

Educational research into the use of video conferencing – a selection of abstracts and further sources.

This document presents a selection of research into video conferencing in education. Topics covered include:

- the evaluation and comparison of teaching by video conference with conventional methods;
- how video conferencing can support student collaboration across language barriers;
- developing social and communication skills amongst children with special educational needs;
- extending multicultural understanding between students of different backgrounds;
- providing student teachers in schools with improved peer support.

Far from being an exhaustive literature review, this collection of abstracts and list of further sources should be seen as a starting point for those interested in the theme of video conferencing. Becta's Evidence and Research team welcomes discussion, and indeed, suggestions for further inclusions.

Over 50 articles and reports of relevance were selected, from which 10 are abstracted. A list of further sources follows the abstracts, after which there is a tabular presentation of the main findings of the shortlisted 10.

This is an area where a substantial number of studies exist, the bulk of the literature found being published between 1997 and 2000. The potential of video conferencing to support language teaching and distance learning is reflected in several published studies. In the higher education sector the potential of video conferencing to extend access to courses has is increasingly being recognised , and several studies investigate how appropriate this is. Some studies reveal concerns about anxiety levels engendered among students but there are also reports of positive behavioural changes. Many schools and local education authorities are implementing video conferencing, and producing small studies to illustrate its use, but there is a shortage of larger scale research into the educational impact on student achievement.

Becta's Evidence and Research team welcomes discussion on this topic through the Research Network, and suggestions for further additions to this bibliography.

CIFUENTES, L., MURPHY, K. L., 2000. Promoting multicultural understanding and positive self-concept through a distance learning community: Cultural connections. *Educational Technology Research & Development*, **48**, (1), 69-83.

This study explores the effectiveness of distance learning and multimedia technologies in facilitating an expanded learning community between two teachers and their students in geographically separated schools. The teachers developed curricular activities and identity-forming multicultural activities for their 5th-8th grade students. The predominantly Hispanic students in a school on the Texas border with Mexico communicated regularly over a school year with diverse students in a partner school hundreds of miles to the north. They participated in collaborative activities and shared multimedia files via interactive video conference. Using qualitative research methods, the researchers discovered that the participating teachers developed empowering multicultural relationships while their students developed multicultural understanding and positive self-concept. This was demonstrated by, amongst other things, raised levels of academic aspirations and heightened poise during public speaking. (*International*)

COVERDALE-JONES, T., 1999. The communicative effects of videoconferencing as a language learning environment: a reduced social and linguistic medium. *Paper given at the conference of the British Association of Lecturers in English for Academic Purposes, Leeds, England.*

A UK and German university linked up in a study examining the features of interaction during a video conference. The basis for this was a role play exercise. Students filled out pre- and post-video conference questionnaires, and also gave feedback during discussions. Tutor comments were collected. There were technical issues centred around interruptions to audio signals and poor picture quality. Students reported some negative features to the interaction, such as the absence of visible body language from those at the other end of the link. They commented on the difficulty of deciding whether to interrupt a speaker or not, and the need to take turns in contributing - however, at least one student welcomed the opportunity to finish her argument without being interrupted. A lack of empathy between students in the two locations was observed, and a strong 'them and us' attitude grew up. The UK students became extremely competitive, and even aggressive towards their German counterparts. Most students reported that it was a useful learning experience, but the researchers felt that the communicative effects of the medium worked against conventional language class teaching and natural group discussion. (*UK*)

DONEGAN, M., 2002. *The TELENET project, summary report*. ACE Centre. <http://www.ace-centre.org.uk/html/research/telenet/teleport/int.html>

Those using assistive technology to help with complex physical and communication difficulties require constant support in its use. This usually means that either the support professionals, or the clients and their families have to spend large amounts of time in travel. Video conferencing is seen as a means of extending the reach of the Aiding Communication in Education (ACE) centre staff both to the professionals in the field, and the clients, without travelling. The TELENET project evaluated its effectiveness video conferencing in the provision of support, assessment and training by the ACE centre to remote teams of support professionals. 86 sessions took place and participants were asked how successfully they felt their aims for the session were realised.

