

TOPIC 5

Media Applications

Overview

Source materials for this topic

Audio

Audio cassettes

Audiovision

Telephone tutoring and audio conferencing

Audiographics

Radio

Educational radio

Video

Video cassettes

Interactive video

Television

Educational television

Video conferencing

Computers

Computer-assisted learning

Computer-mediated communication

Practice exercise

Describing appropriate media applications

1. Overview

These materials support a discussion on the topic of media applications in actual open and distance learning settings. Examples from around the world are presented.

1.1 Source materials for this topic

Barker, B., and R. Goodwin. Audiographics: linking remote classrooms. *The Computing Teacher*, April 1992.

Bates, T. Audio cassettes in the British Open University. In T. Bates, (ed.), *Media and technology in European distance education*. Milton Keynes: Open University, 1990.

- Bates, T. *Technology, open learning, and distance education*. London: Routledge, 1995.
- Beijderwellen, W. Interactive video in geology at the open university of the Netherlands. In T. Bates (ed.), *Technology, open learning, and distance education*. London: Routledge, 1995.
- Brindley, J., J. Roberts, and B. Spronk. *Learner's guide to the information highway*. Ottawa: Office of Learning Technologies, Government of Canada, 1997.
- Community Agency for Social Enquiry (CASE). They talk like us ... An evaluation of the effectiveness of the educational radio programmes produced by the Ulwazi Educational Radio Project. Bloemfontein: Ulwazi, 1996.
- Counta, A. Radio Educative: pilot project in communication media in adult education. In M. Neil (ed.), *Education of adults at a distance*. London: Kogan Page, 1981.
- Crawford, G. Telephone tutoring: how is it used and by whom? Paper presented at an Open University/Empire State College conference, Cambridge, September 1991.
- Deodat, R. Radio as an educational medium in the Caribbean. Report to the Commonwealth of Learning. Vancouver: COL, 1992.
- Durbridge, N. Referred to without source reference in Bates, A. 1990, Audio Cassettes in the Open University, in T. Bates, ed., *Media and technology in European distance education*. Proceedings of the EADTU workshop on media, methods and technology, Open University/European Association of Distance Teaching Universities. Milton Kenyes, 1990.
- Flavell, R., and R. Micallef. *Learning English by radio: The Mozambique project*. London: Institute of Education, 1995.
- Friesen, V. *A critique of computer-managed instruction in the light of key principles of adult education*. M.A. (Education) thesis. Burnaby, British Columbia: Simon Fraser University, 1991.
- Gruber, S., and G. Coldevin. Management training at a distance for Inuit administrators: the Atii pilot project. *Journal of Distance Education* 9:2, pp. 1–14, 1994.
- International Extension College. *Electronic media in distance education*. Course 6, M.A. in Distance Education. Cambridge: IEC, 1995.
- Kuomi, J. Learner-active audiovision. Unpublished paper, presented at the East/West Dialogue in Distance Education: Changing Societies, Technology, and Quality, EDEN Conference, Berlin, May 1993.
- Kurata, M., et al. A networking educational system with NESPAC. Paper presented at the IFIP World Conference on Computers in Education, Sydney, July 1990.
- Latchem, C., and P. Rapley. Trial by satellite: video conferencing for continuing education for rural area nurses. *Distance Education*, 13:1, pp. 118–30, 1992.
- Lee, V., D. Murphy, C. Chan, and L. Chung. Computer-aided distance learning: a case study. *Open Learning* 12:1, February 1997.
- Leslie, J. Use of audiocassettes. In I. Mugridge and D. Kaufman (eds.), *Distance education in Canada*. London: Croom Helm, 1986.

