

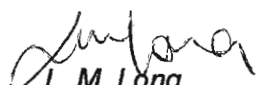
**FACTORS IN MEDIA SELECTION  
FOR QUALITY DISTANCE EDUCATION:  
A SURVEY OF ISSUES AND RECOMMENDATIONS FOR PRACTICE**

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Submitted in fulfilment of the requirements for the degree of Master of Education at the School of Education, Training and Development, University of Natal, Pietermaritzburg, South Africa

**DECLARATION**

*I declare that this dissertation is my own original work, except where indicated otherwise.*

  
L. M. Long  
July 2000

## **ABSTRACT**

*This dissertation examines the contribution that media make in quality distance education and seeks explanations for poor media selection processes.*

*Distance education is viewed in policy documents as playing a crucial role in the development of South Africa and the provision of a wide range of education opportunities through distance methods has increased rapidly. There are however grave concerns about the quality of much of this provision. This reflects global disappointment where many technology-based educational operations failing to meet expectations.*

*In Part One, the study scrutinises the role of media in distance education and concludes that conceptually and in practice, technology is indeed viewed as a crucial component of distance provision and consequently decision around the selection and usage of media will be significant in quality distance education. Thereafter the study analyses possible reasons for poor media choices, highlighting aspects such as over-enthusiastic beliefs in technology, a neglect of educational issues and an under theorised approach. Given that there has been considerable research activity into media usage, the study then examines why previous research has not been influential in media decisions, concluding that the research is conceptually flawed and overly crude.*

*Having identified and discussed bad practice, Part Two moves into the positive and identifies basic principles in making better choices (such as examining our own beliefs, reconceptualising the relationship between education and technology and mobilising team approaches). Developing more sophisticated understandings of education and technology and the ways in which these can be utilised forms the bulk of this section and includes a focus on current notions of quality education. Rather than concluding with strong recommendations, two specific areas for consideration - convergence and media combinations- are suggested.*

## **ACKNOWLEDGEMENTS AND THANKS**

*I am grateful for the patience and understanding of my family – my husband Tim and my parents – when this thesis seemed to go on forever. Their positive expectation that it would be completed kept me returning to it when it was the last thing I wanted to do, while the addition of our two daughters to the family reminded me that life exists outside academia too!*

*Although the work demands of the School of Education, UNP were a significant factor in the delays in this study, I nevertheless value the vibrancy of my work context, which shaped many of the perspectives in this dissertation, and acknowledge the inspiration of my colleagues who tackle the pressing educational issues of our context with courage and commitment.*

*I am appreciative of the support of my supervisors, Prof John Aitcheson initially and then Prof Ben Parker, and for their faith in allowing me a great deal of independence to complete this work in my own way while still sharing their experience and wisdom.*

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## **BACKGROUND TO THE STUDY**

This dissertation focuses on the selection of media for higher education purposes and the understandings necessary in order that effective choices be made. This may seem an unlikely area of interest for an academic at a mainstream contact university. However, my home institution, the University of Natal, is facing precisely the dilemmas outlined in this study. It is at tertiary level that some of the fiercest debates around radical change are raging. The higher education sector, at once seen as essential for South Africa's emergence into the hurly-burly of modern competition but also highly vulnerable to charges of elitism and irrelevance, faces increasing pressures to deal with massification on ever shrinking budgets with increasing demands for accountability and excellence. The University of Natal as a relatively small university, run on fairly traditional lines, seeks to serve a region with a high education-age population, one of the worst apartheid-era educational resourcing records and which is still plagued by ongoing violence and political infighting. Financially, the university has to deal with pragmatic realities such as falling numbers in the university's traditional student base (white middle-class school leavers), government subsidy cuts to "traditionally advantaged universities" and ever increasing bills for financial aid to disadvantaged students. The accreditation pressures and quality assurance mechanisms inherent in the National Qualifications Framework, together with a genuine and longstanding commitment to the educational needs of its constituents, has led the University of Natal to investigate any possible ways of responding to these pressures. It is not surprising that they, along with other traditional providers of education, are increasingly turning to distance education methods in their quest to find solutions to some of the educational problems they are currently facing.

Thus a committee under the direction of a campus vice-principal, was appointed in 1996 to investigate the area of open and distance learning and to initiate university activities in this sector. It recommended that the university pursue the open and distance learning option with vigour, both as a response to massification and in order to develop niche markets. However, the university is clearly operating outside of its traditional expertise base, with only a few isolated individuals with experience and understanding of the ramifications of these types of endeavours. Only a small number of departments, Schools or units in the university have ventured into the distance, flexible or dual-mode provision arena (usually with singular success, it should be noted). While academic inertia might account for some of this reticence,



what seems to restrain many are genuine concerns over maintaining the quality of what is offered. This insecurity is particularly intense around the issue of the use of technology in off-campus provision. The university as a whole may be feeling the need to move into previously distance methods but equally there are widespread fears of an inability to make sensible decisions around the technology to be used. Thus, the answer to “how can we make quality media choices?” has direct applicability to everyday working lives at this institution and it was against this backdrop that this study was initiated.

In the early days of this research, I embarked on a comparative case study approach, being sure that somewhere out there was an institution just like ours on which we could model ourselves, and whose technology choices we could mimic. Being fully aware of our inexperience, we wanted to learn from others' mistakes, and to have the way forward made extremely clear. This proved to be a foolish and fruitless search. Instead I found the kind of dissatisfactions and problems discussed in the first four chapters of this dissertation. What formulae, models and advice did exist were highly contested and suspect, and the amount of technical information thrust at one whenever the word “technology” appeared was enough to make any self-respecting academic head back to the ivory tower! It was at this point that the unlikelihood of finding simple answers became clear. It also gradually became clear that what this institution needed was not directives about which media to pick, but rather that we, as designers, educators and managers needed to become more informed about how to manage the process of media selection and the structuring of technology enhanced learning. This has become the focus of this dissertation.

There will be those at the university who will be disappointed that this study has not provided a 'shopping list', or arrived at a definitive risk-free answer to the problem of which medium to use for quality education. That would indeed be a dangerously simple solution. What is offered is much harder to work with, and to implement but might help those prepared to exert the time to considering at some depth the range of issues raised.

## A NOTE ABOUT TERMINOLOGY

It is customary in a dissertation to have a section, usually a chapter or two into the text, devoted to defining the various terms and concepts central to the study.

