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ABSTRACT

Each of the four papers in this collection is concerned with open learning in one form or another. "Open Learning: Some Current Perspectives" (Ian Barnard) addresses the topic of open learning in general, commenting on contemporary views and developments, and defining the term as a collective for approaches and practices that focus on the needs of the learner. "Staff Development and the Role of the Instructional Designer at Charles Sturt University" (Wendy Pearce and Peter Donnan) highlights the work of the Open Learning Institute. These two papers were presented at the Familiarization Week program of the Charles Sturt University in Wagga Wagga, New South Wales, Australia (February 1993). "Communication Strategies for Reducing the Isolation Factor and Enhancing the Learning Process in Distance Education" (Lee Purches) illustrates the use of communication strategies in social work and welfare disciplines. This paper was presented at the national conference of the Australian Association of Social Work and Welfare Educators in Sydney, New South Wales, Australia (October 1992). The final selection, "Modularization--Some Thoughts--Courtesy of David Merrill" (Ron King) reviews modularized distance education materials for use in the context of open learning. (Contains 30 references.) (SLD)

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CONTENTS

EDITORIAL COMMENT

Formerly entitled *Occasional Papers in Distance Education,* issue number 13 s published under the new name *Occasional Papers in Open and Distance Learning.* The broadening in the scope of the title reflects educational events which have been occurring nationally with the Federal Government's Open Learning Initiative and the recent establishment of the Open Learning Agency of Australia; more relevant, though, it reflects changes which have occurred within Charles Sturt University with the creation of the Open Learning Institute in 1991 and the subsequent open learning initiatives which have ensued and are gathering momentum. Each of the four papers in this issue is connected with open learning in one way or another.

The first paper is an address by the Executive Director of the Open Learning Institute, Dr Ian Barnard, presented to CSU-Riverina staff during the Familiarization Week Programme organised by the Staff Development and Training Unit. Appropriately, it addresses the topic of open learning commenting on contemporary views and developments.

The second paper focusses on staff development and the role of the instructional designer at CSU. Instructional designer with the OLI, Wendy Pearce, also spoke to staff during the Familiarization Week Programme and her original paper has been extended to incorporate other staff development implications arising from the challenges of open learning and the implementation of technology based systems in education.

The third paper by Lee Purches is impressive because it illustrates how innovative staff, committed to interpersonal contact and feedback with distance students, can make courses in the Social Work and Welfare disciplines quality offerings by adopting a diverse range of complementary communication strategies. Course coordinators in other disciplines will be impressed by the commitment, enthusiasm and professionalism illustrated in the paper. At the core of open learning is an orientation to the learner's perspective and this paper is well worth reading simply because of the sensitivity it shows to the distance student's context.

The final paper provides further insights into modularization of study materials arising from Ron King's extensive involvement at the Mitchell campus with the CSU modularization project, a project designed to make distance education materials more appropriate for use in the context of open learning.

Peter Donnan
Editor

A CALL FOR PAPERS

Charles Sturt University staff are invited to submit a copy of any material for publication in the next edition.

Please forward papers to:

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Occasional Papers in Open and Distance Learning
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Open Learning: Some Current Perspectives

Ian Barnard
Executive Director
Open Learning Institute
Charles Sturt University

This paper was presented to CSU-Riverina staff during the Familiarization Week Programme on 9 February 1993.

INTRODUCTION

The use of the term 'open learning' is increasing rapidly in Australia in line with a worldwide trend. Not only do we have open learning institutes and departments, but employers and professional groups now ask for open learning courses. At the national level, we have the Government Open Learning Initiative. Clearly open learning is a present issue of significant momentum. It is also clear that the term 'open learning' is quite loosely and generally applied to a range of educational activities and ideas and that there is widespread discomfort with the term's seeming intangibility.

In what follows I hope to bring some clarity to the term and to identify some of the issues open learning poses for educational institutions.

DEFINITIONAL DIFFICULTIES

> There exists no universally-agreed, adequate and comprehensive definition of open learning.
>
> (Webberley and Haffenden, 1987: 137)

A statement such as this causes dismay to those who like to nail things down. But is this not the common situation we find ourselves in? Try reaching agreement on the definition of 'education' or 'university'. Our recourse with concepts such as these is to define them in functional terms and thereby to impart sense to the terms. I am reminded of just this approach taken by Knowles when he introduced the term andragogy some 25 years ago. Despite many learned attempts, a neat separation between pedagogy and andragogy proved impossible. But the term andragogy was important to draw attention to and stimulate interest in how adults learn.

In a similar vein, it suffices to use the term open learning as a collective for those approaches and practices which focus on the needs of the learner. The looseness of this definition may be uncomfortable but it is also a strength: it avoids unnecessary

restriction to its applicability. But does open learning then really contribute anything significantly new? After all, doesn't all good educational practice take account of the learner? And isn't the history of education dotted with bold initiatives and successful practices where the needs of the learner have been paramount? O'Neil's Summer Hill, Montessori, Keller Plan? My answer is that open learning practices are not a new discovery, but coining the term 'open learning' emphasises the needs of the learner in an era of mass education.

In any society the nature of what constitutes open learning will be defined in terms of the political/social/economic environment of the educational provision and institutional structures.

In the Australian context, Johnson has given point to the topicality of open learning when he comments:

> As government programs attempt to educate even larger proportions of the population, they will be recruiting from ever-wider and more diverse backgrounds and will either have to adopt 'open' policies or fail increasing numbers of students. It will then be governments and educators who have failed, rather than the students.
>
> (Johnson, 1990: 6)

FUNCTIONAL DEFINITION

Glen Farrell of the Open Learning Agency, British Columbia, has provided a useful functional definition of open learning.

> Open learning is a system-based approach to the provision of educational opportunities in which learners can:
>
> - study at the time, place and pace of their choosing using a variety of instructional methods ranging from face-to-face to learning on their own through independent study;
> - progress through levels of education by building on the skills and knowledge already acquired;
> - access instructional resources from the various 'providers' of education in the system to achieve particular educational ends;
> - readily access information and advice regarding options and opportunities relevant to their educational goals.
>
> (Queensland Board of Education, 1989: 13)

DIMENSIONS OF OPEN LEARNING

Lewis (1986) describes open learning as one pole of an open - closed continuum on which all educational practices lie. This notion is very helpful in getting across the idea that it is not only either - or but also more-or-less open or closed that we should be considering. For instance an institution offering a variety of entry pathways to its programs, although not fully open, would be more open than an institution which had a single selective entry policy.

What then do we mean when we talk of an open learning course? Usually it means that claims are being made that one or more of the (educational) practices relating to that course lie towards the open end of Lewis' one dimensional continuum. Clearly then, two open learning courses could differ significantly in the aspects or

dimensions which make them open. This is where much of the general confusion arises about really what it is we mean when we label a course as open (learning). Aggregating several dimensions to give an overall 'measure' of openness has some usefulness in the same way as the TER gives some measure of academic achievement by school leavers. But just as the TER gives no clue to the areas of achievement, labelling a course as open says nothing about what dimensions create the openness. The usual way around this problem is for institutions to list their policies and procedures relating to their courses so that readers can identify for themselves the dimensions of openness relating to their courses. This process can be quite tortuous and I would suggest that a 2-dimensional graphical representation combining the information listed by an institution with Lewis' notion of an open - closed continuum would allow greater clarity to attach to the meaning and use we make of the term 'open learning'.

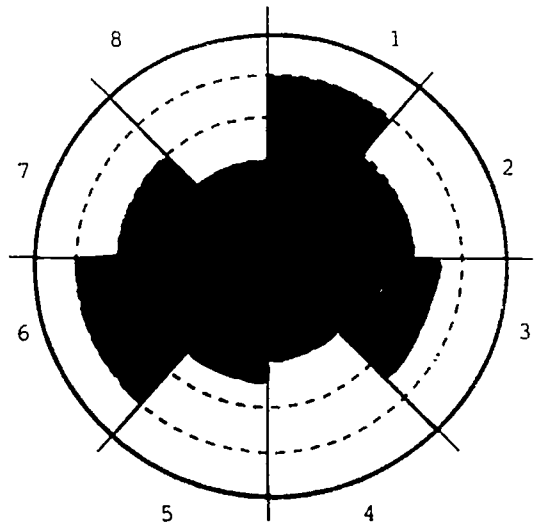
REPRESENTING THE DIMENSIONS OF OPEN LEARNING GRAPHICALLY

To exemplify the use of a graphical representation of the dimensions of openness, suppose an institution identified the dimension given below as important to the openness of a particular course it offered. Each dimension can be represented as a sector of a circle with the centre being Lewis' closed pole and the outer circumference the open pole. The radius of each sector gives a measure of each dimension.