- Mason, R. *Using communications media in open and flexible learning*. London: Kogan Page, 1994.
- Murphy, K., L. Cifuentes, A. Yakimovicz, R. Segur, S. Mahoney, and S. Kodali. Students assume the mantle of moderating computer conferences: a case study. *American Journal of Distance Education* 10:3, 1996.
- Mustafa, Awatif. Using the media to reach the unreached rural communities: the Gezira Rural Programmes, Sudan. Paper presented to the UNICEF Seminar on Multi-Channel Learning, Cairo, October 1996.
- Nadakuitavuki, R. Distance learning for nurses in Fiji. Paper presented at the WHO Inter-Regional Health Learning Materials Meeting in Harare, April 1992.
- Nwaerodu, G., and G. Thompson. The use of educational radio in developing countries: lessons from the past. *Journal of Distance Education*, 2:2, pp. 43–54, 1987.
- Owen, T. Wired writing: the Writers in Electronic Residence programme. In R. Mason (ed.), *Computer conferencing: the last word*. Victoria, British Columbia: Beach Holme Publishers, 1993.
- Perinchief, R., and E. Hugdahl. Teaching music by telephone. *Teaching at a Distance*, 22, pp. 33–34, 1982.
- Perraton, H. (ed.) *Distance education for teacher training*. London: Routledge, 1993.
- Rekkedal, T. The telephone as a medium for instruction and guidance in distance education. Bekkestua, Norway: NKI Forlaget, 1989.
- Setijadi. Distance education in Indonesia. In *Distance education in Asia and the Pacific*, Proceedings of the Regional Seminar on Distance Education, Bangkok December 1987.
- Siaciewena, R. The role of distance teaching in improving the quality of instruction in Zambian schools. *Zambia Educational Review*, 5:2, pp. 124–38, 1984.
- Smith, N. Small-scale, moderate-cost, international distance education in dentistry. In D. Sewart (ed.), *One world, many voices: quality in open and distance learning* vol. 1. 17th World Conference for Distance Education. Birmingham: Open University, 1995.
- Thompson, D. If it's good for you, do you have to swallow it? Some reflections on interaction and independence from research into teletutorials. In T. Evans (ed.), *Research into distance education*, vol. 1. Geelong: Deakin University, 1990.
- Van der Brande, L. *Flexible and distance learning*. New York: John Wiley, 1993.

2. Audio

2.1 Audio cassettes

University of Waterloo, Waterloo, Canada

The open and distance learning programme at the University of Waterloo, from its beginnings, aimed to make the open and distance learning experience as close as possible to the on-campus experience of a regular learner. Thus Waterloo provided an audio channel, via audio cassette, through which professors could comment on the formal and informal visual material contained in the course packages just as they would in a regular lecture. A

one-term course consisted of twenty forty-minute lectures recorded on audio cassettes with a ninety-minute duration (C90 cassettes). In addition to the tapes, course packages contained one study guide for each major topic or segment of the course. The study guides provided overviews and objectives, suggested workloads and schedules; described the contents of the audio cassette; and suggested activities for learners, including assessment questions. Textbooks, reprinted readings, and other resource material were also included as required.

Waterloo still uses audio cassettes, but recently is also making extensive use of computer-mediated communication and video conferencing (Leslie 1986).

Open University, United Kingdom

Tony Bates (1990) describes the audio cassette as ‘the most widely used technology in the Open University, after print’. They are a success story.

To help Open University academics with the use of audio cassettes, Nicola Durbridge assembled a box of materials containing an audio cassette and support materials, including texts, film strips, rock samples, and so on, according to the topic. The box of materials shows 12 different ways in which cassettes have been used at the Open University, and discusses design issues. Over 200 boxes were distributed to course teams, who have now moved on to other media.

2.2 Audiovision

Open University, United Kingdom

The Open University uses audiovision extensively. For example, in an art history course, the audiocassette talks the learner through four or five different texts, some specially designed for use with the course’s audio cassettes. The learner is encouraged to write a précis of the audio comments, in the form of annotations in the margins of these texts.

A more common format, used in mathematics courses for example, is a single source of visual material — a section of the main correspondence text — that has been specially designed for use with the audio cassette. This visual material consists of a sequence of numbered frames or boxes, containing diagrams, text and equations, or both, laid out on the page with plenty of margin, to reduce the density of information. The audio talks the learners through the concepts in the frames, occasionally sounding a musical ‘stopjingle’ and asking them to answer related questions. Sometimes frames are purposely incomplete, with empty ‘clouds’ or boxes in which the answer is meant to be written to complete a frame. When the learners restart the tape, they hear the teacher’s answers, although often the answers are printed in a subsidiary frame, rather than being voiced on the audio (Kuomi 1993).