I have rather tried to insert such discussion at natural points where each term appears in the central narrative, rather than gather all definitions into one section. Discussing terminology in the body of the discussion in which it occurs will, I hope, provide a more immediate contextualisation as well as usefully clarifying the discussion and issues around it.

There is a particular set of terms though which is so fraught with confusion that even the title of this dissertation caused concern., and if I was to define these terms at the place where they naturally occur, it would have to be on the very first page. The terms are of course '**media**' (or medium') and '**technology**'. Because there is a great deal of confusion about these terms, and because of their importance to the study, I did not wish to interrupt the flow of narrative of the main text for such a discussion. Instead I will briefly deal with the issue here. (Section 6.2 also deals with understandings of technology in more detail)

Not surprisingly there are numerous definitions of the two terms and attempts to explain the difference. The problem is that most of the writers arrive at contradictory conclusions. What one writer calls a medium, another calls technology. In one context, inserting a video cassette into a VCR and watching the resulting moving images is called learning through the 'medium' of television, at other times described as using video technologies and still others would call it the audio-visual 'mode'. What some writers call 'mediated learning' others call 'technology enhanced learning'. Even within the same document, a degree of contradiction and overlap occurs.

The Oxford Dictionary (as cited in the TELI report 1996) defines a medium as "the means by which something is communicated" which sounds fairly straightforward and indeed the examples they provide seem to confirm this : "the medium of sound", the medium of television". On deeper thought however, one can see that 'sound' and 'television' are not the same species at all. Sound is a particular form of sensory stimulus, akin to sight, or smell. Television is a mechanical invention which sends light patterns in a unique way so that they

resemble images and sounds - a channel of communication certainly but which utilises another medium (that of sound and indeed of sight) to get its message across – so which is the medium? Bates (1991) provides a useful definition of a medium as “a generic form of communication associated with a particular way of representing knowledge.” (34) Perhaps sound is a medium but television is a technology then?

Technology is often defined as the application of science through the use of tools and encompasses a range of tools far beyond communications and media – flints and axes, hydraulics, the sewing machine. This makes it a very broad field and so qualifiers of some kind are usually attached to the word technology in order to narrow the definition – thus ‘educational technologies’, ‘communications technologies’ or for that matter, ‘water purification technologies’. The one which the TELI report chooses to use most frequently is “delivery” technologies (although this is not consistent either) i.e. tools which deliver the messages communicated through a particular medium, one guesses (as a definition is not provided). The example given is that of the ‘medium’ of video (or should that be the medium of ‘audio-visual motion’ in terms of Bates’ definition?) which can be delivered by a variety of different technologies such as broadcast television, satellite, cable or video cassette. This seems fairly clear-cut until one considers that what is termed the ‘medium’ of video can also be used to deliver message using other media such as the talking head teacher, graphics and so on. This approach to defining a technology as a delivery too for a medium also seems to not accommodate those media or technologies which are interactive such as the telephone or the computer.

Much ‘media’ research has tested one medium against another, say a live teacher versus a broadcast of that same teacher. This is clearly a confusion of terms because in the case of the talking teacher, the medium of speech and the medium of motion is being used, while the broadcast is merely the delivery technology. (Clarke, the most prominent writer on media comparison is insistent that it is the ‘box’ and the broadcast which constitutes the medium, everything else is ‘method’). But what if the television programme was a more appropriate use of the ‘medium’s capabilities and utilised real footage of action, interviews, mood music and so on. Would it then qualify as a distinct medium? But regardless of the answer, in both instances, the phenomenon would be called “television”, which also refers to the box where the image and sound are displayed.

The newer computer-based technologies also raise interesting points to further muddy the waters. The medium which forms such as email or conferencing use primarily is text i.e. the written word or as it is often confusingly referred to 'print' (which is, in terms of the definition discussed so far, actually only the delivery technology for certain paper based versions of text). This text however uses two other media to communicate its message ; that of visual ( we see the text markings) and simulated audio (we hear the words said in our heads as we decode the text markings). Furthermore, text or writing is certainly the product of the application of science (or knowledge) to create a useful tool, and thus also fulfils the definition requirements of a technology.

Educators (as opposed to distance education theorists or educational technologists) often seem to think that 'technology' is a more modern word for 'media' and will thus talk about 'the medium of radio' but 'computer based technology'. While this has no theoretical basis, it is very common.

Some writers seem to use 'media' when they want to refer to a particular type of communication (video or television, or text or live audio) and 'technology' when they want to refer to the generic phenomenon of a technical intervention in communication as in, for example, 'technology has a great deal to offer education'. This however is completely the inverse of Bates' definition and of the TELI division of media and technology where the medium is a broad category ( the TELI report only lists 4 : face-to-face, text, audio and visual) and the technology is much more specific such as CD-Rom, radio or telephone. The problem is that many of the people involved in distance education or in using technology for educational purposes have not read Bates definition and would not be bound by it if they had!

Perhaps then 'technology' refers to the equipment that manages the mediated message? Certainly running one's eye down the list of "technologies for delivery' in the TELI report would confirm this as they are all "things" – cassettes, computers, telephone. But TELI report, in common with in other writers (Seligman 1992) defines a technology as being far more than the "part which plugs into the wall". Technology is not defined anywhere as the **product** of applying science to a problem, but rather the **process**, "the application of" knowledge (SAIDE-Audit 1996:56). Technology is seen as including the interrelated processes which comprise

education such as outcomes, student support, assessment strategies and so on. This concept is discussed more fully in the main part of this dissertation but what is important in this note about terminology is that this broad definition is certainly not what most writers have in mind when they use the word 'technology' or 'technologies'. Some may be thinking of ways of using the medium as well as the actual equipment when they talk about 'communications technologies' but mostly they are referring to the recognisable package of activities, planning and experiences which constitute using that particular tool, or technology. This may not be theoretically correct in terms of various definitions, but that is how the terms are used in much writing.

The point which comes out of this discussion is that that writers seem to use the terms 'media' and 'technology' based on their own understandings, their own customary usage and indeed their own background field ( computer based professionals always seem to use 'technology' while educators and those in development fields more often prefer 'media'). Even those who sit down to sort out the confusion can't agree and sometimes end up contradicting themselves. It thus seemed foolish for me to arbitrarily pick a particular meaning for the terms and use them in that sense in this dissertation when a good proportion of the writers I would be citing would probably be using the term in quite a different way. This would be confusing in the extreme. Thus I have followed the pattern of much of the literature in distance education and **used the terms 'media' and 'technology' interchangeably**, unless it is quite clear from the context that one or other was a more precise choice. A further motivation for this decision was that this dissertation is about making media choices (or should that be technology choices?) easier and more effective for practitioners and providers, and endless arguments about the semantics of what terms **should** mean (even if that's not how they seen in common usage) seemed to distract from what is really important, which is the learning experience of the students.

