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ABSTRACT

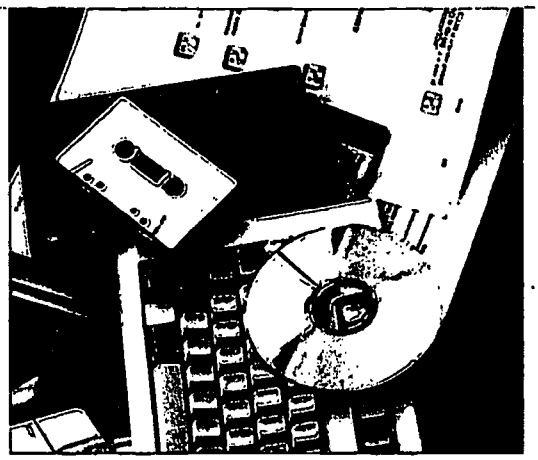
Planning an effective distance education (DE) course requires careful planning by experienced educators supported by strategically chosen instructional and delivery media components. The challenge of DE is to develop an instructional process that incorporates good teaching and learning strategies and provides remote students with a quality of instruction similar to that enjoyed by students attending classes. Teachers often fear that physical separation from their students will result in less effective learning. However, DE gives teachers greater flexibility in using their time, thereby allowing them to focus more on activities such as counseling, tutoring, remedial work, and student support activities. For the many vocational students who are studying subjects related to current employment, workplace trainers may be able to provide counseling and guidance and more experience employees can act as mentors. DE uses various media components to deliver learning information and link students and teachers. Media components can provide the following items: subject information and the instructional process; sound and vision to demonstrate skills; self-testing opportunities and assessment procedures; and communication between teachers and students. There is no single response that fits all DE situations. Teachers' ingenuity and imagination are key in selecting media and determining how it will be used. (Contains 16 references.) (MN)

The Use of Multi Media in Distance Education

KNOWLEDGE SERIES

A good teacher seeks as many ways as possible to present information and ideas to students to stimulate their thinking.

This paper discusses the theory and practice of distance education and explains the main issues involved in planning, developing and using media resources for distance education.



INTRODUCTION

In the past century off-campus instruction has undergone considerable changes, not the least of which has been its name: correspondence became external studies, distance education, open learning and then flexible delivery. A constant throughout its history, however, has been concern with opening up educational opportunities.

This paper discusses the theory and practice of distance education and explains the main issues involved in planning, developing and using media resources for distance education. It is directed at managers of distance education operations and others who have a professional interest in the subject.

The term distance education is generally given to a form of education and training delivery in which students are remote from the institution, and rarely, if ever, attend formal teaching sessions. Some tutorial sessions may be scheduled by phone, and a compulsory residential seminar is sometimes specified, particularly where practical skills are being developed and assessed. Distance education is delivered through the use of various learning resources, and supported by teachers using a variety of means of communication. The resources and means of communication are the *media* components.

The word media, plural of medium, is from the Latin word for middle and describes that which stands between the receiver and the source of the message. It is commonly used to describe ways to convey information and entertainment. The term *multi media* often describes highly sophisticated technology, such as CD-ROM and Internet web sites, which incorporate text, sound, vision and animation. In general, we understand technology to embrace things like radio, TV, video, telephone, fax machines and computers. Not all media involve technology, of course. Books and newspapers don't conjure up images of technology, although a good deal of technology goes into their creation. In this paper, multi media refers to any communication method that conveys information, or that allows interaction between teachers and students.

The golden rule is that the message a teacher wishes to convey is considerably more important than the means used to convey it. In the world of education and training, technology is a servant and not a master; the media isn't the message, only the means.

THE THEORY OF DISTANCE EDUCATION

A good teacher seeks as many ways as possible to present information and ideas to students and to stimulate their thinking. Good teaching practice includes providing opportunities for students to be active learners, taking into account individual differences in learning styles and providing encouragement for students to seek solutions independently. Elements of good teaching and learning practice include:

- the actual teaching, including explanations, examples, illustrations, and learning support in the form of professional advice, comment and encouragement
- the students' work, including reading, research, discussion groups and all course-required practical activities
- the assessment procedures, which will need review and may need to be changed to meet the needs of a distance education programme

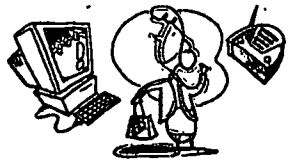
The challenge of distance education is to develop an instructional process which incorporates good teaching and learning strategies, and which provides remote students with a quality of instruction as close as possible to that enjoyed by those attending classes.