2.3 Telephone tutoring and audio conferencing

Athabasca University, Canada

Athabasca University uses telephone tutorials as its main medium for learner support. Learners receive a package of course materials through the post, or from a learning centre. In the package is a letter of introduction from the ‘telephone tutor’ to whom the learner has been assigned, together with the tutor’s address, tutor telephone number, and hours of

availability. Tutors are available to learners typically three hours per evening or afternoon, usually two evenings per week or an afternoon and an evening. Learners can call their tutor collect from wherever they live in Canada. Tutors are also expected to place at least an 'introductory call' to their learners, at least those living in western Canada. The calls tend to deal with both administrative matters (for example, 'When can I write the exam? When will I get my essay back? Can I get an extension?') and course content-related matters (for example, 'I don't understand the question I've been asked in this assignment'). Several courses contain 'telephone quizzes', which the tutor administers over the telephone. The learner's answers are graded, for credit. The intent is to encourage the learner to contact the tutor regularly.

Crawford (1991) compared two telephone tutorial systems, one that made learner access to tutors easy, and the other that expected tutors to initiate contact. The study found that the energy tutors expended on answering calls *from* learners had a greater impact on course completion than energy they expended making calls *to* learners. A similar Norwegian study showed no difference in achievement between a group offered tutor-initiated calls plus opportunities to phone their tutors, and a group not offered this service, although both tutors and learners said they liked telephone tutoring (Rekkedal, 1989).

Universitas Terbuka, Indonesia

The Universitas Terbuka, the open university in Indonesia, has tried satellite-borne two-way telephone tutoring, with each tutor taking a class equipped with a loudspeaker telephone and microphone. A special low rate was negotiated for use of the system. Telephone lines on the ground were poor, however, resulting in low quality sound (Setijadi 1987).

Open Access College, Australia

The most basic form of electronic media in use at the Open Access College in Australia is the teleconference in which several students may be linked with the teacher by telephone for their weekly lesson. See the case study included with this toolkit.

University of the South Pacific, Fiji

In Fiji, tutors teach management to small groups of nurses in three towns through audio teleconferencing plus printed materials, audio cassettes, and video cassettes, followed by discussion under the guidance of a field tutor in each centre. A one-hour teleconference is organised once every two weeks, using loudspeaker telephones and microphones. During the first year, the dropout rate was zero and all the nurses passed (Nadakitavuki 1992).

University of Wisconsin, United States

One of the largest audio conferencing systems is the Educational Telephone Network, which serves more than 100 centres in the state of Wisconsin. Each centre has a high-fidelity loudspeaker and a set of microphones, providing dialogue among learners and between learners and tutors. In a course on folk music that involved audio conferencing, 36 learners enrolled at 16 of the centres, some of them more than 200 miles from the tutor. Learners were shy at first but soon joined in singing, as well as analysing, discussing, and interpreting folk songs. Many learners talked about their special interests, such as native American folk music. Each learner also had to talk about his or her findings arising from the research

assignment set for the course. Learners on the Educational Telephone Network course earned grades as high as those studying face-to-face (Perinchief and Hugdahl 1982).

Deakin University, Australia

In the 1980s, Deakin University ran many teletutorials, each involving one tutor and about nine learners at different locations. But as Thompson (1990) points out, many learners choose open and distance learning so that they are free to study with few of the constraints of face-to-face teaching institutions. Consequently, should tutors intrude into learners' homes via teletutorials? Or, to put it another way, should teletutorials be compulsory? They can be intrusive because learners must prepare for them and ensure that they are free at specific times. See the Deakin University case study in this kit for a current account of Deakin's delivery system and integration of media.

2.4 Audiographics

University of the South Pacific

An early example of the use of audiographics by developing countries was the University of the South Pacific's audiographics by satellite. Academics, administrators, and learners in about a dozen island nations exchanged knowledge, including 'slow scan' graphics, which build up slowly on the screen because of the time it takes to transmit the data by radio on a 'narrowband' channel. (Claire Matthewson, personal communication).