## **NOTE ABOUT REFERENCING**

I have followed the author-date text citation and reference list rules as laid out in the University of Chicago Manual of Style, as recommended by the School of Education, University of Natal.

One of the principles this system follows is that referencing must be as clear as possible and must provide the reader with relevant identifying information about a particular source. Several of the official documents (audits, ministerial reports and so on) I cite frequently emanate from the same organisations (SAIDE and the Department of Education) and were published in the same year (1996) or very close (1995) but are in fact very different documents. Knowing which particular document is being referred to in the citation helps to understand and contextualise the quote at the time of reading. The more traditional academic convention of '1996a' or '1996b' would not have this immediacy and would have necessitated much flipping back to the list of references which would have been irritating. Thus I have chosen with these particular documents to add a clarifying tag to their in-text citation referencing thus :

- the Technology Enhanced Learning Initiative Report of the Ministerial sub-committee of the Department of Education is referenced as DoE-TELI 1996
- while the Quality Standards framework documents, published by the same committee in the same year is referenced as DoE-Quality Standards 1996

The various documents and reviews published by the South African Institute for Distance Education (SAIDE) are referenced as follows

- the 1995 report of the International Commission which surveyed distance provision in South Africa appears as SAIDE-International Commission 1995
- the 1996 National Audit of distance teacher education is referenced as SAIDE Audit 1996
- the 1996 report on the Educational Technology 2000 conference is cited as SAIDE-ET2000 1996

In all cases the full bibliographic details appear in the list of references at the end of the dissertation.

# **PART ONE**

## **CHAPTER 1 : DISTANCE PROVISION IN SOUTH AFRICA**

### **1.1 THE NEED FOR DISTANCE EDUCATION**

#### **Apartheid's Educational Legacy**

A democratic South Africa faces a morass of education problems as it emerges from the apartheid era. Education at all levels was both a battlefield and a victim under the previous regime and is now seen as pivotal in the reconstruction and development process. Demands include the redress of past imbalances in the face of increasing massification as previously deprived populations stream forward for education.

Apartheid education was characterised by poor resource allocation, suspect pedagogy and oppressive policies and practices, with an ongoing cycle of failure and exclusion.

Wallace (1995) highlights some of the statistics generated by this legacy : in the KwaZulu-Natal region

- 15 000 more teachers are urgently required to bring the pupils-teacher ratio down even to 40:1
- half of current teachers (and 80% of teachers of primary science) are non- or under-qualified
- nearly a third of rural schools only offer schooling up to grade 4 (age 9)
- and only 4% of rural black children reach secondary school, compared to a national average of less than 24% (345)

Looking beyond the numbers, apartheid's legacy is also found in the narrow, authoritarian education dispensation dominated by rote learning and characterised by syllabuses which are fragmented, content driven and distant from learners' everyday experience. Very few teachers probe for understanding or engage in meaningful exploratory discussion, and student initiated questions are strikingly absent in many classrooms (Department of Education (DoE)-TELI 1996: 31).

In 1994 the then Minister of Education, Prof. Sibusiso Bengu, sounded a clear call for immediate change : "Our message is that education and training must change. It cannot be

'business as usual' in our school, colleges, technikons, and universities" (Government of National Unity 1995). The White Paper on Education and Training in 1995 called for a completely fresh approach to the provision of learning opportunities (GNU 1995).

### **Policy Development**

Wiechers (1996) comments that never in our history have we seen such an abundance of planning documents and observes that rhetorically at least reform is being undertaken at an astounding pace. Taking the form of a plethora of policy and planning documents, there has been a firm and consistent move towards measurable change in four key areas : establishing equity, access, redress and quality (DoE -TELI 1996 :11).<sup>1</sup>

The goals, values and principles for the new education and training system which have emerged in these policy framework documents have been summed up as follows :

- redressing imbalances of the past through the implementation of new teaching and learning strategies for the effective and flexible delivery of services within various learning contexts and through the equitable distribution of technological and other resources.
- implementing learner centred and outcomes-based approaches to education and training in order to achieve quality learning based on recognised national standards
- developing a problem-solving and creative environment in which new technologies are harnessed to produce knowledge, products and services

(DoE-TELI 1996:11).

There is a need to put right the wrongs of the past, whether that be in resource provision or in conceptual aspects such as the curriculum. There is a call for open access or, at least, opening up access with its attendant need for financial aid, particularly at tertiary level: 'massification' is a call heard frequently with predictions of five-fold increases in numbers generated by the view of educational opportunities as a right for all. The entire system of qualifications and accreditations has been reviewed, culminating in the creation of a National Qualifications framework, and both the schooling and higher education sectors are in the process of reconfiguration. Balancing these calls for reconstruction is the attendant

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<sup>1</sup> Interestingly an UDUSA document in discussing the same concept of 4 framing pillars lists these as equity, democracy, development and efficiency", (in Lockett 1994:2) a significant variant on quality. This difference will be highlighted and discussed at greater length later.



focus on quality, arising out of the recognition that inferior 'gutter education' was used as a deliberate strategy to keep certain groupings trapped in their social, economic and political ghettos. Quality education is seen as essential in building an efficient, innovative and successful nation, able to contend with the complex challenges of early 21<sup>st</sup> century global living. Nevertheless, the difficulties of simultaneously achieving all of these goals - equity, access, redress as well as quality - are substantial with the danger of the development of an implicit hierarchy - redress and access first, quality later maybe. "The pursuit of redress of past imbalances may be at the expense of the level at which the educational product is delivered"(Webbstock 1997 :4).

The government of South Africa has through its various policy making bodies established a clear set of educational goals: the difficulty lies in how to implement them and bring them to fruition within a context of budgetary austerity and a fragile infrastructure and expertise base. The National Commission on Higher Education (NCHE) (1996) paints a gloomy picture of the potentially disastrous effects of simply overloading the current system without substantial innovation :

*"Moving to a massified higher education system without significant increases in resources, improvement in the quality of candidates from the school system, and radical change in the traditional modes of delivery will result in massively overcrowded residences and teaching facilities, increasing degrees of underpreparedness among new cohorts, a decline in the morale of academic staff, poor quality programmes and a fall in research quality"(64).*

The consequence of this, the report suggests, would be a complete loss of confidence by clients (students, employers and funders) in the products of higher education.

