The educational use of videoconferencing in the arts faculty: shedding a new light on puppetry

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Abstract

It is important for learners to be exposed to the real working world during their training in order to prepare them for their professional lives. The Department of Entertainment Technology, under the leadership of Zuanda Badenhorst, conducted a very exciting project with the Handspring Puppet Company while also making use of the newest learning technologies made available by the Department of Telematic Education, with Instructional Designer Mandi Axmann and Technical Manager Anette Sadie, at the Technikon Pretoria. This article reviews the educational use of videoconferencing as well as various considerations when implementing this medium.

Overview of the project

The learners from Entertainment Technology as well as the Drama Department had the opportunity to follow the back-stage production work by the Handspring Puppet Company on a new piece entitled "Zeno at 4pm". The aim of the project was twofold: to introduce learners to the planning and performance of a real-life production in puppetry, and to expose the learners to videoconferencing technology.

The project started off with a videoconference during January 2001 hosted by the Department of Telematic Education with the puppeteers from the Handspring Puppet Company in Cape Town, South Africa during March 2001. During the videoconference the puppeteers illustrated the making of the puppets and their planning for their production.

During the second stage of the project the learners had an opportunity to see a final dress rehearsal of the production in Johannesburg, South Africa, and were able to ask questions regarding the stage set-up, lighting techniques, production costs and planning for the opening night in Brussels. These responses were video taped and were made available to the learners.
The third stage of the project concluded with a videoconference in May 2001, following the puppeteers to Brussels, Belgium, after their opening night. The puppeteers discussed how the production had to be adapted for the new stage and different circumstances in Brussels. They also gave feedback on the reception of “Zeno at 4 am” by the Belgium public and press, as well as their future planning for taking this production to the United States.

The puppeteers discussed how they would integrate the feedback from their opening night to improve and grow the production. Again learners had the opportunity to ask questions regarding the production process. The phases of this project were integrated in a video that illustrates the production process as it occurs in practice, and will be made available as an educational tool for future learners.

The educational use of videoconferencing

Definition

According to Coventry (2000) the term videoconferencing is a confusing one. Some commercial companies (AT&T in the States) are now advertising “videoconferencing” as a new technology. The fact is that videoconferencing is a function that can be hosted by a variety of technologies and has been for some years. It is not a technology in itself. The term is fast becoming defined as any use of television to join people in some live interaction. However, the term is actually applied to a wide range of situations from live video lecturing to large audiences, to point-to-point, individual-to-individual desktop PC chats.

One possible categorisation is into large scale and small-scale conference. The majority of large-scale set-ups are currently satellite-based in the form of “interactive television” ie, one-way video, two-way audio. This allows for broadcast from a central point to many different locations regardless of distance. Small scale refers to compressed video for small meetings between relatively few points. A technology used for this function is Integrated Services Digital Network (ISDN) which promises to make two-way video equally as cost effective, with potential for greater interactivity.

Traditional videoconferencing requires expensive, fixed delivery and reception installations and high transmission costs over full bandwidth analogue video channels or high capacity digital channels. Such high-grade services allow full two-way audio and video communication between several locations at a price; a more common configuration is that of Interactive TV (Full service out, audio only in). High costs and lack of flexibility has limited the past educational uses to research projects.

Why use videoconferencing

New communication technologies are blurring the distinction between traditional and distant teaching with potential uses in both situations. The main pedagogical issue is to understand where the new technology will have real impact on learning effectiveness.

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Some of the technology will support a second-generation approach, bringing new impact and efficiency to the second-generation model (Coventry, 2000). Other aspects of the technology, however, allow the constraints of time and distance to be greatly lessened in bringing the power of small-group face-to-face teaching to the individual desktop, in home or office. The opportunities within open learning is less clear. The reasons for using videoconferencing in traditional and distance teaching are very different. There is also a role for videoconference on an international basis.

- Videoconferencing should be used to facilitate the best of distance and conventional teaching. Distance learning is normally associated with more class materials and better preparation of teaching materials. Conventional learning is associated with lectures and face-to-face meetings.
- Videoconferencing provides a means to get both learners and tutors to a central location, all be it virtually.
- Videoconferencing could lead the way for a dual approach. On the one hand giving learners more responsibility for their learning, working in groups, doing tasks, all of which would benefit conventional teaching providing an opportunity to implement them.

It is also important to structure (scaffold) the process for the learners to make the technology accessible.

**Scaffolding**

Scaffolding is necessary to “organize and support the learner investigation or inquiry” according to McKenzie (1999). Scaffolding is a mechanism that supports learning efforts within a problem-based learning environment (Hannafin, 1999). During this project, the learners were exposed to a new learning environment, namely the videoconferencing event. It was the first time for most of these learners to encounter this specific technology. In order for the learners to benefit from this experience, it was necessary to structure the event as follows:

- Preparation for group interaction;
- Sequence of the videoconference;
- Questions for the presenters;
- Feedback from presenters and learners.