Universiti Sains, Malaysia

In 1987, the Centre for Off-Campus Studies introduced audio conferences as a means of supporting distance learners. They replaced face-to-face tutorials held at regional centres by tutors hired locally. An electronic writing board was incorporated with the audio conferencing system in 1989, and consisted of a writing pad that displayed handwritten characters or graphics. A built-in floppy disk drive in the control unit enabled data playback. The cost of installing equipment in regional centres and using central academics to tutor the courses is much lower than the cost of employing part-time tutors (Mason 1994).

Brigham Young University, Hawaii

Barker and Goodwin (1992) describe the use of audiographics to deliver in-service courses to teachers in Hawaii. Professors at the Brigham Young University campus on Oahu teach the courses by telephone line to classes 170 miles away on the island of Hawaii. Professors establish rapport with their learners by visiting them and explaining how the system works; then they start teaching. In one year, they had two groups of 15 teachers following courses in teaching methods, curriculum development, critical thinking, and classroom management. Sharing a 'common visual reference', even though the picture was still, not moving, and rather small, seemed to be important for professors and learners alike, and helped them to talk about it over the telephone. Learner reactions were very positive, although they did say they would have preferred face-to-face teaching. Barker and Goodwin recommend a mix of face-to-face teaching and audiographics.

Open Learning Agency, Canada

The Open Learning Agency's secondary school programme offers discipline-based teaching mainly through audiographic learning, but also uses audio learning and e-mail. The Open Learning Agency provides learners throughout the province of British Columbia with lifelong learning and training programmes in all areas, at all levels, and for all ages. Learners have an on-site tutor and can work at their own pace within the specified deadlines of the courses, but are linked to teachers and other learners all over the province. They have audio contact with their teachers about once a week, but supplement this with regular e-mail contact with both teachers and peers (Brindley et al. 1997).

3. Radio

3.1 Educational radio

Caribbean Region

The Jamaica Broadcasting Corporation broadcast to schools every weekday during term-time, until 1990. Radio Jamaica Limited continues to broadcast to farmers every day. Radio Montserrat also broadcasts to farmers, but has no schools broadcasting. Barbados, St Kitts-Nevis, St Lucia, and Dominica now have informal educational programmes only. By contrast, St Vincent and the Grenadines still have schools broadcasting as well as a series for adults. Trinidad and Tobago carries schools programmes, as do Belize and Guyana, on a small scale. Unfortunately many schools throughout the Caribbean have no radios, power, or both. Informal education broadcasts in the region suffer from competition with music and entertainment from commercial stations, which command the airwaves (Deodat 1992).

Radio ECCA, Spain

Radio ECCA operates primarily in the Canary Islands. ECCA's teaching system is based on three elements: print materials, audio, and face-to-face tuition. Every ECCA lesson centres on a lesson master sheet. The 'radio lesson' is a detailed explication of the content of the lesson master sheet, with the learner constantly at the 'blackboard'. The learner is required to respond to the radio teacher by writing on the lesson master sheet during the course of the broadcast. ECCA also produces other types of printed material for its learners, in the form of notes and technical memoranda on difficult topics, complementary texts, and so on. In addition, learners are expected to attend weekly tutorial sessions at nearby learning centres, where they receive help with difficult points, evaluation, motivation, and encouragement.

Ulwazi, South Africa

For millions of South Africans, radio is their main medium of communication with the world, yet it is still a largely under-utilised medium for education on a massive scale. The Ulwazi Educational Radio project was established in 1994 as a pilot project that aims to use radio to provide adults with effective and appropriate basic education. The project sets out to train educational producers, produce models of radio programmes in a range of languages, and evaluate its work in order to increase the body of knowledge of educational radio. In its first phase, the project chose to design radio programmes that could both attract a general audience of adults and, when used in literacy classes in combination with print, serve as valuable supplements to classroom activity. The main educational purpose of the

programmes was to serve as ‘triggers’ for discussion and debate wherever people listen to radio. To achieve these aims, the project chose to work in a radio format not often used for education: it chose to produce feature programmes with real voices of real people, as opposed to experts. The evaluation of this experiment indicated it was a success: two-thirds of listeners liked the programmes better than other programmes on the radio. The use of real voices in particular had an affirming effect on listeners (CASE 1996).