### **Distance Education as a strategy**

In the search for more powerful means of delivering education and training, many policy makers have turned to open learning and distance education.<sup>2</sup> A number of significant policy documents, discussed below, have identified the techniques and methods associated

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<sup>2</sup> Section 2.1 will discuss definitions of distance education more fully but for purposes of simple clarification at this point, a common sense description of distance education is provided by Perraton (1998) Distance education is the educational process in which a significant proportion of the teaching is conducted by someone removed in time and/or space from the learner. Open learning refers to those forms of provision where learners determine to varying degrees the entry requirements, curriculum structures, pacing requirements and so on. While open learning has in common with distance learning a flexibility with regard to learning formats, the two terms are not synonymous.

with distance education as having potential to provide "cost effective quality education at all levels to a larger segment of the population bypassing the barriers of remoteness, socio-economic background and gender"(Simpson et al 1995 : 465).

In 1995, a policy framework document for Education and Training emerged from the ANC policy development unit which stated :

*"The development of a well-designed and quality Distance Education system based on the principles of open learning is the only feasible approach to meeting the needs of the vast numbers of our people who were systematically deprived of educational opportunity in the past, while at the same time providing opportunities for the youth coming up through the educational system at present. It will allow people access to education and training and the ability to determine where, when, what and how they want to learn"(ANC –CEPD 1995 :78).*

This approach was reinforced by the White Paper on Education and Training issued by the Government in March 1995 which identified distance education as a crucial mechanism for change as well as instrumental in attaining the ideals of open and lifelong learning. Distance education methods (which were described as "including guided self-study and the appropriate use of a variety of media" (GNU 1995:18)) were commended as appropriate and cost effective in a wide range of educational settings.

The NCHE (whose recommendations formed the basis for the Green Paper on Higher Education issued in December 1996) identified the following as a key challenge for higher education:

*"to enhance the quality of higher education programmes and to improve success and through-put rates. This challenge must be met in the interest of greatly increased access to a wide variety of students at varying entry levels and within a higher education budget that increases significantly slower than enrolments rise" (NCHE 1996: 118).*

The Commission expressed its belief in distance education as a fundamental part of meeting this challenge and proposed

*"an expanded role for distance education and for high quality resource-based learning. It is essential for the new [co-ordinated higher education] system to include far greater focus on distance education and resource based learning as key mechanisms"(NCHE 1996:9).*

A key development in South African curriculum development at both schooling and higher education levels has been the official adoption of outcomes-based education (OBE) approaches, espoused in the Curriculum 2005 document, as "one of the key leverages for change to quality provision"(Doe-TELI 1996: vii). Policy documents have identified technology-based distance learning methods as being extremely effective in supporting the development of learner-centred and outcomes-based education, if skilfully applied (Doe-TELI 1996: vii).

There is a recognition in the various policy documents that South Africa is blessed with technical information and communications capacities and a physical infrastructure more sophisticated and extensive than in many other developing countries facing similar problems. It should thus be possible

*"to develop a higher education system which would begin to meet the social and educational objectives of the Government of National Unity and at substantially lower cost. The success of the methods of distance education suggest how it might be done"*(Swift 1992:17).

Other key policy documents have focussed on the role that distance education methods using the rapidly developing information and communications technologies might play in assisting South Africa in achieving the aims of redress, access, and quality in education and training. For example, a ministerial commission has investigated technology-enhanced learning and issued a report (referred to as the TELI report) which clearly articulates a decisive role for technology in "achieving the goals of transformation, reconstruction and development of the education system"(DoE –Quality standards 1996 :10).

This survey of documents shows that there is significant and consistent policy commitment to the use of distance education methods in solving many of the country's education problems (DoE –Quality standards 1996 : 27).

## **1.2. CURRENT PROVISION OF DISTANCE EDUCATION**

Distance education strategies and delivery systems have a long history of addressing educational needs, both internationally and in this country. As far back as 1920, International Correspondence Schools, a commercial distance provider had an enrolment of over 2 million students (Rose 1990 in Schlosser and Anderson 1994:3). The strategies of distance education have been used extensively in developed and developing countries to

provide education to those who would otherwise have been deprived of that opportunity. Distance education has been effective in overcoming barriers of geography, opportunity, disability, work contexts, and both dwindling and exploding numbers.

*"In developed countries, distance education options have successfully increased the range of opportunities available to those who cannot accommodate the place and time requirements of conventional education, while in developing countries the implementation of distance education, often on a national scale, has been mainly intended for mass education opportunities" (Iskandar and Romiszowski 1995).*

A UNESCO study estimated that by the mid-80's there were over 10 million students engaged in study through distance systems and this number has continued to grow (Woodbridge and Le Roux 1996:27).

Distance education has a long history in South Africa with UNISA, currently the largest university in South Africa and recognised internationally as probably the first dedicated distance university in the world (founded in 1946). Beginning in the late 1980's and continuing, distance education has experienced a boom period of rapid expansion and it is estimated that close on a billion rand per year is spent by the public sector in the field of distance education provision (SAIDE-International Commission 1995). The field is dominated by large national distance education providers such as UNISA and Technikon SA, although there are also countless smaller providers. A coalition of major distance providers, COLISA (comprising UNISA, Technikon SA and Vista University) now boasts a student enrolment of over 225 500. Registered private colleges (such as Lyceum, Damelin, Intec, Rapid Results and Sukses) service a further 229 000 students, usually providing administration and tutoring for other institutions' (such as UNISA) qualifications. Courses offered cover a wide spectrum of disciplines and levels.

Distance education has historically been one of the few access routes for Black students into higher and further education (many prominent current leaders hold UNISA degrees, some earned while imprisoned) and this trend of serving historically disadvantaged communities has continued. In 1993, distance education students made up some 47% of all African students enrolled at universities and 38% of all African students enrolled at Technikons.

## **Teacher Training at a Distance**

Teacher training has always been one of the major areas of activity for distance learning systems and the retraining of educators is often one of the first targets of mass education provision (Mackenzie 1996). When the Open University opened in the UK in the 1960's the vast bulk of its students were teachers. Many newly independent developing countries, such as Zimbabwe and Tanzania, have used distance programmes in a 'crash-course' style to rapidly inject vast numbers of desperately needed teachers into the system, sometimes almost overnight.