CHANGING ROLES FOR TEACHERS AND STUDENTS

In general, teachers often fear that if they are separated from their students the result will be a dramatic drop in effective learning. However, if much of the teaching content is delivered outside of the traditional classroom, teachers are going to find greater flexibility in the use of their time. More emphasis can be placed on activities like counselling, tutoring and remedial work, as well as on student support activities that can significantly improve the quality of the teaching process. Time can also be spent planning and producing learning resources.

A distance education programme can be very challenging for students. Those who have only experienced classroom-based instruction will often struggle with the absence of other students and teachers. These students will need to be taught how to work more independently, how to organise their study time, and how to discipline themselves to study through domestic pressures and other influences. They need to be contacted and counselled on study and learning issues from the start, so that a relationship can be established between student and teacher. Students should be offered help to plan a study programme and be contacted regularly to help them maintain study commitment. High dropout rates are endemic in distance education programmes, and every effort must be made to encourage students to persevere.

On the other hand, there is a freedom about distance education which can be very appealing. Students can design their study programme to suit their lifestyle. There is also a great deal of satisfaction



to be gained from succeeding on their own, but these benefits won't come without considerable and continuous support from their training institution.

VOCATIONAL STUDENT SUPPORT

Many vocational students are studying subjects related to current employment. Workplace trainers may be able to provide counsel and guidance, and more experienced employees can act as mentors. Local professional or business people can provide useful support, and local schools may be recruited to provide access to equipment or other resources. The training institution can help set up semi-formal arrangements for their students, with local specialists acting as tutors or carrying out skill assessments on students who demonstrate competence on the job or in the community. The use of such approaches often depends on the enthusiasm of distance education teachers in seeking possibilities, and in setting up appropriate structures.

EDUCATIONAL MEDIA

Distance education uses various media to deliver learning information and to link students and teachers. Some media can be used for both purposes, but they generally fall into two categories:

- those which can be used to convey subject content, such as print materials, video tapes, audio tapes, television, computer-based courseware, and CD-ROM
- those which permit communication between teachers and students, such as fax, radio, teleconferencing, videoconferencing and the Internet

The telephone offers the opportunity for group links via teleconferencing, and television has led to the development of videoconferencing. The most complex and expensive advances in educational media are being made in computer-based technology, particularly interactive CD-ROM and online course delivery.

Selection

SELECTING AND USING MEDIA

Media components can provide:

- subject information and the instructional process
- sound and vision to explain or demonstrate skills
- self-testing opportunities and assessment processes
- communication between teachers and students

The purpose of a resource rather than the medium will determine how it is integrated into the distance education process: for example, whether students read, listen, watch or interact with a computer. These uses may also depend on who the students are, where they are, their existing skill levels and their learning styles. For example:

- if low literacy levels are a factor, audio or video resources will be useful
- if students are very isolated, the telephone will help break down the distance barrier
- if the course requires students to develop physical skills, realistic video demonstrations will be useful
- if an assessment task requires students to chair e meeting or to interview a client, they can record their activity on audio tape

Since the purpose of using media in training is to improve the quality of the learning process for students, each medium's characteristics need to be matched to the skills being addressed.

PRINT RESOURCES are relatively cheap to produce, and convey theory and knowledge very effectively with instructional techniques which help students to learn, then test their own understanding. Many processes can be demonstrated, but physical operations or interactions are much less successful in the print medium. Most distance education courses are delivered via print resources, often supported by other media components.

AUDIO RESOURCES are a cheap and effective means of conveying information. For example:

- a German language course uses audio tapes to provide vocabulary and conversation exercises
- a community services management course uses audio tape recordings of interviews with managers of service organisations as the basis for student activities
- a communication module on conflict resolution uses an audio tape to present dramatisations and role-plays.

VIDEO RESOURCES are expensive to produce but are very useful where practical demonstrations of skills are required. For example:

- a child care training package includes a video of activities in a child care centre, which brings the subject to life and enables students to respond to real-life situations
- a police training course in modern techniques for fingerprinting uses a video to demonstrate each process
- a course in tour guiding uses a video of an escorted tour around a city to demonstrate presentation techniques, and how to handle "difficult" tourists

Video resources, once produced, can be incorporated into interactive CD-ROM and online programmes.

CD-ROM RESOURCES, if fully interactive, are very expensive but can be highly effective in certain learning situations. A CD-ROM can contain a vast amount of information in text, audio, video, animation and virtual reality formats, which can be accessed through a complex navigation system. For example:

- a CD-ROM is used in a mining and environmental education programme for secondary schools, and includes text, audio, video and animation in game-type activities that allow students to explore the issues raised
- an induction programme for the Australian Red Cross Blood Service uses a CD-ROM to illustrate practices and functions using interactive text, graphics, sound, animation and video
- a course in hair styling uses a CD-ROM that allows students to try out the appearance of different hairstyles on a series of typical head shapes

High tech equipment and skilled multi media developers are required to create an interactive CD-ROM. Once created, the CD-ROM can't be revised or updated easily.