Mozambique

In 1994 the International Broadcasting Audience Research unit of the British Broadcasting Corporation commissioned a project to explore the effectiveness of BBC English programmes among over one thousand learners in different school contexts during the 1994 academic year in Mozambique. Two BBC English series, with ancillary materials, were tested in urban and rural secondary schools with the co-operation of Radio Mozambique. The project, carried out by the Institute of Education, University of London, concluded that exposure to BBC English radio programmes brought significant benefits to listeners in secondary schools, and, that in context with teacher support and ancillary materials, gains were even greater. The programmes were at their most effective in poorly resourced schools, whether urban or rural, that had little previous concern with listening skills. Contrary to expectations, a majority of listeners made more progress in Grammar than in Listening. It is clear that the project had a very marked effect within the Mozambique education system, and a very small outlay produced a creditable improvement in language skills. Many teachers and Radio Mozambique indicated that they would continue utilising BBC English project materials (Flavell and Micallef 1995).

Teacher training

Radio has been widely used for teacher training at a distance. Siaciwena (1984), writing about open and distance learning in Zambia, says that radio can be used to upgrade teachers, to replace teachers temporarily, and to enrich their teaching. Radio is widely available at low cost in all countries.

In Tanzania, trainees were expected to listen to 120 broadcasts in the first year, each lasting 25 minutes and based on the printed correspondence material with the intention of supporting and strengthening the academic and professional content. Friday broadcasts were reserved for questions and answers for the trainees, tutors, parents, and the general public.

In Nepal, radio is vitally important to in-service courses for untrained primary school teachers. Aid-funded projects chose radio, supported by printed booklets and limited face-to-face sessions, because it was the best and cheapest way of reaching most of the country’s teachers. These projects were aimed at improving teachers’ subject knowledge and teaching skills. Each broadcast consisted of two formal lessons, divided by a non-formal magazine segment. The magazine included the ‘Teacher’s Corner’, a question-and-answer session with a forum for reading and responding to teachers’ letters. The broadcasts lasted 30 to 60 minutes, depending on the project, six evenings a week during the school term. Theoretical aspects of teaching were covered in 40 lessons using a discussion format. Maths lessons often included interactive games, riddles, or other activities to which the listeners responded. Dramatic dialogues were used in health lessons. Classroom simulations were

introduced in all subjects, to demonstrate techniques such as leading class discussion. In the final examinations, teachers trained by radio were moderately successful. More important, evaluation responses from teachers showed that some were trying specific teaching practices and the majority felt the courses had positive impact on their teaching. Community visits and letters from listeners revealed that teachers not enrolled in the courses were listening too (Perraton 1993).

Adult education listening groups

Counta (1981) describes how the Senegal government, with help from UNESCO, set up Radio Educative Rurale, aimed at farmers, fishers, and other people involved in food production. The broadcasts contained information, about which the groups expressed opinions. Each group had a trained animateur or facilitator and all its members could dictate letters to literate members, who acted as scribes. The letters, which usually aired complaints, were addressed to government officials, even to the country's president. Radio Educative Rurale had an unexpected political impact. A flood of letters poured into government offices. Eventually the president standardised the price of groundnuts and annulled certain peasant debts. The broadcasts expanded, and with them the feedback increased. The animateurs disappeared, and listening groups gave way to large numbers of individual listeners.

Nwaerodu and Thompson (1987) list other educational radio projects in developing countries: for agricultural and rural development (Benin, Ghana, Guatemala, India, Nigeria and Thailand), health (Nicaragua, the Philippines, Sri Lanka, South Korea, Swaziland, Trinidad and Tobago), and literacy (Mali and Mexico). Most of these were operating in the 1960s and 1970s. The radio forum was used widely under UNESCO's auspices, based on the model of radio discussions broadcast to farmers in Canada from as early as 1941. In India, for example, each village had a group of listeners, meeting twice a week to listen to a 30-minute broadcast and discuss its content. Evaluation showed that they learned a great deal, and illiterates learned as well as literates. Similar projects in Ghana, Benin, and Thailand produced equally good results. It seems doubtful whether educational radio of this direct, non-formal kind can teach individuals by itself, however, without discussion groups. A radio forum includes such groups, which must be organised by field co-ordinators. Once the project ends, no co-ordinators remain and most groups stop meeting.