In order to scaffold this specific learning process, the learners had to divide into groups prior to the videoconference and formulate certain questions in their groups about the given topics. This helped the learners to start thinking about the processes and to prepare them for the videoconference.

Preparation is very important to maximise the learning opportunity provided by this medium. Learners can feel intimidated by the videoconference, and preparation helps them to relax as well as reflect on the videoconferencing event.

The videoconference with the puppeteers was structured as shown in Figure 1.
The puppeteers, providing visual examples where necessary, discussed each phase. The learners were encouraged to ask questions after each phase.

**Aims of the project**

The aims of the project were to illustrate the process of the production of Puppet Theatre and also making use of videoconference to enable the process, thereby exposing the learners to this medium.

This project addressed the different aspects of the learning process by giving the learners opportunity for dialogue, construction and conceptualisation. The learners had the opportunity to view and observe the backstage production, and also to reflect on the process and make suggestions for improvement and feedback.

Questions which the learners formulated themselves and were required to seek answers for, included the following:

- Should actors be trained in specific areas to complement the basic acting training for stage/film/television?
- What are the characteristics of a good puppeteer?
- In what way does the script influence the mechanics of the puppets?
- Does the move-ability of the puppet enhance the expression of the puppet?
- Can you get the same emotional response with a rigid puppet?

From these questions one can see that the learners were able to ask in-depth questions, which, if they were only to view a production, would not necessarily be able to find answers for. Using the medium of videoconferencing, it was also able to achieve a very individualised environment, and each learner was focussed on when a question was posed. During the third stage of the process, learners were also able to discuss the stage setting in Belgium, which would not have been possible without the use of this medium.

The enthusiastic and professional attitude of the experts furthermore motivated the learners and made them aware of the entrepreneurial skills of world-renowned artists.

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Apart from the motivational value, the significant added value of good role models must not be underestimated. The visual impact of the use of practical demonstrations during the videoconferencing also benefited the learners by engaging more of their sensory perceptions.

**Feedback**

The learners reported that they received very valuable insight into the production process, as well as the use of multi-media in the theatre. The project also exposed learners to the production requirements of the international market, as well as the production methods of acclaimed artists. The learners responded well and were able to ask questions regarding the design, stage set-up, lighting techniques, multimedia techniques, production costs and production planning. These responses were videotaped and made available for future reference.

The students found the construction methods of the puppeteers interesting. They commented on the fact that they could speak to the puppeteers on a more personal level, and found it exciting to follow the production from its initiation to completion.

The puppeteers also shared their experiences: "... from our point of view, the biggest advantage was simply to be exposed to a new medium. Immediacy is impressive, but the contact period is finite and perhaps we could have structured our time a little better." (Basil Jones).

It is furthermore important to have a well structured agenda for a videoconferencing project. The presenters were also fully prepared and had a list of questions which the students compiled.

When looking at the pedagogical issues, the research is very contradictory. Is the method suitable for all teaching methods and does it facilitate effective communications and learning? Based on this project it seems that the medium is very effective when trying to expose learners to the real working world and to experts in a particular field. Videoconferencing can also be useful for demonstrations, peer-to-peer evaluations and collaborative projects.

**Assessing the use of videoconferencing**

A telecourse or videoconference enables the educator to capture what is done in the classroom in some electronic format. When the role of a technology within learning is assessed, there are two separate criteria to consider, those of effectiveness and efficiency. Effectiveness refers to the opportunity the technology offers to improve on what is obtainable with traditional methods. Videoconferencing is particularly promising for the support of dialogue.

When we turn to the question of efficiency, the case of technology delivering the primary exposition—the access to content—becomes stronger. The delivery may take the form of a videoconference lecture or other forms of multimedia.
Video-conferencing is an intimate method of communication on an individual or group basis. It does not replace the use of print or other methods used in the conceptualisation process. Its can be used to encourage construction, its true use lies in encouraging dialogue and increasing the scope for dialogue. In addition it:

• Eliminates expensive travel;
• Makes the best use of limited time;
• Allows genuine dialogue between all participants;
• Allows immediate, full two-way communication of content—verbal, pictorial objects etc;
• Provides a sense of social presence;
• Documentation and commentary can be documented and re-used;
• Direct contact can be obtained with internationally renowned experts.

However, we cannot simply assume that a “virtual” situation will be the same as a face-to-face situation. If it is not the same we must find out how it differs and if these differences have a significant effect on the communication and learning process. The dynamics of educational and interpersonal interactions are dramatically changed when mediated by technology. To understand the nature of the changes we must investigate the following:

• What are the effects of inter-communication delay?
• Does the ability to see the person speaking improves interpersonal interaction?
• Is information transmitted in a real face to face received in a videoconferencing situation, ie, eye contact, gaze, body language?
• How are the problems of managing videoconferences identified?

These are questions for further research. There are also certain technological costs and issues related to the use of videoconferencing.