	Dimension	% Openness*
1.	Admission regulations	80
2.	Learner-formulated objectives	60
3.	Credit for prior learning/experience	70
4.	Choice of content	40
5.	Study time flexibility	50
6.	Study place flexibility	80
7.	Delivery methods flexibility	60
8.	Assessment flexibility	40

* The % openness for each dimension would be a matter of judgement in some cases. In others there would be more absolute measures or national or international scales would be developed

The graphical representation of this course would then be:



Such a presentation would give a new meaning to the question "What shape is your course in?"!

THE DIRECTION OF OPENNESS IN AUSTRALIA

At the tertiary level, government initiatives from the White Paper are driving much of the educational agenda in Australia and through funding, controlling the level of openness. In seeking to meet the priorities of increased access and reskilling, the Government has encouraged open initiatives such as the Open Learning Initiative, credit transfer and fee-paying professional development courses.

More recently, the Government, in supporting quality developments in educational provision, has clearly linked notions of openness with quality. Thus for example, quality of an institution's education provision can be seen to be improved through development of bridging and enabling courses or other means to maximise the chances of success for ever greater numbers of students.

Johnson (1990, v) concluded that the moves towards openness in tertiary education in Australia had implications for:

- policies on admission to courses and training programs;
- structure of syllabuses (in modules) and whole courses;
- the teaching process, less 'professorial' and more 'tutorial';
- use of technology, and cooperation in that use;
- cooperation between institutions and sectors, including the private sector;
- assessment, accreditation and awards;
- credit transfer and the concept of a 'credit bank';
- attitudes of teaching staff, and their conditions of work; and
- funding and administrative structures in education.

DISTANCE EDUCATION AND OPEN LEARNING

There is sometimes confusion whether distance education and open learning are synonymous. They are not. The intrinsic openness of distance education is that it is an approach to learning which provides access to programs to learners where the learner **is** rather than obliging attendance at an institution. By so doing, distance education programs generally provide other open learning opportunities such as greater self-pacing by students. On the other hand, distance education programs often have characteristics which are closed. Included in these are such requirements as formal prerequisites and fixed assessment dates. Distance education is one way, and in Australia, an important way, of increasing the openness of our educational provision.

THE OPEN LEARNING AGENCY OF AUSTRALIA (OLAA)

No discussion of open learning in the Australian context can ignore the establishment in 1993 of the Open Learning Agency of Australia (OLAA) which is the outcome of the Federal Government's Open Learning Initiative. The units offered by the OLAA are characterised in their openness by:

(i) open entry (except for capacity to pay);

(ii) frequency of starting dates (4 times per year);

(iii) extensive credit transfer arrangements;

(iv) major collaboration between participating universities;

(v) extension in some cases of the range of presentation to include broadcast TV and radio.

In other respects the units share the level of openness of 'traditional' distance education courses.

CONCLUDING REMARKS

In seeking to clarify the term open learning and in touching on some of the implications I have made no attempt to justify any of the dimensions that governments or institutions may promote for openness. The justification for openness lies in its capacity to provide students with quality choices relating to their learning needs. Noble as this is, it is inevitably tempered by the political, social and economic realities of the time.

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Staff Development and the Role of the Instructional Designer at Charles Sturt University

Wendy Pearce and Peter Donnan
Instructional Designers
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Charles Sturt University

This paper was presented to CSU-Riverina staff by Wendy Pearce during the Familiarization Week Programme on 9 February 1993 and then subsequently extended in association with Peter Donnan for publication in this issue of *Occasional Papers in Distance and Open Learning*.

STAFF DEVELOPMENT

At Charles Sturt University how are academic authors assisted in producing quality distance and open learning study materials in this era of volatile and competitive realities in the higher education market place? In considering this question, Parer and Faust's (1992: 8) following summary of staff development will be used:

> Put simply, staff development is on-the-job training undertaken when formal qualifications are complete.
>
> The various authorities focus on the following points:
>
> - Staff development meets the needs of students, staff and institutions.
> - It facilitates response to changing circumstances.
> - It is essential to affirmative action and useful to equal opportunity.
> - It is more comprehensive than just improved teaching skills.
> - It is appropriate for staff at all levels.
> - It is an on-going process - it cannot be achieved in a single event.
> - It is neither a privilege nor an option but an integral part of good management.
> - It is a form of human resource management.
> - Staff assessment requires staff development but staff development does not necessarily require staff assessment.

OTHER AUSTRALIAN UNIVERSITIES

The need for academic staff development programmes in Australian universities is widely acknowledged but what are the realities when it comes to the preparation of study materials? After interviewing seventy academic staff from four major providers of distance education in Australasia, Parer, Croker and Shaw (1988: 45) concluded that:

> institutions designated as major providers in distance education: did not have a clear statement of policy, as perceived by their staff, on how to fulfil their role as major distance education providers; did not offer training for academic staff in the different skills of distance education; did not have a reward structure and career path for academics teaching in distance education.
>
> Nevertheless it was found that, while distance education is perceived by practitioners to be on the periphery of tertiary education, it does flourish; and to those involved in it, distance education has a vigour which is drawing them towards a new paradigm of learning and teaching.

For academic staff in Australasian dual mode institutions there is often a sense of operating within two time frames - while preparing materials in advance for their distance students, they are often summoned to the present by the demands of their full time students; deadlines for submission of materials can create a real sense of oppression for many authors; there can be a sense of writing in isolation while producing materials which will be publicly scrutinized by one's peers as well as one's students; new lecturers, especially those without teaching qualifications, find it difficult to write for students whom they have never met and they sometimes attempt to either reproduce a set of internal lecture notes or write an academic paper. In most Australasian universities producing effective study materials is not recognised in promotion terms in the way that research and consultancy are; consequently, distance education matters are generally of a lower priority for lecturers. In some Australian universities, however, writing distance education and open learning study materials is becoming a highly rewarding consultancy option for academic staff.

CSU AND THE CHALLENGES OF THE 90S

Charles Sturt University has been involved in distance education since the early seventies and it has evolved procedures which enable it to deliver well prepared, effective distance education courses. In this era of rapid change, however, it is essential that CSU, as one of the largest distance education providers in Australia, continues to recognise the importance of staff development and quality assurance issues as it responds to the challenges of the 90s.

Since the establishment of the Open Learning Institute at this university in September 1991 there has been a period of consolidation. With the launching of the national television open learning programme, the establishment of the Open Learning Agency of Australia and the increasing impact of technology in higher education the implications for staff development need to be carefully appraised. Mitchell (1992: 81) states:

> The future usefulness of technologies which support open learning will not be dependent on the power of the technologies. Technologies change but people might not. The usefulness of open learning technologies will be dependent on the skills of educators to manage the staff who will use those technologies.

> Staff development is the urgent issue for open learning.
>
> ...Moving beyond open learning staff development induction programs, we need to predict the skills and knowledge which educational managers will require to function effectively in an open learning environment.
>
> Keys to successfully managing the change to open learning includes an understanding of management processes; an appreciation of how staff respond to innovations; a model of staff development based on staff concerns; a commitment to evaluation; an awareness of the revolutionary and disruptive features of open learning; an appreciation of the need to change infrastructures; and an understanding of the need to change government funding patterns.

It is sometimes assumed that the current expertise and competencies of staff are sufficient to cope with the challenges of open learning and the implementation of technology based systems in education but Mitchell indicates the implications for staff development. Instructional designers are aware, for example, of the level of resource and educational support required by innovative staff at CSU who are using multimedia packages, animated disk material, video conferencing, Voice Mail and videos for teaching purposes.