4. Video

4.1 Video cassettes

The Open University, United Kingdom

Durbridge (1993) discusses problems in designing video material for part of an undergraduate course, *Understanding Music*. Could learners follow when a lecturer wrote out a piece of music in front of the camera? Could they follow the score as he played it, again on camera, on a piano? Did they follow the score better if it was displayed as a 'still', or if the camera panned across the lines of music bar by bar? She found that learners wanted clearer guidance about the purpose of the exercise; they wanted more information and explanation about what was happening, and an opportunity to try music-writing for themselves. They found it helpful when the camera followed the music, bar by bar, as it was played. In fact, they suggested using a split screen: the top half with part of the score; the

bottom half showing the lecturer's hands playing the piano keyboard. A split screen would teach well the relationship between the score and the sounds.

Tutored video instruction

Video cassettes have been used both at Stanford University in California and the University of Aston in Britain for 'tutored video instruction'. This entails the centralised production of usually well-illustrated lectures, with the programme being copied on cassette and distributed to local centres (often work-sites), where the programme is watched by a small group of local learners, with a tutor to facilitate the discussion. Sometimes the 'central' tutor is available for questions or discussion by telephone. The important feature is the ability of the group to discuss the teaching material and ask questions, either of the tutor or the central instructor (Bates 1995).

4.2 Interactive video

The Open universiteit, The Netherlands

Beijderwellen (1990) describes why and how the geology course team decided to use interactive video (accessible only at study centres) to replace a planned fieldtrip. He stresses that the video design is integrated with geological textbook theory and is not consciously based on any instructional theory. The geology course team started from scratch, first with the aim of telling the story of how a geologist works in the field. The video includes 12 geological locations in total. The interactive video solution is cheaper than the fieldtrip alternative for more than 50 learners a year, assuming the geology course is repeated for five years.

King's College London, United Kingdom

The first intake into the distance-taught Masters of Science programme in dental radiology started in January 1990. The course is available to dental practitioners anywhere in the world who have a recognised medical or dental qualification and access to library facilities and simple radiographic equipment. Advantage was taken early on of the newly introduced photo-compact disc players (produced by Kodak Ltd.) for displaying the radiographic images required in the course and, beginning in 1993, all third-year learners were supplied with a photo-CD player out of fee income. From 1994 it was decided to issue the photo-CD players to learners in their second year of study, as the Radiographic Anatomy module was at that point produced on compact disc. The compact disc is proving highly successful (Smith 1995).

5. Television

5.1 Educational television

United States

Over 100 American universities and colleges teach partly by television. For example, at San Francisco State University, a cable carries 40 channels to all the main classrooms, and lecturers can ask for either one of the many broadcast television programmes (received by satellite dish or terrestrially) or a video cassette to be channelled to their classroom at a

certain time, for use in teaching. Many American universities and colleges also broadcast to the community by cable.

Open University, United Kingdom

At the Open University, television is used for instruction, although large numbers of the general public watch broadcasts for enrichment, without taking the courses. Each programme uses a wide range of material. 'Talking heads' are the exception, and many of the programmes include segments made 'on location', that is, not in the studio but in places important for the programmes concerned. In other words, the type of televised instruction offered has grown out of the 'documentary' style for which the British Broadcasting Corporation is justly famous.

Chinese Television Universities

Almost all the programmes made for the Chinese Television Universities are recorded lectures. It is rare to see talking heads, however, as the camera is focussed most of the time on the chalkboard. If you were watching, you would probably see a hand moving, writing the Chinese characters, with Arabic numerals and occasionally some scientific notation. And you would also hear the lecturer's voice, explaining what he or she was writing. This pattern appears to stem from Chinese traditions of teaching. Learners copy down the writing, while listening to the teacher's commentary (IEC 1995).

