

# Sharing lectures for teaching undergraduate surgery

Gordon Jameson

Teaching context	
<b>Subject area</b>	Medicine (Surgery).
<b>Course level</b>	Undergraduate.
<b>Participants</b>	Staff 6, one from each site. Students Several hundred, spread across 6 sites.
<b>Type of use</b>	Lecture series.
<b>Teaching methods</b>	Traditional lecture, clinical case studies, online Q&A sessions.
<b>Length of use</b>	An 18 lecture course delivered 6 times over two years.
<b>Project background</b>	Teaching and Learning Technology Programme (TLTP) Phase 2 Project, INSURRECT (INteractive SURgical Teaching at REmote CenTres).
<b>Sites</b>	Medical Schools at University College London (project leader), Cambridge University, Newcastle University, Edinburgh University, Manchester University, and Bristol University.
<b>Prior experience</b>	Most staff involved had none.
Technical context	
<b>Conference type</b>	Multi-point 6 sites.
<b>Technology used</b>	SuperJANET ATM (Equivalent to ISDN 20).
<b>Additional equipment</b>	At each site: Two fixed cameras, OHP and slide projectors, VHS Video projectors.
Contact	
<b>Contact name</b>	Dr D G Jameson
<b>Contact details</b>	Director, Multimedia Support and Communications Centre, University College London, Windeyre Building, Cleveland Street, London W1P 6DB. Tel: 0171 504 9320 Email: g.jameson@ucl.ac.uk

## Background<sup>3</sup>

The project linked the departments of surgery in six major UK Medical Schools. It ran for 3 years from 1992 to 1995. The first year was concerned with establishing the connectivity between individual partner sites and equipping the lecture theatres or teaching area with the necessary technology. The second and third years were spent delivering lectures and using the feedback from this experience to modify delivery.

## Why videoconferencing was chosen

The project aimed to use collaborative teaching courses to teach undergraduates surgery. This allowed sharing of scarce teaching resources, particularly clinical case studies. By using video technology and projecting the images on a large screen the students were given a better view of the patient than they would achieve around the bedside. The collaboration of the teachers resulted in students being taught by experts in each topic, where this expertise would not necessarily have been available at their own centre.

## The Execution

### First Year - Technology Set-up

The first year was concerned with setting up the network and equipping the teaching space. The SuperJANET network connected five centres. Bristol University was not connected to SuperJANET, so special considerations were given to connecting that centre; (SMDS technology was used). Further work had to be carried out to connect the teaching space to the SuperJANET network.

The SuperJANET project did not have special Audio-Visual expertise, and there were a number of problems associated with the AV requirements. Audio in particular presented problems and work had to be done to incorporate echo cancellation facilities. These facilities are now incorporated in most videoconferencing systems. It was vital that the technical capability of each site was the same, so that a lecture could be transmitted from any of them.

<sup>3</sup> Further information about the Insurrect project (INteractive SURgical Teaching at REmote CenTres) can be found at <http://www.mmscc.ucl.ac.uk/insurrect/index.html>

## **Second Year - Traditional lecture delivery**

As the lecturers had virtually no experience of network teaching and it was difficult to explain this to them, it was decided to permit the teachers to give their lectures in the same manner as face-to-face teaching. This experience was a shock as they were forced to realise that many of the methods of feedback from their audience did not work over networks and the students found asking questions difficult in these circumstances.

The lecturers had a second chance to deliver their lectures but this situation did not improve the second time round, and so the project decided to have a special meeting to discuss the problems associated with network teaching. We had collected feedback from students and this was also discussed.

It was evident that the prime requirements were that the sessions should be interactive and that multimedia material should be used more in the lectures. In the medical context this meant that we should try to bring real patients into the lectures as part of the presentation of case studies of the clinical conditions.

## **Third Year - Modified lecture delivery and Conclusions**

Changes were instituted and these improved the quality of lectures, which was measured by the proportion of students who continued to attend lectures throughout the course. Where possible clinical material was used in the lectures and this was appreciated by students.

## **Evaluation comments**

The project had highlighted that the use of ISDN videoconferencing techniques for teaching was very different to the experience of videoconferencing meetings. Application was made for another TLTP project award for further work in this field but this was not supported. The cost of ISDN calls between the 6 sites was too high to maintain from departmental resources and consequently this teaching activity stopped.

## **The Barriers**

Interaction was a major problem because students were cautious about asking questions in front of colleagues from other universities. We found that the best way to maintain the anonymity of the student was for the students to decide who should be their spokesperson and for this person to channel all questions and responses. This also overcame a technical problem of microphones being able to pick up the sound of the audience. A roving microphone was used and carried by the student spokesperson at each site. This person also introduced the teacher at whichever site was responsible for the lecture on that day.

## **The Enablers**

If the teaching session was structured for interaction to take place at specified stages, i.e. after the initial presentation of the clinical condition of the patient, but before a discussion of how to treat that condition, then interaction was successful. This did not stop spontaneous questions and as the students became more accustomed to the network environment the interaction improved.

## **European Collaboration**

A project has been recently completed linking Copenhagen (Denmark), Turku (Finland) and UCL London, which was funded through the EU SOCRATES Programme. This collaboration has presented clinical case studies, given by students under the supervision of a clinical teacher. This collaboration is continuing between London and Copenhagen although the funding has finished. The students have the opportunity to compare clinical practice in different countries.

## **Desktop Videoconferencing**

Another project is being carried out within the UK between London, Manchester and Edinburgh using the IP (Internet Protocol) videoconferencing technique (i.e. desktop conferencing), where packet-switching technology is used. The user interface is very different to that used in the ISDN environment and this will have an important impact on the teachers and students which needs to be examined. The problems of taking the network to the teaching space have occurred again and also there are problems handling the audio for small groups. These audio problems can be avoided if the PC workstation is used by a single person who is wearing headphones.

At this stage there is much work to be done to establish a stable network. The AV quality is limited over the network, but if enabling packages such as NetMeeting are used then high-resolution images can be presented. Currently there are severe limitations on playing out video in this environment. If the multicast environment can be made to work suitably then a low cost method of network teaching is possible over a pervasive network.

## **Advice for new users**

Experience of teaching in this way led us to the conclusion that this type of network teaching was more suited to delivery in small rooms to groups of between 12 and 20 students because the size of the group was not too large for interaction. Sessions have to be more interactive than traditional lectures, and should make more use of multi-media materials.