During the course of the year most of the developmental work of the instructional design staff at CSU occurs as they work with individual authors who are preparing study materials. David Meacham (1982: 253), the Director of Research and Development within the OLI at CSU, stresses that:

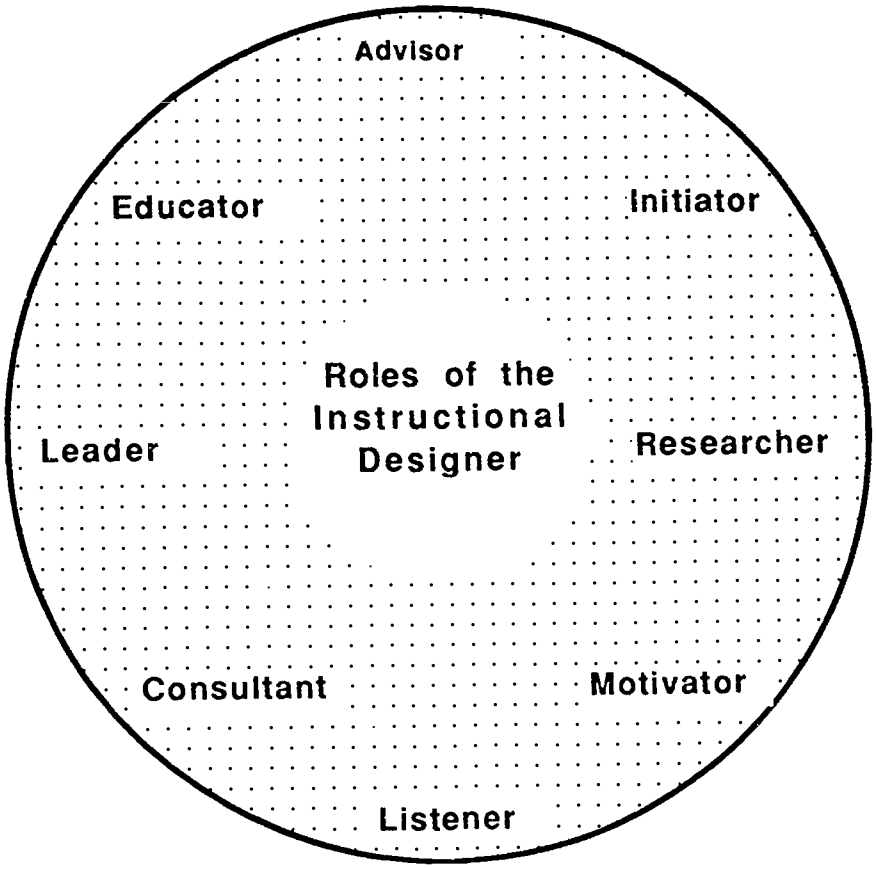
> Emphasis should be placed on staff development programmes that are responsive to the needs of individuals, yet take cognizance of the large number of small interventions that are part of a change, and the finite amount of intervention capacity existing in any situation.

There are a considerable range of concerns Meacham identifies: self-concerns generally revolve upon such questions as "how will advice or suggestions affect me?"; task concerns are related to management questions such as "Will I be able to complete this package in the time available?"; and impact concerns focus on how "how will this subject affect students?" or "how can other staff benefit from my experience?".

THE ROLES OF THE INSTRUCTIONAL DESIGNER

The roles that the instructional designer plays in staff development at Charles Sturt University are numerous and varied yet each role has the common objective of producing a quality learning experience for students.

These various roles of the instructional designer are represented in the diagram below followed by a brief description of each role.



Advisor

While the instructional designer as highlighted in the above diagram has numerous roles, the role which consumes much of their time and is seen to be of paramount importance is that of advisor. The instructional designer is called upon to advise academic authors on how best to prepare their study materials for distance education and open learning students.

The desired outcomes of this association between the subject author and the instructional designer are quality study materials. Implied in this relationship is Shaw and Taylor's (1984: 280) observation that "the subject matter expertise that is currently accorded the overwhelming responsibility for instruction is only part of the total process". That is, considerations of what to teach need to be closely linked with how it is taught and ultimately the question of how well this is accomplished will be answered by distance education students themselves. Simpson (1980: 51) observes that "staff development is now recognised by most educational bodies as being an important factor in improving services to students" and quality assurance concerns are important.

It is the role of the instructional designer to provide advice to academics on matters related to the learner's perspective. There may be suggestions about statement of objectives, insertion of self-assessment activities, advance organisers, structural and access devices, the creation of a clear learning path, establishing clearer links between assessment activities and the subject's aims and objectives, and providing opportunities for evaluation, all of which are directed at enhancing the quality of learning for students. Instructional designers often act as surrogate students working through learning materials with the lecturer to highlight any potential weaknesses.

Freeman (1991: 26) states that "if we take quality as fitness for purpose the quality is the end we are trying to achieve". The learning path needs to be clearly defined, communicated and understood by the learner so that the total subject offering, in terms of content and method, meets the criterion of fitness for purpose. In this way instructional designer's collaborative efforts with the subject authors produce study materials that enrich the quality of our students' education. It must be remembered that the experience of academic staff at CSU varies considerably. Some lecturers have had extensive experience in traditional face-to-face education but no exposure to distance education. Others may have come straight from industry and therefore lack experience in formal education.

While the other roles outlined in the diagram may not at first glance be related to producing a quality learning experience for students they are closely integrated with the total staff development programme of academic staff at CSU.

Consultant

In the highly competitive environment of open learning there is a need to be constantly aware of educational trends and what students perceive as quality and value for money.

The Open Learning Institute is constantly attracting and seeking out organisations in business and industry that require specific training materials and expertise for their staff. In designing courses for industry in consultancy roles, instructional designers extend their knowledge and skills; furthermore, they gain a broader view of the education/training sector. They bring this expertise to their work with academic authors at CSU.

Researcher

Instructional designers, located in the OLI Office of Research and Development, are clearly required to conduct research. Some of the research areas where work has been done include:

(a) Diagnostic testing of first year students. By investigating the strengths and weaknesses of students, learning materials are able to be adapted/designed to suit the level of the student.

(b) Investigation into how students use their study materials. Do students, for instance, actually study the Readings provided in their mailing contents? Do students find objectives and self-assessment questions an effective learning tool?

(c) Modularization. The process of modularizing subjects has meant that students are able to study parts of subjects rather than whole subjects, allowing prior learning and individual student interest to be accommodated. Modularizing subjects is an innovative approach to learning which promotes flexibility and choice for the learner.

CONCLUSION

At the 1990 Australian and South Pacific External Studies Association conference, instructional designers from many different institutions produced a series of metaphors to explain their perceptions of their roles. Images included a:

- chamelon - a creature that changes its appearance to fit best with its surroundings
- civil engineer - who when consulted, seeks to define the problem and use professional expertise to devise solutions
- joint venturer - fellow traveller along the way assisting the lecturer with directions and arriving at destination
- professional irritant - asks necessary but sometimes unwelcome questions about teaching and learning.

In this paper the authors have focussed on staff development and presented a model of the role of the instructional designer at CSU; and however one views the work of instructional designers, the authors believe that if CSU is to respond to the distance and open learning challenges of the 90s, to the importance of staff development and quality assurance issues, and to the new era of the Open Learning Agency of Australia, then this model will be of increasing relevance.

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Communication Strategies for Reducing the Isolation Factor and Enhancing the Learning Process in Distance Education

Lee Purches
Field Educator in Social Welfare
Charles Sturt University

This paper was presented to the National Conference of the Australian Association of Social Work and Welfare Educators (AASWWE) Workshop: *Challenges of Distance Education* at the University of NSW, Sydney on Friday, 2 October 1992

INTRODUCTION

Distance Education and the Communication Challenge

Distance education implies that the student and the learning institution are separated in some way. The teaching methods employed in distance education vary from the normal face-to-face teaching of internal courses. At Charles Sturt University-Riverina (CSU-R), students enrolling in Social Work and Social Welfare potentially come from every Australian State - as far north as Jabiru in the Northern Territory, west to Perth in Western Australia, and south to Tasmania. During 1992, an overseas student from Malaysia studied Welfare . Whether distance education students are living locally in Wagga Wagga, or are located a long way from the institution, opportunities for interaction with both teachers and other students are limited. These students all experience some degree of isolation, which has the potential to inhibit the learning process, or even hinder progress through the course. Reducing the degree of isolation for students, and optimising their learning experience is a major challenge for distance educators.