*"Distance education for teacher education has by now an established track record over the last two decades. Studies (Brophy and Dudley, 1982, 1983; Perraton 1984; Coldevin and Naidu 1988) have identified more than 60 distance education programmes for teacher education in over 40 countries and the number of projects since then has grown" (Robinson and Wall 1992: 5).*

In line with international trends, teacher training and inservice retraining feature prominently in local provision and is often seen as an area of crucial activity. In 1995 inservice teacher training programmes through distance means experienced a 23% increase with 281 institutions involved in the field. Reports of numbers of students registered vary from 480 000 (Hofmeyr 1996) to 129 000 existing or would-be teachers (mostly African) (Glennie 1996). This means that roughly one third of all practising teachers at the time were enrolled in distance education programmes and that distance programmes are the largest slice of the teacher education sector (Glennie 1996 : 1).

## **Distance Provision by Contact Institutions**

A further factor to consider when surveying distance education provision is the entry, both globally and in South Africa, of previously exclusively face-to-face institutions into the distance market. Jenkins (1995) in surveying this phenomenon world-wide says, "a startling change has taken place in higher education. Most of this activity is recent. Its extent is totally unexpected" (427). The figures which lead her to this conclusion include

- three-quarters of all British universities offer open or distance learning programmes of some kind and more than half offer one or more programmes using traditional distance education methods
- in Canada 42 out of 69 universities offer open or distance learning courses (a 50% increase over 8 years)
- 23 French universities out of 57 have tele-education centres

- in Sweden most of the 13 universities and 57 university colleges and almost all US universities are involved in some form of distance education (Jenkins 1995:427).

The entry of traditionally contact institutions into what was previously the exclusive domain of 'correspondence' institutions may seem an unlikely one. Nevertheless it is in line both with current international trends towards a convergence of the two modes of delivery as well as policy directives emanating from the new dispensation in South Africa.

The White Paper on Education and Training (1995), having identified distance education as a key mechanism in achieving its goals, then clarifies that it does not envisage this as an activity solely for dedicated distance education institutions but that these methods would be adopted by a very wide range of institutions.

The NCHE Report (1996) is even more explicit and suggests that the move towards resource based and distance education will have major implications both for South Africa's well-established distance/correspondence institutions and for traditionally 'contact' institutions (118-119).

The SAIDE Audit report (1996) <sup>3</sup> encourages all sectors of educational provision

*"to forget the traditional distinction between face-to-face and distance learning and concentrate instead on what the best practice from each mode can contribute to effective teaching and learning for all students regardless of whether they are studying primarily in a face-to-face institution or away from one"*(97).

This idea of a mixed-mode delivery provision which combines the best practice of both forms is an important concept although it has not always been implemented to the optimum in practice. This issue will be returned to in more depth in Chapter 7.2.

More common than a genuine convergence of delivery modes seems to be the practice of an established tertiary institution expanding its field of operation to include off-campus students: in the US this has often taken the form of 'distributed learning', where an on-campus lecture is broadcast or narrowcast by satellite to students watching (and sometimes

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<sup>3</sup> In 1996 the South African Institute for Distance Education, a non-profit, non-governmental agency conducted an audited survey of teacher training by distance across the country which encompassed all providers and covered a wide range of aspects of distance provision

participating) at off-campus receiving sites. This mode of delivery has been fairly popular in South Africa, although the cost of setting up the satellite links (or the hire-out charges of commercial companies who have air-time to sell) has limited this to the major providers.

In South Africa, contact institutions have often entered the distance market by signing accreditation agreements with third parties experienced in distance or correspondence courses. These third parties, usually private-for-profit companies with no historical links to the university, are responsible for the management of these off-campus enterprises and often the only interaction a student might have with the accrediting institution is some sort of graduation ceremony. Examples of such arrangements have existed in the South African arena between, amongst others, Rand Afrikaans Universiteit and Lyceum College, Pretoria University and Sukses Kollege, and University of Port Elizabeth and Azaliah. Such arrangements have proved most lucrative for the institutions concerned while for students the chance of having a recognised tertiary institution's name on their qualification has proved a drawcard. There is the further permutation where a local provider offers a qualification 'on behalf of' another institution, usually from overseas. This is particularly common where the local institution might not have the expertise or credibility to mount that particular qualification independently. An example would be the Technikon Natal offering an MBA accredited through the University of Cardiff. In most of these cases, the curriculum, materials (if any) and external moderation would be provided by the accrediting institution overseas with teaching, administration and student support (if any) being provided locally.

Robinson and Wall(1992) maintain that the track record of distance education programmes world wide in many countries and contexts has demonstrated that distance education can be an effective (and sometimes cost-effective) means of teaching and learning (7). It is certainly a popular choice for many students, and numbers world-wide continue to grow, sometimes, as in South Africa, at an astonishing rate.

### **1.3. CONCERNS WITH THE QUALITY OF PROVISION**

Section 1.1 has described the educational context in which the perceived role for distance education would be played out. Section 1.2 has described the current provision of distance education, internationally and in South Africa with particular reference to teacher education and to the activities of traditionally contact institutions.

Little of this extensive activity, in South Africa at least, is characterised by quality and educational effectiveness. All relevant policy documents as well as various international commissions and audits have been unequivocal in voicing their concern at the quality of distance provision in this country.

In 1994 a group of international experts surveyed distance provision in South Africa<sup>4</sup> with the following verdict:

*"The quality of current provision is comprehensively deficient. The work of the four major providers is based on an outmoded and very limited conception of what distance education is and how it should be managed. Serious questions must be asked of institutional policies that give access but fail to provide forms of education that enable students to capitalise on their opportunity"(SAIDE–International Commission 1995:14).*

This comment refers in particular to the very low through-put rates and high drop-out rates<sup>5</sup> of the major institutions, caused in part by the almost total lack of student support facilities, such as tutorials, and by inaccessible materials. The Commission reported figures such as only 4% of students who had registered with UNISA for a B.Sc had completed the degree nine years later. Even the B.Comm degree had a throughput rate of only 11% over the same period (SAIDE-International Commission 1995).

Given the great hopes for national development pinned on distance provision by the new policies, it was particularly worrying that the Commission also found that

*"taken as a whole, distance education's contribution to the priorities for education and training in the [new Education] Policy Framework is variously marginal, inefficient and in respect of the values sought for a democratic South Africa, dysfunctional"(SAIDE - International commission: 1995 :16).*

The Green Paper on Higher Education (MoE: 1996) also reflects serious concerns about the appropriateness and effectiveness of current distance education provision and cites the following as areas of concern

- low throughput and completion rates

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4 The Commission issued report "Open Learning and Distance Education in South Africa" and was the first comprehensive review and professional evaluation of distance provision in the country.

