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Technical Evaluation Report

17. Videoconferencing in Theatre and Performance Studies

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Abstract

Previous reports in this series have indicated the growing acceptance of video-conferencing in education delivery. The current report compares a series of video-conferencing methods in an activity requiring precision of expression and communication: theatre and performance studies. The Accessing and Networking with National and International Expertise (ANNIE) project is a two-year project undertaken jointly by the University of Warwick and the University of Kent at Canterbury, running from March 2001 to March 2003. The project's aim is to enhance students' learning experience in theatre studies by enabling access to research-based teaching and to workshops led by practitioners of national and international standing. Various technologies have been used, particularly ISDN video-conferencing, computer-mediated conferencing, and the Internet. This report concludes that video-conferencing methods will gain acceptance in education, as academic schools themselves are able to operate commonly available technology the assistance of specialised service units.

Teaching Performance by Video-Conferencing

Of the activities carried out in the ANNIE Project between March 2001 and late 2002, nine have been conducted via video-conferencing (see Table 1).

Table 1. List of Videoconferences Conducted as Part of the ANNIE Project

Location of lecturer(s)	Location of students	Technologies	Used for
Frankfurt	Warwick	ISDN	Vivas
Vancouver	Warwick	IP + desktops + *iVisit* + projection	Workshop
Exeter	Canterbury	IP + desktop + *NetMeeting* + projection	software demo
Exeter and Canterbury		IP + gateway + projection	Workshop
London	Warwick	ISDN	Lecture
London	Warwick	IP + desktop + *NetMeeting* + projection	Lecture
Vancouver	Leicester	IP + desktops + *iVisit*	Workshop
Kansas	Canterbury	IP + desktop + *NetMeeting*	Supervision
Canterbury	Exeter	IP	Workshop

Evaluations of these sessions were carried out by focus groups with the students and by email. Interviews were held with the people conducting the lectures and with academic staff attending the sessions either as a facilitator or observer. The following analysis is based on these responses and on notes taken at the time of the activities.

Evaluation of Communication Modes

Video-conferencing activities used differing communication modes at different times during each session. These can be described as: (1) one-to-one; (2) one-to-many; (3) many-to-one; and (4) many-to-many. The first two of these are self-explanatory. However, we are often not aware of the second two modes of communication in face-to-face situations, although they become evident in video-conferencing. The *many-to-one* communication can be typified as 'class feedback,' relating to the set of verbal and nonverbal communications that a lecturer observes from a class while lecturing. Many-to-many communication exists in two modes: where a single link exists between two sites with more than one person at both ends, and where multiple links are made to many sites, each with one or more participants.

Evaluation of the case studies indicates that the *many-to-one* mode is the most difficult to achieve in video-conferencing in vivas, lectures, and software demonstrations. (Workshops involve an additional set of problems, which will be discussed separately.) The problems with many-to-one communication that were noted were:

- *Audio echo*. If two-way audio is enabled, anyone communicating via the video-conferencing equipment may hear their own voice relayed back to them a short time later. To avoid this, the audio feed from the lecture room is switched off. As such, the person speaking has to stop deliberately, and hand over the audio to another room for someone there to begin speaking.

- *Restricted video view*. Seeing all the participants both adequately and simultaneously in a videoconference is impossible. Sightlines are difficult to achieve too. Since the speaker at one end is looking at the screen, and the viewer at the other end is seeing what the speaker's camera sees, there can be no direct eye contact unless the camera and the screen are in the same place.

- *Time delay*. Time delays can cause communication breakdown in a one-to-one communication mode. In the situation where someone at a distance is taking part in a discussion, the person at the other end of the video-conferencing link will often feel isolated, since they will always be lagging a short time behind the discussion.

These technical problems amplify poor teaching practices and highlight the need to develop effective teaching techniques. Students attending the video-conference lectures felt passive and uninvolved. Many reported that they could not maintain their attention for the full length of the lecture. According to comments made by the focus groups, even the perceived reduction in movement reduced their ability to learn. These difficulties in communication focus attention on the following video-conferencing 'best practices':

1. *Sessions must be highly structured*. Since students cannot interrupt, and the lecturer cannot adequately observe students to detect if they are not following the lecture, the lecture needs to be broken into short sections, and feedback must be elicited from the students after each section.

2. *Presentation skills must be developed*. In order to compensate for the lack of physical presence, skills such as modulating tone of voice, developing good questioning, and building activities into the session, should be considered as more important in video-conferencing than in face-to-face presentations. It is necessary to make the length of the didactic sections of a video-conference session shorter than one would in a face-to-face session.

3. *Trial, rehearsal, training*. A frequent suggestion that arose in the focus groups was that the video-conference would have been more productive if the participants had practised interacting using the technology beforehand.

Feedback from the student focus groups indicated a high degree of apprehension before the video-conferences. Although dissatisfied with many aspects of the actual videoconferences, all focus groups agreed that the experience was better than they had anticipated, and that that they would be willing to repeat it.