The disciplines of Social Work and Social Welfare at CSU-R are taught within the School of Humanities and Social Sciences. The two courses are run independently, while sharing a common field education office. Despite the obvious differences between the two disciplines there is a need for maintaining a high level of interaction with students. There are both similarities and differences in how the communication challenges are met in distance education.

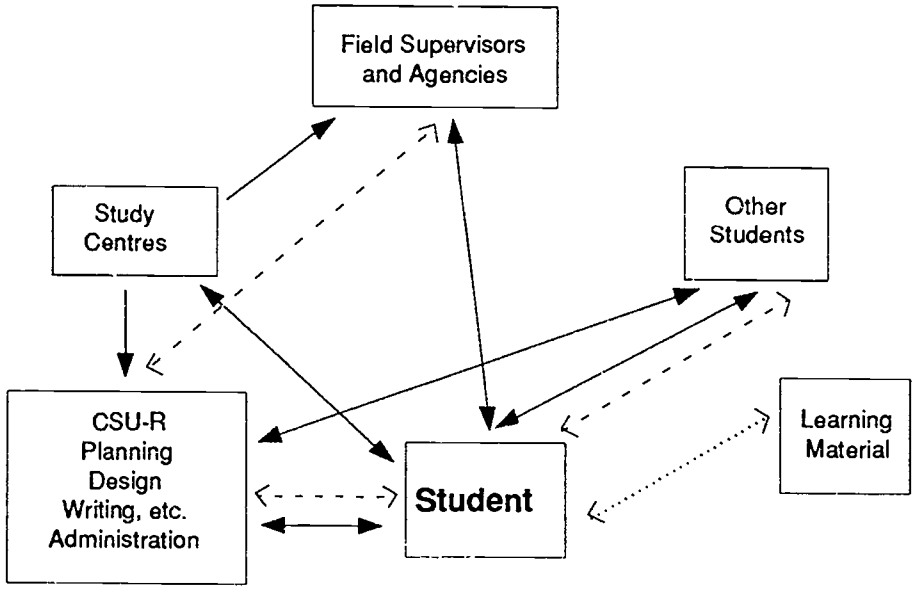
I will present an overview of some of the communication strategies currently being used at CSU-R for reducing the isolation factor in the Social Work and Social Welfare courses. A broad range of communication techniques will be outlined, from face-to-face strategies to more indirect methods. Fook et al (1991: 178) point out that distance education is beginning to force educators *"to utilise new technologies, or old technologies in new ways."* This is indeed a challenge!

Recent developments in technology are becoming available to educators in Social Work and Welfare such as, teleconferencing, videoconferencing, and ASPEN system (Voice Mail). These technological strategies provide a variety of techniques for facilitating interactive communication in the learning process for distance students. It is also important to highlight the need to be able to utilise such technology effectively, and in a manner that will provide maximum benefit to the student (just as for the vision-impaired elderly women's group outlined by Regan, S. (1992: 2).

The following framework is useful for examining the complex pattern of interactions available in distance education. I have attempted to adapt these to those interactions which occur in Social Work and Welfare distance education courses. (See Figure 1)

Figure 1

PATTERNS OF INTERACTION IN SOCIAL WORK AND SOCIAL WELFARE DISTANCE EDUCATION COURSES AT CHARLES STURT UNIVERSITY-RIVERINA



Category 1 <.....> Interactions between student and learning materials	Category 2 <---> Direct, interpersonal communication	Category 3 <- - -> Indirect interactions use communication technology to alleviate distance
Student interaction with the study material (Written, Audio, Video, Slides, etc.)	Residential schools Direct phone calls Personal visits Teleconferences Videoconferences Study groups and student networks	Written correspondence Facsimile ASPEN (Voice Mail) Audio/Video tapes Electronic mail

INTERACTIONS WITH THE LEARNING MATERIAL

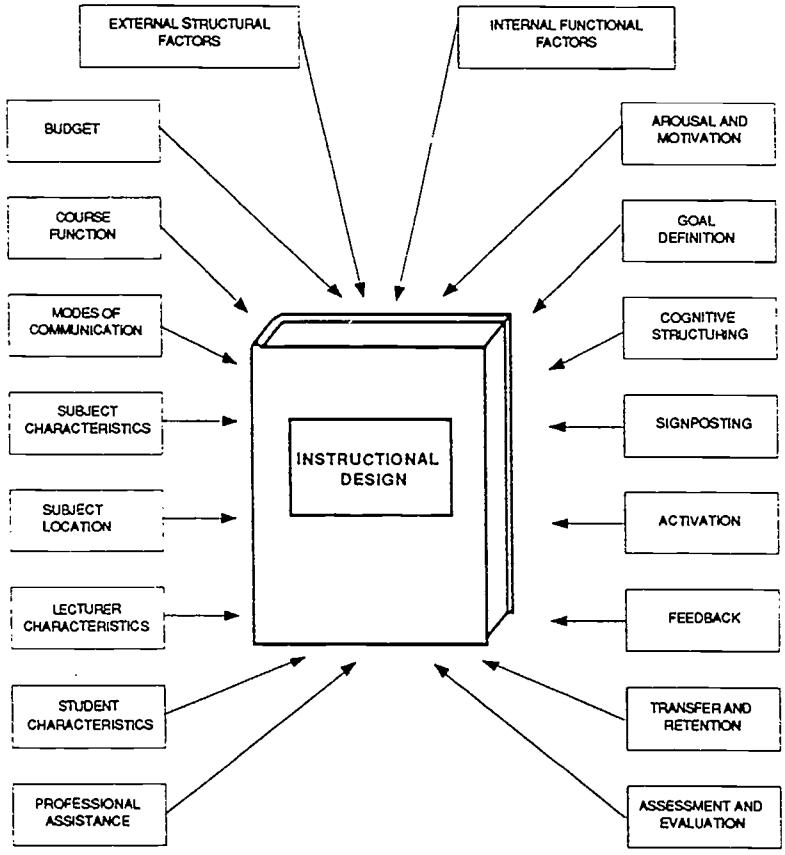
Learning materials may constitute written packages, photographs, audio and video cassettes, case studies and study guides so that the student has access to a range of possible interactions.

Fook et al (1991) argue that course material in distance education must take a high priority, and that there needs to be an adequate infrastructure to produce this material at a high standard. This infrastructure includes the relevant technology, administration and support structures. At CSU-R, we are lucky to have as a resource the Open Learning Institute. Instructional Designers are employed in each school to assist academics in the task of producing course material.

The quality of written material is vital for effective distance education, and many factors determine the level of effectiveness. Meacham and Evans (1989: 3) provide a comprehensive diagram of the "Considerations for Distance Education Materials", which they have adapted from the works of Gagne and Baath. Adherence to these considerations is likely to minimise the feeling of isolation that students often experience as they work their way through their external packages.

Figure 2

Outline Model of Major Design
Considerations for Distance Education Materials



(adapted from the works of Gagné and Bååth)

Reference:

Meacham, D. and Evans, D. (1989) *Distance Education: The Design of Study Material.* Australia: Charles Sturt University - Distance Education Centre, 5th Ed; 1989.

However, the Social Work and Welfare disciplines are people-oriented, requiring well developed interpersonal skills. These skills are difficult to teach solely through interaction with the written course material. There are a range of other communication strategies that have potential to recreate the interpersonal contact that is afforded to internal students in these disciplines. Hence, it is the Category 2 & 3 Interactions in Figure 1 which require closer inspection in this paper.

DIRECT INTERACTIONS

Direct interactions take place between teaching staff and students; student to student; student to field supervisor; and field supervisor to teaching staff. These interactions are at an interpersonal level and feedback is immediate once the contact is made. Interactions take place in a variety of ways in both the Social Welfare and Social Work courses.