The Sudan

In the Sudan, a series of programmes produced by the Gezira learning centre address rural communities about agricultural and extension activities as well as health education. This rural television medium is serving as a source of educational information, as a catalyst for activities among farmers, and as a mirror of the Gezira province. Some of the programmes are of a magazine type, such as one that follows the calendar of agricultural activities. Others treat special subjects in a systematic way, in serialised programmes. For example, there is a series on health education, mainly concerned with preventative health measures, and another on new agricultural methods or areas of activity, such as poultry raising. In less specialised programmes, such as those on social problems, drama and other forms of entertainment are used, as well as course information and news reporting. The Gezira station transmits for slightly over seven hours per week, of which about two-thirds are devoted to educational and semi-educational programming (Mustafa 1996).

Indira Gandhi National Open University

The Indira Gandhi National Open University broadcasts over the national television network three times a week in regularly allotted time slots. See the case study included in this kit for a detailed account of IGNOU's use of broadcast television.

5.2 Video conferencing

NEC Technical College, Japan

The NEC Technical College is linked by satellite transmissions to nine other centres. Examples of the use of video conferencing include lecture and discussion, in which the

lecturer operates a document camera as well as the classroom cameras, one of them focused on herself; she explains topics with the help of overhead projector transparencies, and draws on white paper on the document camera. Learners in distant classrooms see two screens at a time, for which she selects the pictures, and they hear her voice. Individuals answer questions, and are on-screen when they do so. The system is also used for laboratory activity, in which learners themselves give presentations, followed by comments from the instructor and other learners. Sub-instructors are present in the classrooms, because it is almost impossible for the central instructor to deal with individuals' problems. Co-operation between all the instructors is critical (Kurata et al. 1990).

Curtin University, Australia

In the School of Nursing, in-service training was provided for about 85 nurses at three distant sites, using video conferencing for seven two-hour sessions. The evaluation showed that most of the nurses were satisfied with the picture quality but not sound quality. There were some criticisms of the instructors and their aides, though the nurses felt that they had adequate opportunity to question instructors and discuss the content. Their general assessment of video conferencing was strongly positive (Latchem and Rapley 1992).

Korah Collegiate, Sault Ste. Marie, Canada

Learners at Korah Collegiate, a school in a northern Canadian community, used video conferencing to compete in the Canadian Bar Association's mock trial competition. The competition is held annually and is a completely optional extra-curricular activity for advanced secondary school learners, which helps them acquire advanced presentation and debating skills as well as learn about the trial process and legal system. Although secondary learners from anywhere in the province of Ontario are eligible to participate, the competition is held in Toronto and those from the north must travel a considerable distance to compete. In 1996, for the first time, learners in the north were offered the option of participating by video conference. Learners are given notes in advance of the competition and have three months to prepare. The competition is a one-day activity during which teams of six participants compete with one another in presenting both the prosecution and defence for a particular scenario. What participants liked about video conferencing was that it gave them an opportunity that they would not have had otherwise. They also agreed that once they got used to the equipment, they discovered it was quite simple to use and could be employed effectively — as or even more effectively as face-to-face presentation, since learners can see themselves perform in addition to seeing others perform (Brindley et al. 1997).

6. Computers

6.1 Computer-assisted learning

Single-mode open and distance learning institutions

In the Open universiteit of the Netherlands, the British Open University, the FernUniversitat in Germany, and the Open Learning Agency in Canada, learners usually have to go to study centres or residential summer schools to access computers or terminals to use computer-assisted learning packages. However, all learners (about 4,000 a year) on the British Open University's Technology Foundation course are required to have an IBM-PC compatible

computer, and the course contains a suite of computer-assisted learning materials to provide additional tutorial help for those learners who have difficulty with the numeracy strand of the course. At Athabasca University in Canada, the Writing Skills course team have developed two computer-assisted learning packages for enhancing the writing skills of English learners, one at the most basic level and one at a somewhat more advanced level that is intended to bring learners' skills in grammatical construction and appropriate punctuation to university level. At the Open Learning Institute of Hong Kong, the MT366 course team (Computer and Network Architectures) experimented with computer-assisted learning packages for the two most difficult units with mixed results: learners thought that computer-assisted learning could enhance their learning and arouse their interest in the topics, but they lost interest very quickly because there was too much text and too much duplication of existing hard copy (Lee et al. 1997).