**Technological and cost issues**

The technological costs and issues are very real considerations. The following needs to be considered:

• It is difficult to anticipate the costs of running a regular service based on this technology.
• Compressed video reduces dramatically the bandwidth required for high quality digital video. This will reduce transmission costs, but the costs still remain high.
• The educational justification for two-way videoconferencing comes from increasing educator to learner ratios by sharing educators between sites, through reducing travel costs, and allowing greater access to quality teaching regardless of geographical location.
• Costs will also be incurred by curriculum development, preparing teaching materials, training teaching staff and facility costs.
• The cost of hardware, software and transmission is constantly changing.
• Careful consideration of all the costs involved is crucial. Network management and volume of traffic are also critical factors. Few educational users can generate
sufficient traffic to justify a dedicated wide band system. On demand wide band services are not generally available.

The following decisions regarding the hosting of videoconference needs to be made:

- Who will pay the costs?
- Who manages the initial set up?
- What are the staffing requirements?
- Will there be compensation for extra work?

The initial set-up and liaising (planning phase) is very time-consuming and asks for good organisational skills. Following are some aspects to consider when using videoconferencing as an educational medium.

**Tips when using videoconferencing as an educational medium**

Following the project, the following factors need careful consideration when videoconferencing is used as an educational medium.

The physical environment

Often people think they can set up a videoconferencing system anywhere. This would be analogous to holding a seminar in the coffee lounge or your office while the person you are working with is trying to get on with their work. To maximise the chance of successful interaction the quality of the input must be maximised. The content of the conference should be the central issue, but if the learner is uncomfortable, sound is poor or inadequate lighting is reducing the quality of images, then the learning process will be interfered with. The conference equipment should be based in a special room if possible. It can then be available for use when ever it is required rather than setting it up every time it is requested. There is justification for support personnel to maintain and run the equipment and leave the educators free to concentrate on the learning process.

Critical factors for success

Through carrying out the research for this work, and taking part in a number of videoconferencing scenarios, a number of critical factors have been identified. These factors are listed and discussed next.

- Critical preparation;
- Site logistics;
- Microphone issues;
- Leadership;
- Timing;
- Non-verbal and verbal communication;
- Enhancement of interpersonal skills;
- The issue of control for the educator;
- Information dissemination;
- Media to use;
- Site involvement;

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• Variations in teaching skills and instructional strategies;
• Training requirements;
• Use of visuals and documentation.

These are only some of the critical factors for success. The educational aim and purpose of the videoconference need to be carefully considered in order for it to be successful, and enthusiasm is probably the key factor to success.

**Videoconferencing—the future?**

There is, as we have seen, an increasing variety of ways in which to participate in videoconferencing. The most appropriate choice of system will depend partly on the physical configuration of sites to be connected, the number of people to be included in the conference, the applications that are required, the amount of traffic to be carried, and the distances between sites.

A recent survey of educational applications of videoconferencing technology in North America (Bates, 1992) identified a number of findings that are likely to have a wide relevance.

• Learners prefer the “electronic classroom” at a local site to having to travel to another learning centre or central campus.
• The amount of time needed for instructional preparation time was usually grossly under-estimated, and teaching (and learning) methods often had to be radically changed to exploit fully the teaching potential of the technology. Videoconferencing for teaching purposes required additional skills to those of a classroom educator. Without training of the teaching staff and their learners, systems were under-used.
• In many of the projects reviewed, it was difficult, given the extra cost and lack of exploitation of the visual medium, to see the justification for using videoconferencing rather than audio-conferencing.
• None of the projects reviewed provided firm evidence that two-way live videoconferencing was more effective than one-way video plus two-way audio, or even the distribution of video tapes for individual use. Indeed, there was some evidence that mature learners who were working preferred flexibility to live video interaction, if the latter meant they had to be in a certain place at a certain time (Stone, 1992). We do not fully understand the psychological limitations of videoconferencing; more research in this area is essential.

Despite these views, there is current excitement over the development of low-cost PC-based videoconferencing, using public domain software and small cameras. Increasingly, we are seeing videoconferencing experiments conducted over the Internet. If video of the user becomes “just another datatype”, so the argument goes, then video will be used naturally to support communication.

Anything is possible with videoconferencing if enough money is available. However, institutes must have a clear plan about how they want to teach and where they want teaching to be delivered before committing to a particular delivery technology if cost
effective systems are to be established. Videoconferencing also lends itself very well to the performing and visual arts because of its highly visual nature, and more studies in this area can further explore the possibilities of this medium.

References
Cantor J A (1992) Delivering Instruction to Adult Learners Wall & Emerson, Toronto 35–43.
Coventry L (2000) Videoconferencing in Higher Education Institute for Computer Based Learning, Heriot Watt University, Edinburgh, lynmec@icbl.hw.ac.uk http://www.man.ac.uk/MVC/SIMA/video3/contents.html
Winn W (1989) Toward a rational and theoretical basis for educational technology Educational Technology Research & Development. 37 1, 35–46.