1. Residential Schools (Face-to-Face Contact)

Residential schools are familiar to most readers so I do not intend to provide a descriptive account of this distance education strategy.

However, it must be noted that at this time of economic rationalism, there has been considerable debate recently about the pro's and con's of residential schools. There are increasing demands being placed on academics to justify the inclusion of compulsory residential schools into subject or course requirements. It has been argued that residential schools are expensive to run, very costly to students who attend (especially for those travelling from interstate), and that there may be alternative strategies for achieving the same end.

Professional bodies would argue the necessity for residential schools as a bare minimum for specific professional standards. It would be safe to say that academics involved in the teaching of Social Work and Social Welfare courses at CSU-R also put great value on the necessity for residential schools, especially in practice-oriented subjects. Hence, a great deal of planning goes into making residential schools worthwhile, both for the students who have made considerable sacrifices to attend, and for the teaching staff in meeting objectives that are related to facilitating the learning process for the students.

Brackenreg and Allen (June 1992) have compiled a list of possible functions that residential schools may have. They point out that this list is not exhaustive but suggest there are several benefits to both students and teachers:

- Networking with other students
- Identification with the campus from which the student will graduate
- Access to campus resources
- Enhancement of self-esteem through peer interaction
- Access to a "rite of passage"
- Identification with the student culture
- The "retreat" effect
- Motivation to continue the course
- Oral skill development
- Lecturer responsibility and rapport with students
- Learning "the system"
- Academic clarification of learning material

(Brackenreg & Allen, June 1992: 28)

Donnan (1992: 33) suggests that Brackenreg and Allen affirm the *"human and educational values* (of residential schools) *at a time when the authors perceive them to be assailed by powerful economic and technological forces which are setting the agenda in distance education institutions"*.

Interestingly, the arguments against residential schools are often couched in terms of equity and access along with the educational rationale such as that presented by Eiseman and Mahoney (1992). However, in the Social Work and Welfare courses that are taught by distance education at CSU-R, residential schools have been found to be useful for teachers and students in a number of essential areas, in addition to those outlined by Brackenreg and Allen:

Teachers:	Students:
Teaching and clarifying difficult theoretical concepts. Exploring attitudes and value issues. Intensive teaching and assessment of interpersonal/groupwork/community work skills, etc. Personal interviews to get to know students, discussion of field placement arrangements, developing workplans and contracts, etc. Opening up the communication channels and facilitating two-way communication.	Get to know lecturers and field educators personally before going on placement. Chance to air grievances (strength in numbers). Gauge their own progress through the course against that of other students. Participation in discussions, tutorials, case studies, which increases the understanding of the subject material. Experience constructive feedback from others on skills development.

As distance educators in Social Work and Welfare it is important to maintain at least a minimal level of direct interpersonal interaction with students, and a vital strategy would appear to be the face-to-face contact gained through residential schools.

2. Direct Phone Calls

As has already been pointed out, Social Work and Welfare are disciplines that require a lot of interpersonal contact and feedback. The telephone is in constant use, and staff at CSU-R who are involved in subjects which have field components have direct STD lines. Students are provided with the normal information as to consultation times, but some staff also find that it is necessary to give out home telephone numbers, especially while students are on field placements. This system is not often abused by students, who generally only make use of this facility if they have a pressing matter or have not been able to make contact at other times. Regular telephone follow up is also made to both students and field supervisors during the course of the practicum.

3. Personal Visits

Personal visits include those made to the student on field placements and also those where the student may make a special trip to the University to see the lecturer or use the resources at the University. Personal visits to the institution tend to be more common for those students who are in closer proximity, and lecturers welcome this contact.

4. Teleconferences

A teleconference is a *"two-way voice communication between two or more groups, or three or more individuals who are remote from one another and are using a telecommunication medium"*. (Burge et al, 1988: 1) At CSU-R teleconferences are used in a number of ways: with student and field supervisor to review progress while on placement, tutorials or seminars with groups of students; and information sessions or workshops with field supervisors. In the Social Welfare course we have found teleconferences useful for resolving difficulties that may arise while students are on placement. Indeed it is a useful communication strategy to try before having to make an urgent visit interstate.

Effective groupwork skills are an obvious advantage but need to be adapted to this medium. Much of the literature on teleconferences highlights their cost-effective aspect and relative convenience. Most students will be able to gain access to a telephone if arranged in advance.

There are important technical and organisational considerations for optimising the use of teleconferences. It is essential for both teachers and students to understand their role in the teleconference, and what contribution is required of them and the protocol to be followed. It is also a good idea for participants to understand the actual processes involved in the use of the technology. This can help to minimise complications.

Regan (1992: 11) has highlighted the impact of this sort of technology for participants, and the technical difficulties that can be encountered during teleconferences. When connections are not clear, some participants might feel disadvantaged. Sometimes lines drop out and the whole group has to be reconnected, causing frustration for the participants and conference leader, and possibly losing track of the theme or issues being discussed. Rothe (1985: 202) points out that *"disconnections, faulty speakers, line interference, and poor installations have proven to be major obstacles in the quality of interaction"*. He suggests further that the *"reliability of the audio teleconference design is a major factor in the learners' active and satisfactory participation"*. (Rothe: 202)

In terms of interaction, teleconferences do not replace face-to-face contact. What is missing from the teleconference is visual information. (Rothe, 1985: 200). For teleconferences to be effective there needs to be a lot of preparation, a clear agenda, and fairly directive approach from the leader, at least at the beginning of the teleconference. I have been involved with co-leading teleconference tutorials with groups of students during 1992. Co-leadership appears to have several advantages. Teleconferences are a stimulating experience, but can be very draining. For example, the lack of non-verbal feedback requires a great deal of concentration on what is being said, and on discerning the *"auditory non-verbal cues"* such as pitch, intonation, inflections, etc. (Robinson: 1985). Co-leadership helps to reduce the impact of this factor. This approach provides an opportunity to share the task and maintenance functions of the group, and the interchanging of these functions during the course of the teleconference.

The practical experience gained by students in the use of this technological medium has the added advantage of opening up the range of welfare and social work strategies for them as they take up their professions. In particular, teleconferencing has enormous potential for providing extended services to clients in the more isolated rural areas.

Teleconferences are not meant to be a substitute for face-to-face interactions; rather, this technological medium provides staff at CSU-R with a number of strategies for developing communication links, reducing the isolation of both students and supervisors, and broadening the learning experience of the distance education student. It is an important communication strategy which has flexibility, and the potential to be further developed.

5. Videoconferences

Videoconferencing has been recently introduced at Charles Sturt University. To date this technology has mostly been used to conduct cross-campus consultations, meetings, faculty and discipline discussions. However, academic staff are actively being encouraged to consider ways of utilising this available technology and incorporating it into their distance education teaching programs. The Open Learning Institute of CSU has been conducting workshops aimed at helping staff become familiar with the use and potential of this teaching medium.

Videoconferencing is an interactive medium requiring a low energy approach in terms of body language, but at the same time facilitates participation. While appearing to be initially daunting, this medium generally only requires adaptation of old teaching competencies to meet the needs of the new medium. (Meacham and Pearce, 1992).

Nevertheless, some practice may be required to make this a worthwhile teaching tool. Meacham and Pearce (1992: 22-33) give several hints that can help make the presentation effective, eg. look at the camera, use individual focus buttons, personalise the communication to prevent distancing participants, keep a list and map of participants in front of you, keep in touch with your live audience as well as the video audience, involve the learners, avoid letting distance making you "remote", plan for the unexpected technological problems.

Meacham and Pearce outline twelve examples of possible Interactive Techniques for Videoconferencing: Role Play; Celebrity Guest, Case Study; Tandem Teaching; Brainstorming; Groupwork Session; Panel Discussion; Buzz Group, Reactor Panel; Interview; Lecture; Question and Answer. (Meacham and Pearce, 1992: 11-22) There is also potential to include debates, report presentations, demonstrations, hypotheticals, and group discussions.