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ONLINE RESOURCES which use text and basic graphics are relatively cheap compared with CD-ROM production, once you have the technology and an online developer. The most useful aspects of online delivery are its research potential and the communications features it offers, such as e-mail, bulletin boards and chat facilities. Online information can also be updated very quickly. For example:

- an online course for English as a Second Language teachers provides a web site containing practical exercises, demonstrations and links to other sites for research purposes
- a print-based tourism training course uses a web site to provide up-to-date industry information, links to tourism sites for research and the facility to e-mail assignments directly to the teacher
- a vocational preparation course in fractions and decimals uses interactive exercises which enable students to key in answers, which are automatically checked and corrected if necessary

More vocational training courses are now delivered online; students can communicate with teachers, e-mail assignment submissions and contribute to bulletin board discussions.

Distance education programmes are increasingly using combinations of media to deliver training. For example, print materials often cite references to audio and video resources, which can be sent out to students from the library or resource centre on temporary loan. In all of the above examples print materials form a significant part of the delivery method. Other media components can offer supplementary information in a different format, or provide different learning experiences for students which help them learn skills more effectively.

The value and effectiveness of print resources should not be minimised. In spite of the explosion of high tech computer-based communication and of the information super-highway, print will remain the most accessible medium of communication for many years to come. It can be used anywhere, and is always at hand for reference. Technology-based media suffer from the limitations of the specific technology being used; its accessibility depends on availability, where and when it can be used, and is contingent upon its reliable operation.

Audio and video equipment is relatively common these days, but the computer hardware and software required for CD-ROM and online access is much less common and is very expensive. The question has to be asked: how much more effective are they than less sophisticated media, in terms of value for money and educational effectiveness? The answer is not simply that more expensive equals more effective. Cost-effectiveness is as important as educational effectiveness in distance education delivery.

USING MEDIA FOR COMMUNICATION

No matter how good a learning resource is, for example a CD-ROM complete with all information, explanations, illustrations and activities, students need personal contact with a teacher to provide the kind of support available in a classroom.

Contact can be made by fax, telephone, teleconferencing, videoconferencing, e-mail and the Internet. Formal links using teleconferencing and videoconferencing can be arranged where specific times are programmed for groups to get together. This is very [illegible] for tutorial work, and can be supported by materials faxed [illegible] teacher and students. For example, a rural office practice course uses standard print materials containing weekly assignments, which are then discussed at regular videoconferencing tutorials led by the teacher.

practice

THE PRACTICE OF DISTANCE EDUCATION

Distance education encompasses many different ways of delivering education and training to students. The term *strategy* is used to describe the particular combination of teaching, delivery, assessment and communication components used to produce an effective instructional and support process. Distance education is a resource-based instructional methodology; its effectiveness depends heavily on the quality of the learning resources that are used and on the appropriateness of the delivery media. The specific choice of media elements for a distance education strategy has less to do with the technology and media options which are available, and more to do with the nature of the learning task which is involved.

The educational structure of the materials, or the instructional process, is the most critical issue. This is best worked through with the assistance of an instructional designer, who will help the teacher analyse the learning task and select a form of media appropriate to the programme's educational objectives. This ensures that the strategy used and the resources developed will enable students to gain the required skills, knowledge and experience efficiently and effectively.

PLANNING A DISTANCE EDUCATION STRATEGY

The process recommended here applies to the development of any distance education strategy, whether it incorporates print, audio, video, computer-based or online components.

The best approach is to:

- gather together the materials currently used to support the teaching of the programme
- examine them and compare them with the curriculum or learning objectives of the programme

When this has been done the resource gaps, that is the places in the programme where essential information, instruction, illustration or explanation are missing, should be evident. This will give the teacher a clear picture of the kinds of resources required to make the distance education strategy work. At this point, decisions about media selection can be made based on the above considerations.

THE RESOURCE DEVELOPMENT PROCESS

The key to the success of any distance education programme is the quality of the learning resources used. It's important to search for existing resources before developing new materials; resource development for distance education courses has been a flourishing activity in many countries for years, and a huge body of material already exists in almost every vocational area. A library search will identify many resources, but a closer examination may reveal the resources support a different curriculum, or use a different instructional approach.