5 Through-put rates refer to the proportion of students who successfully complete the qualification in a designated period of time. Drop-out rates refer to the numbers of students who fail to complete either single modules or whole qualifications.



- inadequate learner support (very few institutions provide tutoring, student guidance or individualised assistance with studies. Many in fact 'contract out' any form of student contact)
- a focus on correspondence-type programmes which are less effective especially at entry levels rather than multimedia and open learning programmes, (many courses are entirely print based and cheaply produced, often crudely translated from another language, and show inadequate instructional design)
- the failure of the current funding formula to encourage the development of a learner centred model (funding is reliant on simple head counts of students registered, rather than quality assurance and through-put rates)

This last point reflects an obsession both nationally and internationally with the numbers involved in distance education rather than a focus on the quality of the provision. This view is reflected in comments like this:

*"Distance education loses identity and finally direction once it fails to address needs far larger than those addressed through conventional education. According to Daniel (1992) "it is better to educate ten people than one, a hundred than ten, a thousand than a hundred, a million than a thousand, and a billion than a million. The future of distance education is in the challenge of those large numbers" (Ligate 1995: 395).*

While one of the imperatives driving the growth of distance provision is undoubtedly the need to meet the aspirations of large numbers of students, having huge numbers of registered students who then fail to complete their courses is surely counterproductive.

Swift (1992) makes the comment that while distance education's role is seen as opening doors to knowledge and learning,

*"its nemesis comes when it acts as a revolving door, when too many of those who enter discover after an experience of failure that they are back on the outside. Distance education structures that principally generate failure cannot be used seriously to increase opportunity"(3).*

Access policies are only one side of the coin with success rates being the other. "Very real questions must be asked about the morality of enrolling students for courses if the great majority will be doomed to failure because of ineffective teaching and inadequate support" (SAIDE-Audit 1996 :75). There seems very little purpose in improving access "without

creating the conditions necessary for ensuring a reasonable chance of success"(SAIDE-ET2000 1996 :9).

The concerns of the Commission and of the government are echoed by the report of the extensive audit of teacher education by distance means (as one of the largest sectors of the market) carried out by SAIDE in 1996. Here the materials, systems and administration of providers countrywide were examined. The results were alarming: although this area of endeavour is both large and lucrative, and is seen as crucial for national development, it perhaps exemplifies most clearly the problems of low quality. The auditors expressed grave reservations with regard to the quality of provision and said that, in general, quality assurance was paid lip service only - if it existed at all (DoE–Quality standards 1996 :18). Most providers, according to the audit, are locked into outdated and inappropriate forms of distance education, characterised by :

- overwhelming use of poor quality print materials and lack of any mixed media provision
- print materials designed in a didactic, content-centred manner as opposed to interactive, problem-centred style
- a lack of face-to-face tutorial support for students

(Butcher 1996 :10).

The Audit further complained that "the course materials produced in all four major institutions fail to meet good international standards for instructional quality"(SAIDE-Audit 1996:62) with bias and propaganda evident. The serious defect of the lack of student support facilities is compounded by the poor quality of these materials which are not designed properly, (and thus are "uninviting, dull and impersonal") (62), are seldom extensively revised, and are not evaluated in any consistent way.

*"Texts often convey an authoritarian tone. Students are commonly directed step by step towards to the one correct answer. Little if any scope is provided for students to interact with the ideas they are meeting or with the minds of the lecturers who prepared the guide. Students are considered to be subservient and the text ensures they will be. Rather than being encouraged to learn actively students are drilled through exercises as if these were the ends of learning"(62).*

These comments relate particularly to the use of print based courses but a survey of technology-based projects by a ministerial sub-committee (1996) found similar concerns with many satellite based projects where 'distributed learning'<sup>6</sup> was used. These projects, says the TELI report, were underpinned by the belief that by amplifying or broadcasting educational inputs, provision will become affordable and will redress imbalances of the past. However impact assessments show that "simply increasing the reach of teaching does not necessarily lead to effective teaching" (DoE-TELI 1996:38). Many initiatives using hi-tech approaches showed a complete disregard for the principles of learner centredness, and "still considered learners as empty vessels to whom knowledge must be transmitted in a largely one-way process" (SAIDE-ET2000 1996:7). Furthermore there was very little attempt to match technologies to the learning outcomes and processes of the course, nor was there consideration of how technologies could be used to enhance the educational provision(8).

Butcher (1996) in reporting on the results of the SAIDE Audit says "Teacher education at a distance displays its apartheid history strongly"(10) and identifies the following as problematic:

- the didactic nature of the courses where the teaching and learning process is based on unquestioning acceptance of presented facts which are then regurgitated in an exam context
- the pseudo-scientific, single-theoried approach of fundamental pedagogics
- little understanding of the South African context in which teacher work
- little concern with or ability to improve actual teaching practice
- a focus on memorising one theory rather than using theory reflectively
- out of date and poorly researched content
- poor scholarship in presentation and poor quality materials

While many of these problems exist in face-to-face teacher training institutions, it is particularly worrying given the extent of the numbers of in-service teachers in part-time study receiving uniformly poor education because of low-quality distance provision.

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<sup>6</sup> "Distributed learning" is used to refer to the use of video conferencing technologies which beam out traditional classroom and teacher based lessons or lectures from a home site to a number of off-sites.

Gultig (1992) maintains that most providers in South Africa have a hopelessly underdeveloped concept of the fundamental nature of distance education and he, like many other critics of South African distance provision, condemns it as no more than 'correspondence' teaching. The use of this term in such a derogatory way needs explanation. In the early days of distance teaching at the end of the 19<sup>th</sup> century, correspondence education was perhaps merely a descriptive term, accurately indicating the use of the postal system to convey learning materials to students, who then independently studied and prepared themselves for exams. Certainly its initial use was not pejorative – indeed Peters (1993) suggests that those who originally coined the phrase were impressed and excited about the possibilities afforded by the new speedy post-by-rail system which allowed for easier, quicker and reliable correspondence between teacher and learner than previously. Such an approach is, however, largely discredited now as outmoded and inadequate, and as failing to utilise the facilities now available to provide more meaningful and appropriate education. The SAIDE Audit (1996) criticises much provision in South Africa as being of the correspondence variety with the added problem that the materials, on which a correspondence system is so dependent, were "of inferior quality" (xxi). Distance education according to Robinson and Wall(1992) involves more media variety, more learner support and more interaction than correspondence teaching offers. They also argue that the two forms represent quite different underpinning assumptions about the requirements for learning. The policy documents make it clear that the vision of distance provision in mind for South Africa is a very different one from "the species of correspondence education with which many South Africans are now familiar"(SAIDE-Audit 1996:136).

