it would be best to produce.

Commercial relationships

8. Relationships with commercial companies have been less than satisfactory, experiencing difficulties in customer support, liaison, charging strategies and development work. Poor commercial relationships have limited the potential for international use of the system.

Technical functioning

9. Technical functioning of the system in use has been almost without problems. The system is unobtrusive and fulfils its functions well. The primary learning opportunity provided by the technology is the observation of experts at work: how they perform new techniques, how they handle difficulties and how they carry out various details of surgical operations.

Ethico-legal issues

10. Issues of copyright, confidentiality, danger to the patient and the responsibility of the observer for the safety of the operation are being addressed.

Educational value

11. There was a range of valuable teaching and learning outcomes:

- The primary value of the particular application designed by the college is the interaction provided with the operating surgeon and the discussions fostered by the moderator, course tutors and trainees.

- Trainees all endorsed the live-links programme. Watching a full operation in comfort, being able to discuss it and often having a better view than presence in the operating theatre itself would afford, were very positively regarded.

- Integration of the live links with other educational events, such as simulated clinical practice and discussion, was a great strength. Watching an entire operation rather than edited highlights on video was appreciated, especially if the operating surgeon met with and solved unexpected problems.

- The system has solved the problem of how best to bring clinical material into the college for courses by offering access to the practice of a variety of surgeons, and the consequent opportunity for comparison of surgical techniques.

Coherence with existing surgical education

12. The new system enhances rather than replaces current practices:

- The value of the live-links learning was generally seen to be in the speeding up of practical learning when the participants eventually returned to the operating theatre. It was predicted that gains would be made in the actual amount of clinical contact time required to reach mastery of a procedure. This has yet to be proved but is a common hypothesis.

- The technology fits in with and builds on the existing effective ways of learning surgery and with the professional culture associated with that.

- It avoids competing pressures on the participants' time by removing them from their site of practice.

- It is, essentially, a support rather than a change of direction or free-standing innovation.

- The benefits of the technology are in its capacity to make available to a varied audience experience and knowledge which would otherwise be more time-consuming and difficult to acquire. The technology received almost total endorsement from those who had used it.

Options for expansion

13. Given the availability of funding, a variety of options for expansion were reviewed including:

- making videotapes of the live-links material for sale to other hospitals and educators
- expansion to further hospital sites
- broadcasting of other kinds of surgical procedure
- extending the audience to other doctors and paramedical specialties
- multipointing
- integration with other technologies, such as the virtual microscope and the World Wide Web.