This paper assumes that *some* learning resources will have to be developed by the teacher or institution offering a distance education programme. Learning materials development is best carried out by a

team of people which includes teachers and instructional designers, who can ensure that content and educational structure meet the requirements of the curriculum.

Resource materials must be designed and written to be superior to a textbook or a manual. Teachers should provide specialised instruction based on their knowledge of:

- how students learn
- the difficulties they are likely to experience
- how to overcome those difficulties
- when and how to provide support
- how to use activities to reinforce the learning process
- how to assess the progress made

Subject specialists will be responsible for writing the materials, and for the accuracy and appropriateness of the content. The content should be checked by other subject specialists to ensure that it is current and accurate. This process can be more difficult than it first appears. Writers of learning resource materials are often inexperienced and require considerable support. Even the most experienced may encounter problems, and the writing process almost invariably takes longer than anticipated.

Because of the many complexities involved in writing and designing resource materials, they should always be trialed with students. Teachers should evaluate the materials and their effectiveness and revise them as part of the resource development process.

All learning resources, in whatever media format, begin life as text; someone has to write the words and instructions for the media producers to use. Once the text has been written, the content checked and the material edited and proofread, the materials producers can get to work.

PRINT MATERIALS can usually be produced in-house, providing that skilled staff is available. The essentials are an experienced desktop publisher and a good graphic designer. Desktop publishing facilities turn out a good quality print product, which can be amended or revised relatively quickly before being reprinted.

AUDIO AND VIDEO MATERIALS can be produced locally, using the kinds of equipment usually available in training institutions. Recording and editing facilities are needed for audio materials. Video production requires an experienced camera operator and video editing facilities.

INTERACTIVE CD-ROM development is very demanding. It requires expensive hardware and software and highly experienced programmers. Just about any media can be reproduced on a CD-ROM, which makes it attractive as a one-stop shop. But you need plenty of time and money to go down this path; your students must have the appropriate hardware and software, and you still have the issue of teacher-student contact to address.

ONLINE MATERIALS development requires specialised software programmes and experienced online developers and graphic designers to produce the web pages. You will also need a web site to host the web pages, and a number of site management techniques to enable students to use the communications facilities effectively.

CONCLUSION

This paper proposes that an effective distance education course requires careful planning by experienced educators, supported by strategically chosen instructional and delivery media components. There is no single response that fits all distance education situations. The ingenuity and imagination of teachers will be the key factors in the selection of media and the way in which it is used.

When the distance education package has been created, with appropriate media resources to deliver and support the programme, teachers and managers have to address the issue of how students will use the materials. It is the responsibility of course deliverers to ensure that students are able to use any required technical equipment, as well as ensuring that the resources are readily available: for example, a textbook around which a course is written. All references must be accurate, and library facilities must be able to provide any that are specified. If there is any problem in this area, students will give up; the educational opportunities, which were the reason for the course in the first place, will be lost.

Finally, course developers must always bear these key points in mind:

- distance education should not be a poor cousin of classroom based instruction; the best teaching and learning practices must be used to minimise student disadvantage
- when considering using media in training delivery, always ask WHY?
- the perspective of the students who will use the training programme is a vital consideration
- instructional effectiveness should always be measured against cost and time: is the resource development effort really going to be worth it?
- regular and frequent contact between teacher and student will repay the effort many times over in maintaining student interest and course completion rates

Distance education is about opening up greater study opportunities for students. Educators must keep the needs and rights of students clearly in the forefront of any plans to provide distance education opportunities. If this is ignored, there is a serious risk of offering a second-class education to those who can't regularly attend classes.

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www.odlaa.org : Open and Distance Learning Association of Australia (ODDLA)

www.odlaa.org/odlaa/websurvey.htm : A survey of online and distance learning journals and professional communities, taken from a University of Illinois online report

www-icdl.open.ac.uk : International Centre for Distance Learning (ICDL) literature database, containing abstracts of literature on all aspects of distance learning

webster.commnet.edu/HP/pages/darling/journals.htm : Journals and newsletters for distance education

www.uwex.edu/disted/home.html : Distance education clearinghouse, the University of Wisconsin-Extension and partners

ccism.pc.athabascau.ca/html/ccism/deresrce/de.htm : Athabasca University's Resources in Distance Education (RIDE) database

www.hec.ohio-state.edu/bradshaw/distance.htm : Distance learning online resources

www.ncver.edu.au : National Centre for Vocational Education Research (NCVER) is the principal research and evaluation organisation for the vocational education and training sector in Australia. Its web site gives access to its publications on all aspects of vocational education and training, and well as a database of over a hundred journals from around the world, with links to each

www.col.org/irc : The Commonwealth of Learning Information Resource Centre

The Use of Multi Media in Distance Education

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