Gultig (1992) further cites the following as highly problematic in South African education at a distance :

- virtually none of it can be characterised as 'open' or flexible
- there is little evidence of students being at the centre of the process : most of the time the student is peripheral
- much of the education is limited to linear information transfer.
- teaching and student support are not linked and indeed are often provided by quite separate organisations (as in the contracted-out arrangements described already)

He sees this approach to teacher education as exacerbating the problem rather than contributing any solutions to it (10). Van Wyk et al (1995) point out that one of the most common complaints about South African schooling is its over-reliance on rote learning, but

that likewise much distance material, which encourages memorisation of content rather than interaction, will further entrench the use of rote learning at tertiary level (230).

The SAIDE Audit also describes teacher education courses as "impersonal, authoritarian and convergent with the content in the highest degree abstract, dense and obscure" (67) in contrast to the Policy framework and other similar documents where the emphasis is on "enquiry, innovation, engagement, creativity and active engagement" (SAIDE Audit 1996:67).

There is a dramatic disjunction between the kind of provision offered and the picture that the policy makers envisage of professionally committed teachers who, through their studies, are better able to

*"enquire into and reflect on their work and their roles, deepen their specialised knowledge, improve their effectiveness as facilitators of their students' learning and prepare themselves for positions of greater responsibility and leadership"(ANC-CEPD 1995: 48 quoted in SAIDE- Audit: 1996: 125).*

The ripple effect of poorly trained teachers, desperately scrabbling after paper qualifications, whether purposeful or not, based on "a mistaken notion of teacher quality which equates it with qualifications and rewards these with an automatic salary increase" (Hofmeyr 1996: 4), has serious implications for national development. This concern with the poor quality of much inservice training and upgrading of qualifications had lead to government moves to de-link automatic salary increases and further study. Although partially driven by economic necessity, this does serve as a significant 'vote of no confidence' in the usefulness of much current teacher education at a distance. The National Director for Teacher Education, Prof A le Roux's response to the various reports and audits indicates acknowledgement of the problems at the highest levels:

*"My first inclination has been to deny that such criticisms are valid, but on reflection I believe we should test our institutions against these criteria and seek positive ways and means of remedying our deficiencies. This is, indeed, a time for soul searching" (in Butcher 1996 :10).*

These comments relate specifically to teacher education which, because of the scale of its operation and the rapidity of its expansion, has come under close scrutiny. Other sectors of distance higher education, however, are not necessarily in any better state of health : fields such as economics and management, nursing, and other vocational fields have all seen massive growth of distance programmes, generating many of the same concerns as listed

above. Even the elite market of M.B.A.'s is being flooded with part-time distance courses of dubious provenance and quality.

The activities of traditionally contact institutions have also received negative comments regarding the quality of their off-campus provision. The sudden interest of traditionally contact universities in a field which has been previously been seen as the 'poor relation' providing a second best alternative to learners who could not manage 'real' education, has been viewed with cynicism as income generation opportunism. Concern is voiced around issues of quality with the fear being expressed that traditional institutions, without proper understanding of distance education, may adopt distance education methods simply as a cost cutting device (or indeed an income generating strategy) without regard for ensuring quality (DoE –Quality standards 1996 :49).

*"New distance programmes are implemented in an extremely haphazard way: much of the emphasis has been placed on last minute production of course materials and little on the design of the programme as a whole. Vital aspects such as learner support, evaluation procedures and administrative details are neglected entirely or responded to in an ad hoc manner (Glennie 1996 :8).*

One might ask though whether these newcomers are in some ways any worse than some of the dedicated distance providers if the comments from the audits and reviews cited earlier are any indication.

Economics lies at the heart of much low-quality provision, suggests an earlier (1994) Department of Education report on teacher development.

*"Distance education is rapidly expanding because a correspondence model without student support allows low cost provision. Consequently, many institutions are adopting it to improve their financial viability. As a result good [education] is rapidly being driven out of existence by poor [education] as more institutions turn to correspondence education instead of high quality resource based learning with good student support"(DoE 1994: 36).*

This is further exacerbated by the current state subsidy formula where a distance student is subsidised at a disproportionately generous rate relative to a campus-based students although the relative costs of provision for those students may be radically different. There has been no real requirement that a provider should demonstrate any quality assurance in order to earn the subsidy, although there are signs that this may change in the future.

A further threat to quality assurance takes the form of rapidly growing interest from overseas for-profit providers, some of whom have sound international reputations while others seem of the 'fly-by-night' variety. Although the following quote refers to the situation in Nigeria, it sounds a warning for the local context:

*"Adventurous entrepreneurs see a juicy field of operation because of the imbalance of demand and supply with a ready market of ever increasing applicants who are desperate for educational qualification though correspondence methods"*(Euler-Ajayi: 1983 in DoE–Quality standards 1996 : 33).

Whether a qualification – regardless of the mode through which it was gained – does actually improve job prospects in a tight economy is not the issue. What is apparent is the perceived belief amongst students, policy makers and indeed institutions that distance education is a desirable, and thus marketable, goal.

The reputation of distance education is not well-served by some of its more enthusiastic advocates who approach the notion of distance education with somewhat inflated expectations of its ability to serve as a panacea (and a cheap one at that) for most of South Africa's educational woes. Some policy makers seem to be searching for a 'quick-fix', focussing particularly on the goals of access and equity in providing instant and unlimited educational opportunities for all South Africans, while downplaying more difficult to achieve goals such as quality, which do not often lend themselves to instant solutions. "Most seem to seek for quick solutions instead of a well researched and planned approach that has minimal pitfalls"(Nhlanhla 1996: 50). Perold (1996) commented that there is a wide spread -and worrying- assumption that "distance education is good for development and can solve social and economic problems simply by extending educational provision to non- or under educated masses"(53). Linked to this is the unproblematised view that the use of technologies – and the newer ones in particular- is a valuable exercise in itself (SAIDE-ET2000 1996:7).