An interesting example of the use of videoconferencing that incorporated a practical component, was the recent use of the University Centre in Sydney for a music master class for students at the Conservatorium in Sydney and University of New England. This master class included musical performances by students and feedback by the guest overseas musician who was visiting Armidale. (Billboard, 1(6), 1992: 2)

However, there may be limitations to the effectiveness of this medium, and some important issues for consideration in the use of this technology in Social Welfare and Social Work courses are:

- Essentially the technology needs to be in top working order. Deficiencies in sound and picture will severely detract from the benefits of running such a session.

- The content of the teaching program in the videoconference should offer more than the effective written material can provide. For example, a straight lecture could easily be read in the course notes, and would not be an efficient or effective use of the medium for either the teacher or the student.

- Videoconferencing has potential to replace some residential school strategies for subjects which do not have an interpersonal skills component. For instance, a student in Jabiru might only have to travel to Darwin, rather than at great expense to Wagga Wagga. The facilities will need to be available in all the capital and provincial cities, but isolated students may still not have easy access to the videoconference facilities. If this medium is to be utilised as a teaching strategy, then equity issues should be addressed.

Videoconferences have a great deal of potential as a teaching medium; however, there are obvious limitations to their use, and to date it would appear that the technology itself cannot fully replace the two-way communication necessary in the learning experience in Social Work or Social Welfare disciplines.

6. Study Groups and Student Networks

Both study groups and student networks are actively encouraged because of the potential they have for reducing isolation, and for providing some of the benefits of student contact that are enjoyed by on-campus students.

Study Groups can be formed where there are a number of students in a particular geographical location and where students find they have a common bond. These groups can take various forms depending on the needs and preferences of the students. For example, they have been found to take the form of discussion groups; forums for reviewing progress; presentation and discussion of summaries on written material/articles; a sharing group, eg., literature searches and resources; social get-together; and peer support groups (such as one formed by Social Work students in Wagga Wagga).

Student networks often develop informally at residential school. We also provide students with the opportunity to have contact information circulated to other students if they wish. This year we had a Welfare student in the Northern Territory who has kept regular contact with a student in Northern Victoria, and a student in Malaysia has been corresponding with a student who is on campus in Wagga Wagga. Social Work students can utilise the ASPEN system at CSU to develop their networks with other students. This technology is discussed later.

INDIRECT INTERACTIONS

This category focuses on the more indirect forms of communication that are used at CSU-R to reduce the effects of distance. This type of communication does not involve the same degree of non-verbal and paralinguistic features as in Direct Interactions.

1. Written Correspondence and Facsimiles

Formal correspondence is still an important means of communication to distance education students. Students might sometimes be sent additional reading material, submit assignments, or can receive general written feedback on assignments.

The "FAX" has revolutionised written communication, and the feedback process for distance education in Social Work and Welfare. For example, in the Social Welfare course, students undertaking community work field placements, are required to submit draft contracts and workplans of their specific projects as part of a competency process, before the final copy is submitted for marking. Many of the distance education students make use of the FAX for this purpose. During their placements, students might also FAX a draft questionnaire, or the program for a particular community consultation that they have organised. We can then talk to them over the telephone, and provide more immediate written feedback.

2. Voice Mail (ASPEN)

This technology is a very exciting development that has lots of potential for reducing the isolation experienced by students studying by distance education. CSU is currently trialing an innovative concept in voice communication (Voice Mail), and is the first university to use Voice Mail in relation to distance education. This technology utilises Telecom public telephone network, and **ASPEN** (Automatic **SP**eech **E**xchange **N**etwork). The Bachelor of Social Work course is currently participating in this trial and its evaluation.

The purpose of this trial project is stated as: "to evaluate the use of Voice Mail as a means of improving communication between lecturers and off-campus students, between university support staff and off-campus students and between off-campus students themselves". (Smith, 1992).

ASPEN is a system that records spoken messages, and enables participants to record, send, review, reply, and store messages at a time and place convenient to each party. The parties wishing to communicate do not have to be available at the same time as with a normal telephone conversation. ASPEN retains the convenience of the telephone and combines it with many of the features of telephone answering equipment and computer mail, to provide an easy-to-use sophisticated communications medium. (Davidson, 1991).

Students using ASPEN are able to:

- Send messages to academic and administrative staff and/or other students in the course.
- Receive messages and replies.
- Reply to messages received.
- File messages for future reference.
- Review or replay filed messages.

(Davidson, 1991)

In addition staff have the added facility to:

- Send a message to all members of a group simultaneously. This can be used for mini-tutorials, general comments/feedback on assignments, organisational messages, etc.
- Use ASPEN as an answering facility.

Some general features of ASPEN include:

- Users of ASPEN are allocated a private voice mailbox which is only accessible by their own private password.
- There is an 008 number and cost to the student is as for a local telephone call.
- 24 hour access to the system which means greater convenience.
- To utilise the ASPEN services, users must be able to transmit tone-dial sound pulses through the telephone. Telecom sponsored the replacement of hand sets for students for the trial period.
- Student users are encouraged to use ASPEN several times a week to check for calls. Staff would check their mailbox more regularly.
- ASPEN can be accessed from anywhere in Australia.

(Davidson, 1991)

Voice mail does not have asynchronous interaction, but boasts "substantial telepedagogical possibilities". (Donnan; 1992: 35). Surprisingly, despite its indirect nature, one of the attributes of ASPEN appears to be the increased immediacy compared to other types of interaction. While telephone calls provide direct

communication it may be days before people actually connect. Evaluation surveys of students have found that the ASPEN system has many positive attributes. For example:

- Savings in money, time and travel.
- Direct access to lecturers.
- Knowing the message has been received.
- Being able to clarify learning materials, assignments, etc.
- Being able to contact other students as an affordable option.
- To finalise residential school arrangements.
- Establishing study groups.
- Reduced sense of isolation, being able to hear voices had a supportive and motivational impact in many cases.

(Donnan, 1992: 37)

The teaching staff in Social Work have also identified many positives about the system. One interesting one is the replay feature. When the lecturer gives class feedback, or a mini-tutorial, students often find it helpful to play this over a couple of times. It is also felt that ASPEN reduces secretarial time required for answering the telephone, and students and staff can be easily contacted in off-peak time.

It would seem that ASPEN is particularly suited to the needs of distance education in both Social Work and Social Welfare disciplines. However, it is unlikely that the ASPEN system could be introduced universally across the University because of the costs involved. Hopefully, if there is selective allocation of this system, it will favour courses such as Social Work and Welfare, where there is a high level of interaction required.

3. Audio and Video Tapes

At this level of interaction this technology can be utilised for a number of purposes. For example, as a way of introducing staff, the subject, more personalised comments, assessment and feedback on student performance. Staff at CSU are currently looking at developing video technology further as a teaching tool to be utilised both on-campus and off-campus.

4. Electronic Mail (Computer Mail)

Currently, at CSU-R, this particular communication technology is not being utilised specifically in either Social Welfare or Social Work disciplines. It has been actively incorporated into computer courses and at some administrative levels. The possibilities for Social Work and Welfare need to be explored further, but there does seem to be limitations to its usefulness as a teaching tool in these areas. The communication technologies that are presently being utilised for enhancing interaction and reducing isolation factors would appear to be more relevant and effective, at this point in time. One limitation to universal adoption of this communication strategy is the need for students to have regular access to computers and modem connections.

CONCLUSION

At present, Social Work and Welfare staff at CSU-R are utilising a wide variety of communication strategies to reduce the isolation experienced by students who are studying from a distance, to enhance the learning process, and to recreate the interactive processes vital to education in these two areas. The two disciplines use both similar, and different processes, in the use of technology, and a variety of outcomes are achieved that suit the specific nature of each course.

It is important that communication strategies are not seen as competing mediums, but rather complementing each other. The essence is in the diversity of the strategies available to meet the challenges of distance education. Some areas of communication technology are still in their infancy, or are being trialed. Others beckon us with challenges that will hopefully be faced in the future.

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Modularization - Some Thoughts - Courtesy of David Merrill

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This paper has been written for CSU staff and other readers who are interested in CSU's experience of modularizing distance education materials so that they are appropriate for use in the context of open learning.