Comparing Different Technologies

1. Use of Isdn (Video Telephony Methods)

The *advantages* of using ISDN are:

- High-resolution audio and video are possible when the technology works
- Sessions usually take place in dedicated video-conference suites, which require no set-up and no technological upgrading or improvement of skill at the far end
- It involves no firewall problems

While the video-conference suites mentioned above are suitable for the lecturer, at Warwick and Canterbury they are not large enough to accommodate a class of students. At the students' end, therefore, it is necessary to use rooms that have ISDN connections, though they do not need to be dedicated spaces. This leads to the following *disadvantages* of ISDN:

- Conference rooms can be completely unsuitable for teaching
- Space must be booked in advance
- Facilities can be expensive
- Software packages must be used
- The method is generally unreliable

2. Use of IP Gateway Systems

The *advantage* of IP gateway systems is that:

- They enable ISDN and IP technologies to be interoperable, permitting high-resolution video-conferencing equipment to be plugged into IP network ports. A codec (coder-decoder) allows digitisation of analogue signals from video and audio devices. Multiple cameras and audio channels can be connected in this manner, which means high quality videoconferencing can be located in any room that has an IP port

Disadvantages are:

- Network bandwidth is often insufficient to take full advantage of the extra quality the equipment makes available
- Set-up procedures are more complicated than with other technologies

3. Use of IP Room-Based Systems

Because in the intervening time the Joint Academic Network (SuperJANET 3) came online, the system set up for the above workshop became outdated within a few months. In our use of room-based video-conferencing for Stand-Up Comedy case study work, equipment was used which could plug directly into the network port in the studio. For any institutions connected to SuperJANET with a sufficiently high bandwidth (approximately 2 MBps), this system can provide the same quality of image as ISDN-based video-conferencing.

Advantages of room-based systems are that:

- The equipment is simple to use – simply plug and play
- Image quality is high – equivalent to six-line ISDN equipment *Disadvantages* are:
- Equipment is expensive (approx. £ 5000)
- Most institutions have insufficient connectivity to SuperJANET to take full advantage of the equipment. Options are to request that a certain bandwidth be dedicated to the video-conferencing activity. Alternatively, video-conferences can be conducted in the evening when contention for the bandwidth is less of an issue

4. Use of IP Desktop Systems

Various desktop systems have been used in the ANNIE project. All of them, however, have the same core features:

- PCs are connected via IP to the Internet
- A camera is connected to the PC
- Video-conferencing software runs on the PC
- A data projector projects the monitor image onto a screen

The first three features are commonly used in standard desktop-to-desktop video-conferences. These are adapted for use in a teaching situation by the addition of the data projector, and

usually a microphone and speaker system. The software used was *iVisit* [recommended as a useful freeware product previously in this series. *J. P. B., Series Editor.]*.

The *advantages* of IP desktop systems:

- Accessibility. All of the equipment used in our IP-desktop videoconferences were already available in the department, or could be purchased at a low cost. The accessibility of the equipment, and the fact that it can be used anywhere there is a network port (or within 40 meters of a port with sufficiently long patch cables) means that users have flexibility and, more importantly, *control* over the videoconference

- Familiarity. Since it is a simple extension of familiar desktop video-conferencing, the setting up of the equipment does not require expert technical staff. It is also reliable, since it uses technology that is in constant use

Disadvantages are:

- Lower resolution and frame rate of the video
- Lower quality audio
- Bandwidth problems
- Firewall problems

Gaining Acceptance for Video-Conferencing

Video-conferencing promises to provide access to remote expertise in theatre and performance studies, depending on the ease with which the practise can become embedded in the regular work of our department, and on its perceived need for video-conferencing. This need has already been recognised by the academic staff with whom we have worked on the ANNIE project. Owing to the expense of transporting the experts and other time commitments, none of the sessions conducted via video-conference could have taken place face-to-face.

To embed the practice, the staff involved need:

- Control over the technology
- For it to be easy to integrate into the regular teaching programme
- Minimum of planning
- Lowest possible cost
- A location within the usual classrooms and studios

On these counts, ISDN has fallen far short of our requirements. Although PC/ IP-based technology meets all of these criteria, it is severely limited by the standard of the Web cameras available, and by low bandwidth available via university networks.

Conclusion

The ANNIE project has shown that there is a role for video-conference lectures and workshops. A series of technological solutions has been tested in the teaching of theatre and performance studies, among which the traditional, telephony-based ISDN methods have proven the least

satisfactory. The use of specialist equipment controlled by service departments is problematic, whereas commonly available technology is allowing video-conferencing methods to become easily utilised within the academic schools themselves. With improvements in the quality of these methods, video-conferencing will become embedded into the school's regular teaching programme.

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The next report in the series includes an updated review of online whiteboard applications.

> ***N.B.*** Owing to the speed with which Web addresses are changed, the online references cited in this report may be outdated. They can be checked at the Athabasca University software evaluation site: http://cde.athabascau.ca/softeval/. Italicised product names in this report are assumed to be registered trademarks.
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