Outcomes for the remote professionals:

- increased knowledge, confidence, expertise and motivation;
- perception of ACE centre teams as colleagues;
- raised local profile and increased authority stemming from their collaboration with ACE.

Results for the children:

- receiving a form of support which was the outcome of a detailed process of collaboration between professionals;
- an increased number of consultations in which the ACE centre participated;
- earlier intervention by the ACE centre.

In addition there were the expected savings in time and travel, but also the involvement of professionals such as consultant paediatricians who are normally very rarely seen at child-related sessions, but were attracted by the convenience of being able to drop into a session at short notice. (*UK*)

EALLES, R. T. J., et al., 1999. Desktop videoconferencing as a basis for computer supported collaborative learning in K-12 classrooms. *Paper given at the Educational Multimedia, Hypermedia and Telecommunications conference, Seattle, WA.*

Describes efforts to introduce desktop video conferencing into four schools in Virginia, US, working with four science teachers. The focus was the support of distributed collaborative learning between science classrooms, but initially technical difficulties dominated the project. Once these were overcome, a number of educational issues came to the fore:

- while most students are very interested in video conferencing, some are only passively interested, enjoying watching the interaction but not taking part;
- many of the most active and competent video conference users were those students who were often hampered in school activities by poor literacy skills;
- not all students are comfortable with video conferencing and some may feel very self conscious;
- the educational value is highly dependent on the suitability of the collaborators and the basis for the collaboration.

The researchers also felt that the technical and organisational issues surrounding video conferencing may hinder widespread acceptance by teachers. (*International*)

FURST-BOWE, J. A., 1997. Comparison of student reactions in traditional and videoconferencing courses in training and development. *International Journal of Instructional Media*, **24**, (3), 197-206.

A study to assess postgraduate student reactions to a course taught by video conference as opposed to a traditionally delivered course. Two sections were taught, one to 28 students on campus in a conventional setting, and a second to 12 students in four different cities via video conference. Each section followed the same syllabus, and used the same assignments and projects. Students completed evaluation forms covering five main areas: instructor preparation, presentation methods, class time utilisation, instructor-student communication and evaluation methods. Data showed that students receiving the course via video conference were as satisfied with the teaching as those present with the instructor, and indeed they felt extremely positive about this delivery method. The results indicated that one key to success in distance learning is the instructor, who must be thoroughly trained in the technology, demonstrate polished presentation skills, create opportunities for interaction, develop appropriate materials and use media effectively. Consequently it may take significantly longer to prepare for sessions taught by video conference. Recommendations are made for instructors. (*International*)

GAGE, J., et al., 2002. Can videoconferencing contribute to teaching and learning? The experience of the Motivate project. *Paper given at the Annual Conference of the British Educational Research Association*. <http://www.leeds.ac.uk/educol/documents/00002264.htm>

The Motivate project aims to use video conferencing to contribute to the enrichment of mathematics in schools, and to give students an idea of how practising mathematicians use mathematics in their working lives. It also provides students with a real audience for presentations, and gives them an experience of collaborative working. Students complete a preliminary task, and during the first video conference they take part in activities and discussions, listening to the ideas of other schools. In a second session they work on projects involving areas of maths which are unfamiliar to them, requiring full engagement in mathematical activity. Although the project focusses on mathematics, its methods could be applied to any curriculum area. Analysis of teachers' views on the project is based on over 50 evaluation forms returned by primary and secondary teachers at the end of their projects. Students' views were obtained from 250 evaluation questionnaires. It was found that teachers valued:

- the opportunity for students to work independently;
- collaboration between students as they work on problems beyond the normal curriculum;
- presentations of work given by students to a real audience.

In turn, the students valued:

- the variety brought to mathematics teaching;
- the chance to communicate with others by giving presentations;
- being able to discuss problems in mathematics.