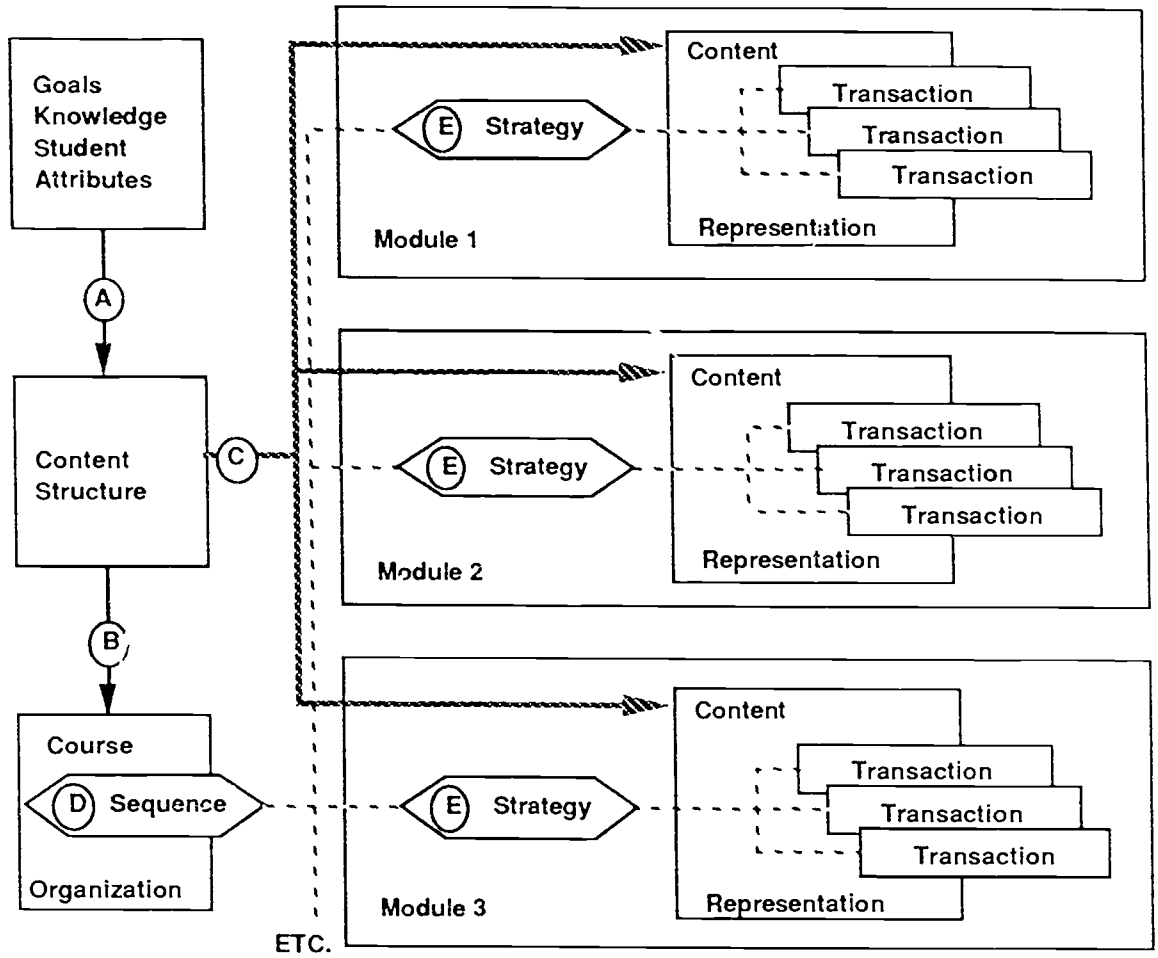
In the discussion of the approach known as 'modularization' in relation to the development of external learning materials the following definition has been offered:

> Modularization is a process of redefining and reorganising subjects in order to produce sections of work that have recognizable boundaries, objectives, content, self-assessment items, formal assessment, and, very importantly, information on the requirements - either formal or informal (prior knowledge and experience) - that are necessary to successfully complete the module. The context of the module - where it articulates with other modules and its contribution to a subject or subjects and course overall - is also a characteristic of a module.
>
> (Pearce and Wright , 1992: 22)

From the literature search undertaken during the preparation of the CSU modularization project proposal, the most fruitful representation of a modular structure is the one presented by David Merrill in the article in the September 1990 issue of *Educational Technology*. This article is one of a series which presents an extended conversation, or dialogue, carried on in the public arena by Robert Gagne and David Merrill as they compared their respective theoretical approaches. (Merrill, 1990: 36-42)

Figure 1

Components of an Instructional Design System



Source: *Educational Technology*, XXX, 9, p.37

This model sets out the underlying course or subject structure and its relationship to overall factors such as course goals, knowledge, student attributes, content, and course organisation. Three modular units are represented, but these more or less depend on the relationship between the modules and the subject, or course as a whole.

Modules are cohesive groupings of content which are to be distinguished from topics or frames. Modules are groupings of topics and they have a role in relation to the organisation of a subject as a whole. Division of subject content into modules can be somewhat arbitrary, but no more so than division of fields of knowledge into subjects.

Merrill's model shows division of subject content into lesser blocks which are intended to assist a student in coming to terms with all that a subject comprises. Merrill points out that each subject, or content area, needs to be presented according to its specific structure and methodology. The educator needs to adopt a strategy that will enable content structure to be effectively represented and indicate how content is to be handled by a student so that understandings and skills are gained.

Merrill's model is aimed at all forms of teaching. For the distance educator, however, there is a need to consider the relationship between what occurs in face to face teaching in the classroom, and how these transactions are translated into the distance education situation. In face to face teaching the content of a subject is, in fact, 'blocked'. Students aren't given 'the lot' at the start and told 'to get on with it'. An outline of a subject is normally presented at the outset to face to face students, and then the subject is normally presented in phases, or term week sequences. The time allocations and the cues provided in the lectures and tutorials indicate clearly the phases, so students have a perception of the intermediate goals which are to be achieved. The content is presented physically in sections. The lecturer monitors its presentation and adjusts this according to the perceived level of understanding and progress of the students. This is where a modular approach to the presentation of distance education materials can be of particular assistance to students. Using modules enables a subject to be blocked into cohesive units. These units can be organised so that they clearly set out the intermediate goals, whilst still keeping the overall subject objectives in view.

Once the cohesive units into which a subject can be divided are identified and their content determined, a real opportunity is provided to look at the modular unit structure in terms of its contribution to the teaching/learning approaches. Whilst overall subject aims and objectives need to be set, a module can be provided with its own specific, more detailed objectives, content structure, self-assessment material and, if appropriate, assignments. It is often appropriate to provide specific assessment for each module - as occurs already in many cases. However, where assessment requires the development of a background arising out of the study of more than one module, an assignment may not coincide with the module structure developed in such instances.

Some subjects may not be amenable to a modular unit approach; that is understood when one comes to examine the structure of a subject. However, even where such a structure does not appear to be amenable, circumstances can arise where a modular approach may need to be adopted. There is evidence from teaching research findings that presentation of materials in modular form is motivational. There is anecdotal evidence that blocking content into modules and linking resource readings with the modules, leads students to make better use of the resource material provided.

Merrill strongly supports the modular unit approach to the preparation and presentation of learning materials. He adopts two principles to support his approach which were first proposed by Ellen Gagne in 1985 in her book *The Cognitive Psychology of School Learning*. These approaches were termed 'organisation' and 'elaboration'.

- organisation during the learning of material aids in the later successful retrieval of information by students.

- elaboration generated at the time of learning new information can also facilitate retrieval.

Organisation refers to the structuring of content whereas *elaboration* refers to the explicit specification of relations among knowledge units.

The format of modular units is aimed at achieving better organisation, and is certainly intended to provide students with better maps showing where they have come from and where they are going.

Merrill's model emphasises the importance of 'instructional transactions' which assist in defining the active learning intended to take place. Merrill (1990: 2) defines an instructional transaction as:

> .... a mutual, dynamic, real-time, give-and-take between an instructional system and the student, in which there is an exchange of information.