Workplace training

The use of pre-programmed computer-based learning is more common in workplace training. Van der Brande (1993) states that in Europe, the main concentration of computer-based training is in the area of banking, finance, and insurance, followed by general manufacturing and the public service sector. It is also being increasingly used in the retail sector. For instance, in 1987 B&Q plc placed computer-controlled video disc equipment in most of its home care and garden centre stores in Britain, to train its 12,000 employees. Use for training of professionals is also growing. In Ireland, the National Distance Education Centre, in collaboration with the Institute of Chartered Accountants, has developed a 100-hour programme of self-directed instruction on accounting, which includes 40 hours or practical work on IBM-compatible computers, either at their own work-stations or at 14 study centres across Ireland. Over 2,000 people have participated in this course (Van der Brande 1993).

Adult basic education

In North America, pre-programmed computer-based learning is used in open learning contexts aimed at adults who have not completed high school graduation. For example, the Open Learning Agency has used a system developed by the Jostens Corporation in its learning centres. Learners who need to improve their reading and writing skills can 'drop in' at the local centres and use the system when it suits them. Pathfinder, an integrated learning system that includes direct instruction, reports on learners' progress, and diagnoses of problems, has been used in similar ways by native Indians in First Nations Learning Centres in the province of British Columbia (Friesen 1991).

6.2 Computer-mediated communication

Canada

The Writers in Electronic Residence programme connects learners in Canada with writers, teachers, and one another to discuss and exchange their original writings. The programme began in 1987 with a connection between two schools and has since developed into a national facility with offerings for elementary, middle school, and secondary learners. Learners use word processors to compose their work and their responses to other work. Their messages are then uploaded to the appropriate conference on the host computer at

Simon Fraser University in Vancouver. Most schools can connect with a local area call. For example, learners from Baffin Island in Canada's high Arctic can connect with learners from urban centres in the south, and first-generation Vietnamese immigrants, Canadian-born Chinese, and established residents of the city of Toronto mix on the system together with a professional writer or poet (Owen 1993).

Texas A&M University

Murphy et al. report on the analysis of six semester-long computer conferences that took place during a fifteen-week semester at Texas A&M University in late 1994. These conferences were moderated by university learners, and the intent of the analysis was to discover how learners perceived and used the conferences. The two purposes of the conferences were to provide a meaningful, authentic context for pre-service teachers to learn about technology and collaborative learning, and to provide an opportunity for graduate learners to learn to moderate computer conferences. The analysis found that learner moderator roles reflect the influence of both instruction and personal communication styles, and that participants adopted behaviours that fostered communication in a text-based environment and led to positive attitudes about computer conferencing (Murphy et al. 1996).

United Kingdom

Online Education and Training is a part-time course at the post-graduate level that is offered jointly by the Institute of Education at the University of London and the Institute of Educational Technology at the Open University. The course is aimed at educators and trainers who are interested in using computer conferencing, whether as teachers, network support staff, or course designers. The course is run on the Open University conferencing system and administered by London University. The tutors for the course include staff from both institutions. The printed material to accompany the course varies from presentation to presentation, as the amount of suitable literature on computer conferencing is extensive and growing. On-line advertising has produced an international catchment. The core, however, remains in the United Kingdom, allowing two face-to-face meetings to take place, one at the beginning of the course for training on use of the conferencing system and induction to the course, and the second toward the end of the course. This second meeting has given learners an opportunity to experience video conferencing as well, some by satellite, others in classrooms of the London University interactive video network, LIVE-NET (Mason 1994).

Open Learning Information Network , Canada

The Open Learning Information Network in Newfoundland, Canada, blends traditional resources like textbooks and learning materials with information and communication technology resources like web pages that show the study manual and a computer-conferencing system. See the case study for OLIN for an account of an institution that delivers courses via the World Wide Web.

7. Practice exercise

7.1 Describing appropriate media applications

Instructions: Divide participants into pairs. Ask each participant to describe and explain to his or her partner the kinds of media applications that:

- are currently being used in his or her working context;
- could be used in this context if certain conditions were met, and what these conditions are; and
- could not be used in this context in the foreseeable future, and the reasons why.

Ask participants to list their answers to these questions — preferably in ‘chart’ form — on newsprint sheets for posting around the room, where other participants can read them and ask questions about them.

Timeframe: Approximately one hour.

Materials: Flipchart paper, marker pens.