(UK)

KNIPE, D., LEE, M., 2002. The quality of teaching and learning via videoconferencing. *British Journal of Educational Technology*, **33**, (3), 301-312.

Video conferencing is widely used in higher education for the delivery of lectures between sites, but there is concern that the quality of teaching and learning may be poorer than that experienced in a traditional classroom. This 10 week study investigated the classroom activities and cognitive outcomes amongst a group of 66 Masters students, of whom 45 were local site students and 21 remote site students. It was found that the local students were receiving more information and explanations from the lecturers, reading and reviewing material more, working in groups and making presentations more than the remote students. Local students also reported a higher occurrence of learning in 10 of the 15 cognitive outcome categories. There is discussion of possible reasons behind these differences, including the significance of physical access to the lecturer, and feelings of isolation emanating from a lack of eye contact with the lecturer. The quality of teaching and learning is not the same in a course delivered by video conferencing, but the medium itself is not entirely responsible: inexperience, bad preparation and planning, and inefficient training on the part of the facilitator can also have an influence.

SHARPE, L., 2000. Multipoint desktop videoconferencing as a collaborative learning tool for teacher preparation. *Educational Technology*, **40**, (5), 61-63.

Describes how multipoint desktop video conferencing (MDVC) is used in initial teacher training programmes in Singapore. Weekly conferences are held between university supervisors and student teachers from five different schools. This has been done with three successive cohorts of 59 student teachers who were seen to benefit in a number of ways:

- sharing of ideas, problems and solutions;
- availability of immediate feedback;
- peer support reduces stress levels for some teacher trainees;
- communication barriers between student teachers and supervisors have been broken down, with students being more willing to engage in frank discussion than they were during face to face meetings.

In a further experiment, two students videotaped each other teaching. The videos were put on a web site for all students to view prior to a conference at which they were able to share their peers' experiences. Students responded positively to this.

THORPE, R., 1998. The use of personal video conferencing with special needs pupils from three schools serving rural areas: a case of successful adoption of new technology. *Journal of Information Technology for Teacher Education*, **7**, (3).

Children with special educational needs from three Welsh secondary schools were linked by video conference sessions. Conferencing took place every week, with each group being able to access the link once a fortnight. The main aim was to improve students' social skills through facilitating contact with others in similar situations. Data was collected through interviews with staff and students, observations, student logs and questionnaires. 16 student case details were compiled, illustrating a range of special needs and uses made of the video conferencing facility. Main findings were that:

- social and communication skills were developed, as most strongly evidenced in speech development;
- the technology proved a good motivator, specifically for getting six reluctant writers to use a keyboard, but all found using the system exciting and teachers reported that it helped in inspiring all students to work;
- the video conferencing situation imposed a structure with fewer distractions and this seemed to help some students to concentrate;
- constraints of the sound system required that students learn the discipline of working with others, and consequently peer pressure caused two children to behave more sensibly.

As a result it is suggested that video conferencing does have a future in education, but particularly in areas where teachers and children work in small groups, interactively, within a flexible timetable.

Consequently, an obvious application would be in overcoming rural isolation in small primary schools.

TYLER, C., 1999. Beyond the content - videoconferencing. *Speaking English*, **32**, (2), 15-27.

Two examples of video conferencing in higher education. At the University of Ulster, all the students were together at one site, the lecturer at another. The group size never exceeded 12, and the first two classes were held by the lecturer in person, to develop group rapport. The most positive outcome was the social cohesiveness of the group, the physical absence of the tutor helping students to express their own views with less inhibition. Student evaluations also showed high levels of satisfaction with elements of pre-planning, such as the advance despatch of presentations by post. At De Montford University students are present at both sites (one with the lecturer), and taught simultaneously. 20 sessions were analysed. The largest session comprised 15 at one site and 14 at the other. There was substantial dissatisfaction amongst students with aspects of interaction - difficulty in communicating, poor sound quality, hostility towards the remote group and shyness were all reported. While video conferencing may be a way to extend access to learning, it seems most suitable for activities where little interaction is required.

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