Video Conferencing in UK Further and Higher Education

This briefing has been prepared for senior managers in further and higher education institutions with responsibility for curriculum development and delivery strategies. It will be useful for Assistant, Deputy or Vice Principals, Pro Vice Chancellors, and Directors of Learning and Teaching.

What is videoconferencing?

Videoconferencing is a communications medium variously used for lectures, tutorials, workshops, project reviews, remote site visits, etc. A videoconference can be either two way (point-to-point) or multipoint, linking three or more sites with sound and video in real time. Multipoint conferences are technically more demanding. Depending on the system used, a videoconference can also include data sharing such as an electronic whiteboard that all participants can draw on, or text based real time 'chat' (like e-mail but it appears instantly on recipients' screens) and application sharing such as word processors, spread sheets, CAD packages, etc, so that all participants can work on the same file.

Why is videoconferencing important?

Videoconferencing has been around for quite a while. There are a variety of reasons why educational institutions and commercial organisations are taking a fresh look at it:

- It is widely available: All Scottish, Welsh and Northern Ireland HEIs and many English HEIs, and all Welsh FEIs, now have custom-built videoconference rooms. Desktop systems are increasing in numbers and usage.
- The technology has changed: With the development and implementation of SuperJANET4, the possibility of providing real time applications such as Videoconferencing and Video Streaming using IP has become a reality.
- Costs are decreasing: equipment is cheaper and Internet-based systems are cheaper to run than ISDN based systems, since there are no ISDN charges or telephone bills to pay.
- Functionality is increasing: Multi-site videoconferencing is becoming easy to do. 12 sites in a single meeting is standard in some communities. An additional PC and network connection added to the main videoconference facility enables participants to share PowerPoint slides, or look at web pages together, work on the same database or spreadsheet, share a whiteboard, and use instant text messaging while still seeing and hearing each other on the main videoconference screen. Desktop PC based systems are widely available which allow integrated videoconferencing and application sharing in different windows on the same screen.
- Standards have been established: Internet-based systems use standards such as H.323 and T.120. There are ISDN 'gateways' so that videoconferences can include both internet and ISDN sites.

What are the benefits?

Campus based uses

- Guest speakers can be invited to add quality and variety to campus-based activities.
- Small group tutorials and seminars can be enriched with input from students at different sites.

- Share teaching sessions between outreach centres or associate institutions.
- Inter-institutional collaboration: students from different Institutions can use videoconferencing to work on tasks together.
- Overseas market share can be increased, by providing quality learner support direct from the UK.

Off-campus uses

- Non-traditional learners, who may live near a campus or learning centre but not be able to attend campus-based sessions, can use desktop videoconferencing to interact with teaching staff.
- Geographically isolated learners find videoconferencing invaluable.
- Remote attendance - some operating theatres now have videoconference technology. Students can get the same view as the surgeon during keyhole surgery and may be able to ask questions during the operation.
- Links with industry: Work based learners, students on placement, and Teaching Company associates can be supported using videoconference facilities in the work place.

What are the options?

System types

Desk top

Usually a desk top computer with a camera, audio and either an ISDN interface or a network card. Low cost but limited quality. Best for very small groups of 1-6.

Roll about

Normally a trolley based unit comprising one or two medium size television monitors, a separate microphone and camera. Moderate cost, good quality. Effective for medium sized groups of up to 15.

Studio system

Often based around a roll about unit, it accepts a wide range of peripheral equipment, such as additional cameras, videocassette recorders, slide projectors, computers and extra screens. Highest cost because of the additional peripheral items but most versatile. Ideal for large groups.

Network options

LANs/WANs

Local and Wide Area Networks can transmit good quality video and audio although quality of service is affected by the level of network traffic. However for single site operation LANs/WANs are a good solution because there are no additional usage charges to pay. For off-campus or intercampus use other options have to be considered.

ISDN

The Integrated Services Digital Network (ISDN) can carry video, audio and other data 'Basic Rate' ISDN2 is sufficient for conversational exchanges involving little movement. Audio, however, is noticeably poor, jerky and out of sync with the picture. If more than one site attempts to speak at the same the beginnings and endings of words can be lost. Six channel ISDN offers much better performance. However picture quality is still degraded by movement and there is still audio delay, limiting its usefulness for truly interactive sessions such as seminars.

JANET

Videoconferencing can be run across the JANET network using IP protocols. While JANET speeds

are more than enough for videoconferencing in principle, any shared network can suffer from quality of service problems if the volume of traffic is high enough.

What are the issues?

To achieve successful uptake of video conferencing:

Facilities must be easy to use without needing support from technical staff. Standard equipment helps to make conferences easier to set up, and more robust in operation.

Equipment must be easily accessible. Local arrangements for booking and gaining access to equipment can make all the difference to usage.

Communication technologies work well together. A successful recipe is to use:

- email (to arrange the meeting, and to hold preliminary discussions);
- web site (to publicise papers beforehand, and minutes and slides afterwards);
- discussion board, chat room, or email list (to continue the discussions).

The audio visual (AV) environment is critical, and needs regular monitoring to maintain agreed standards of lighting, and to check sound levels. Interior finishes and furniture are important aspects of the AV environment.

Local campus LANs may need to be reconfigured to support good access to network-based videoconferencing.

Staff training and awareness is essential: for academic staff; IT staff; learning technologists; and administrative staff.

Compatible equipment is vital for successful videoconferencing, and the UK Education and Research Network Association (UKERNA) develops UK-wide strategies which recommend the use of particular videoconference standards.

Conclusions

With the development and implementation of SuperJANET4, the possibility of providing videoconferencing using IP has become a reality. Videoconferencing can have an important role to play in bringing together staff and students across different institutions, bringing in outside experts from industry and reaching and supporting remote students, either in the local community or those based overseas. In particular they can be used to aid widening participation and enhancing retention rates through better support for off campus learners and assist with increasing overseas market share. It is already widely available throughout FE and HE and availability should increase as prices continue to fall.

Further information

This briefing was prepared by the TechLearn service of the Technologies Centre. The Centre is funded by JISC (the Joint Information Systems Committee) and exists to encourage and support the investigation, development and proving of the applications of new technologies in support of the whole education process in the JISC communitiy. It can be contacted at www.techcentre.ac.uk.

UK wide facilities and support services are available as follows:

A central booking system is operated so that users throughout the UK can see when other Institutions are available. www.jvcs.video.ja.net/

There is a UK-wide videoconference management centre which facilitates multi-point videoconferences. www.jvcs.video.ja.net/

UKERNA's Video Technology Advisory Service (VTAS) can provide advice on appropriate standards, equipment and also guidance on AV issues and video streaming www.video.ja.net/

All Scottish Institutions with ATM connections can videoconference via the Scottish MAN videoconferencing network at http://www.jvcs.video.ja.net/docs/smvcn.html

All Welsh institutions can get advice and support via the Welsh Video Network support site at http://www.wvn.ac.uk/

Training materials and case studies are available from www.scotcit.ac.uk/

Case studies are available from www.icbl.hw.ac.uk/ltdi/vcstudies/vcstudies-all.pdf

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