Merrill describes 'instructional transactions' as 'patterns of learner interactions designed to enable a learner to acquire a certain kind of knowledge or skill'. Different kinds of knowledge and skill require different kinds of transactions.

In Merrill's model (1990: 38), in any given module a set of content is organised into some block for presentation to students:

- Strategy - answers the question

  'which transaction is next, and when do you shift?'

- Sequence - answers the question

  'which module is next, and when do you shift?'

Merrill makes the point that:

> Because we can't present everything at once, we must figure out a way to sequence the set of learning activities for a student.

Sequencing is accomplished via modules and the order of their presentation.

Transactions result from what is provided to the students to help them interface with the content represented in the knowledge base. In the case of distance education materials, for practical reasons we do present everything at once. It's not the way it's done in face to face teaching. Modularization is an attempt to alleviate this situation, and provide sub-blocks of material which focus the students on a body of content which is less in quantity than the materials for the subject as a whole. Success in handling this body of content leads forward into a succeeding body, and, hopefully, a growing grasp of the subject as a whole.

How do we apply ideas such as those of Merrill to the design of modules for external students?

First, we need to accept for external students the same approaches adopted in the case of internal students - based on Merrill's statement -

> We can't present everything at once.

It is helpful to have a basis for module construction.

Use of the Module Profile approach can help do three things:

- it can provide module information for the students
- it can help focus attention of preparers of subject materials on provision of all the elements which go to make up a module
- it can assist the process of developing 'learning transactions' which will work to the students' benefit.

A module profile format is set out in the appendix to this paper. It presents the means of defining what each module is to comprise.

Some of the problems which need to be addressed in relation to establishing a modular unit structure are as follows:

1. Subjects

Not all subjects lend themselves to being structured into modules. Yet, even those which may appear the most intractable are taught in sections in the face to face situations - whether these sections follow the format of a selected text, or the logical sequence of a presentation inherent in a subject. It is still the case that for all subjects, you cannot present everything at once. Subjects are structured so that there are succeeding stages of complexity. This is inevitable since as one reaches the more complex stages, the content moves closer to those ambiguities and uncertainties which link into the fringes of the most recent research or development, where the answers are not 'foregone conclusions'. You really do need to consider the actual circumstances, and look further at how students will respond to the way in which it is presented.

There is quite a deal of research (Posner, 1982) which has looked at student tasks, or transactions as lecturers conceive them, and the tasks as perceived or interpreted by students attempting to carry them out. The success of the student often depends on the knowledge and attributes brought to the tasks presented. A lecturer has to think carefully about the assumptions being made about student capabilities and potential perceptions. Decisions about the approaches to be adopted need to take into account students' perspectives and ability to correctly interpret requirements. This is so much more easily gauged in the face to face situation.

2. Assessment

Whilst it is desirable to set an assessment in relation to each modular unit, and in many cases this is already being done, in the case of some subjects this may not be feasible. If an assignment is the outcome of an accumulation over time of skills and understandings, such an assignment may not appropriately be set against a particular module. This will occur where the presentation of concepts or the development of principles is not linear.

However, it is possible to construct self-directed reviews and assessments for each module, and most lecturers who work in the modular format do this as a matter of course.

Such decisions are part of the process of working out how best to meet the needs of the presentation of content, of the development of student understandings, and of achieving a formal evaluation of student progress.

3. Choice of modular divisions

Merrill recognised the difficulty of doing this, and pointed out that even division of a field of knowledge into subjects is prone to be arbitrary. However, in discussion with subject coordinators, and in relation to classroom practices, most lecturers can identify cohesive blocks of content which could form the basis of modular units. Grouping of previously selected topics into modular structure occasionally provides some interesting new topic relationships. One lecturer who had undertaken modularization with my assistance came up with a quite radical restructuring of the subject being taught as a consequence of looking more closely at what had previously been a linear format based on the structure of the chapters of the textbook being used.

Certainly modules are not miniscule 'program learning frames'. They are convenient and appropriate groupings or 'chunks' of subject matter, set out in a form which will help provide students with a cohesive set of experiences that will assist comprehension and growing confidence in coming to terms with content and the necessary skill formation and understandings.

4. Presentation

By adopting a modular format it is possible to pay some explicit attention to how the content of the modular unit is presented. The learning transaction approach which Merrill supports does mean that close attention is paid to methods of presenting content and the assistance provided to aid concept formation. The physical presentation of subject materials has been the subject of considerable attention. Whilst cost is still a consideration, more amenable learning access is being provided by focussing on how a page is laid out, and what can be achieved with typography.

Modularization is not a panacea, nor is it, as some have thought, a subtle way of achieving rationalization of courses. As set out in the original project proposal, modularization is an attempt to improve the methods by which learning materials are developed and achieve greater flexibility and access. Control of the process is in the hands of those who prepare subject materials - the lecturers. Benefit to external students is equally in their hands. Merrill has no doubt about the benefits of the modular unit approach to the presentation of subject materials. I believe that more attention needs to be paid to what he has found in his research, and what benefits the approach he recommends has to offer distance educators.

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Module **Data Communications**

Module Relationship This is an optional module which students choose from a list of 8-9 modules. It is a content based module which reflects a specialised area of study that the student may have a particular interest in. It is aimed at the individual who has no background in tele/data communications other than that which is obtained in the course of daily living.

Value 50% of the subject

Length the equivalent of half of a session

Prerequisites It is expected that students studying this module will have the following knowledge and skills:

The ability to use a computer system confidently.
The ability to use a computer communications system to connect and send messages to a variety of destinations.

Expected Learning Outcomes

After successful completion of this project the student should be able to:

1. explain the environment in which business telecommunications operates
2. explain common telecommunications terminology
3. comprehend and describe many basic data communications theories
4. describe the common local area network topologies and layered protocols such as X.25 and IEEE802.3 (Ethernet) under TCP/IP and OSI.
5. comprehend the concept of a layered network architecture system according to the Open System Interconnection model (OSI).
6. use the OSI model to describe the relationship of the TCP/IP Internetworking Applications Protocols (TELNET, FTP), Gateway routing and levels of addressing when connecting node A in network 1 with node B in network 2.
7. identify the role of networking system software in co-ordinating and controlling the operation of the hardware, software elements and the processing of data within a computer network.
8. design and size a network for an application.
9. use software tools to create, manipulate and manage a microcomputer network.
10. give examples of the latest network services available in Australia.
11. comprehend concepts in telecommunications management and support.

Content

Objective	Specific Content	
1, 2	**PART ONE:**	
	Revision of the Business Telecommunications Environment	Chapters 1-4
	• Introduction to Telecommunications	Chapter 1
	• Telecommunications Applications	Chapter 2
	• Internal Influences on Telecommunications in the Enterprise	Chapter 3
	• External Influences on Telecommunications in the Enterprise	Chapter 4
	PART TWO	
	How Information is Communicated: The Technical Details	Chapters 5-13
2, 3,10	• Voice Communications	Chapter 5
2	• Data Terminals	Chapter 6
2, 3	• Coding and Digitising	Chapter 7
2, 3, 10	• Data Transmission and Modems	Chapter 8
2, 3	• Communications Circuits	Chapter 9
2, 3, 4	• Data Link Control Protocols	Chapter 10
2, 4, 5, 6, 10	• Communications Networks	Chapter 11
2, 4, 5, 6, 7	• Connecting the Circuit to the Computer	Chapter 12
2, 4, 5, 6, 10	• Telecommunications Architecture and Standards	Chapter 13
	PART THREE	
	Managing and Operating the Telecommunications Department	Chapters 14-16
2,7,9	• Telecommunications Management	Chapter 14
2,7,8,9	• Network Design and Implementation	Chapter 15
2,7,8,9	• Network Operations and Technical Support	Chapter 16

Resources Provided Study Guide/Notes/Readings

Learning Strategies A variety of learning strategies are provided as part of the preface to the study guide. Students may elect to follow one of these recommendations or use their own preferred style.

Assessment There are two components to the assessment for this module. Assignment work which consists of 2 assignments to be submitted during the course of the session worth 40% of the value of this module

and

An examination at the end of the session worth 60% of the value of this module.