Cynics such as Hees and Badenhorst (1992) have speculated that "in almost all cases what hides behind the advocacy is either a search for a bargain or blind faith in technology, and the belief that the latter can make education infinitely replicable" (70 in Gultig 1992 : 6).

Others see in distance education methods an opportunity to use technology to 'leap-frog' developmental stages undergone by other countries with similar problems, thus arriving in one fell swoop at polished and fully conceived solutions.

*"The ultimate challenge is whether technology can allow underdeveloped communities to make a quantum leap by exposing as many people as possible to quality and relevant education, in a cost-effective manner and in the shortest possible time"*(Nhlanhla 1996:49).

While no-one would argue with this as an aspiration, the audited quality of provision in South Africa would seem to indicate that it is an unlikely eventuality.

From these expressed concerns and in line with world wide trends (Robinson and Wall 1992), while the issue of **quantity** (the supply of qualified personnel such as teachers, nurses or managers) is obviously a problem, the issue of poor **quality** (the competence and effectiveness of those personnel) is seen as more urgent (Teachers and Distance Education Working Group Report :1 in SAIDE 1992). It seems unlikely however that current standards of distance provision are going to provide the competent, skilled people envisaged in policy. Although the SAIDE Audit and the International commission found small 'pockets of excellence' in their surveys of distance provision in South Africa, these providers tended to be small, expensive and unable to grow to scale (Gultig 1992:11) . The picture on the whole is bleak.

All the commitment and vision in the world, as expressed in the policy documents discussed earlier, will not yield fruitful results if the quality of provision remains suspect, as seems to be the case with South African distance provision as outlined in this previous section. There is significant policy commitment to the use of distance education methods in solving many of the country's education problems : there is also a documented need to urgently improve the quality of that provision (DoE–Quality standards 1996: 27). While properly managed and planned distance programmes are seen to have a vital contribution to make to the development of an effective education system for South Africa, it is probable that low-quality distance provision will fail to meet the nation's expectations for economic growth, and individuals' aspirations for access with success (54). Rather than being cost-effective, shoddy approaches waste already scarce resources, and rather than remedy a country's educational problems, may add to its woes. If, as the policy documents propose, the largest steps taken towards increased access and redress for previously disadvantaged groups will be through the mode of distance learning, then the quality of those programmes becomes critical.



The previous section has argued for the centrality of quality, alongside goals of access and equity, and criticism has been levelled at some institutions for their low quality provision. It seems necessary then at this point to explore further what is meant by the concept of 'quality'.

#### 1.4. UNDERSTANDINGS OF QUALITY

The issue of quality in education is both politically and pedagogically important (Parer 1996), but remains notoriously elusive, and is not easy to define, "not because it is difficult to recognise when one sees it but because it is a distillation of a complex mixture of a number of factors"(Sparkes 1992: 133). Johnes and Taylor (1990) examined the available data comparing universities in a variety of ways but did not find correlations between them. "There is no simple or even complex formula that enables us to give a single quality assessment to an institution" (in Perraton 1995 : 180).

The debate as to what exactly constitutes quality is a complex one and cannot be pursued fully in this study beyond a recognition that policy makers, providers and purchasers of education are convinced that it is desirable and exists, and that certain providers have attained it more than others. Persig grapples with the problem in this way :

*"Quality, you know what it is, yet you don't know what it is. But that's self-contradictory. But some things are better than others, that is, they have more quality. What else are grades based on? Why else would people pay fortunes for some things and throw others on the trash pile?..what's the "crux"? So round and round you go, spinning mental wheels and nowhere finding any place to get traction. What the hell is quality?"(Persig 1974 in Parer 1996 p 171).*

Webbstock (1997) provides a concise overview of the different interpretations given to quality in education.

- **Traditionally** quality is valued as something exclusive, distinctive, unattainable by most but intuitively recognisable, relating to the highest standards accessible only in limited circumstances i.e. with the best students, best teachers and most resources. It is established and maintained by comparison with other providers who are also recognised to be of 'quality'.
- A more **industrial** view of quality sees the product (in this case, education) as having been checked against certain standards set by an outside monitoring body, thus ensuring that existing standards are maintained. The acme of this type of quality is

where 'zero-defect' is attained or where a perfect conformance to specifications is achieved.

- An **economic** interpretation is sometimes placed on quality where it is measured in terms of 'value for money' : the efficiency and effectiveness of the educative process relative to use of resources.
- A more **liberal** interpretation of educational quality focuses increasingly on transformation. Here the democratisation of the process is emphasised, not just the outcome. There should be some empowerment of the participants, some sort of 'value-added' through their studies.

*"In such a view, a quality institution would be one that, in changing circumstances, transforms itself in such a way that it adds great value to present levels of education in the country. Particularly important would be for it to define its own purpose, with reference not to uncritically accepted notions of purpose but to existing social realities and identifying 'gaps' in the market where value needs to be added (Webbstock 1997 : 11).*

One of the difficulties with the above surveyed types of understandings of quality is that they tend to be context specific and laden with the value assumptions of a particular group. Webbstock (1997) cautions that

*"traditional notions of quality as something exceptional and easily recognisable can really only be applicable in an homogenous situation where there exists an understood consensus on what standards are and what purpose is"(11).*

In South Africa and probably elsewhere too, this consensus is largely absent and consequently quality will emerge as a contested issue. Thus a more appropriate view might see quality as being excellence of a specific kind : there can be more than one type of quality and very different providers could each exhibit excellence in their own way (a 'fitness for purpose').

Even the notion that quality equals 'fitness for purpose' is not problem-free, as Perraton (1995) cites examples where most educationalists might question the legitimacy of the purpose, however excellently that mission was achieved. For example, it has been asserted that the Free University of Iran under the Shah was established as a distance institute to prevent students meeting and threatening the state, while "to educate Christian gentlemen to rule the empire" was a stated aim of some English public schools in the heyday of British imperialism (180). One might also say that apartheid education admirably

achieved its purpose of keeping the Black population disempowered and oppressed. "Fitness for purpose may usefully force us to ask some questions about social ends - but it takes us down a further digression in asking 'whose fitness?' and 'what purpose?'"(Perraton 1995:180). Furthermore, even without these questions about illegitimate purposes, in South Africa 'purpose' has become a contentious issue.

*"Questions have been asked about whether the purpose of higher education is to provide a liberal education and whether it is possible to achieve consensus on that or whether people's education would be more appropriate or whether more competence based approaches would be needed to provide for the developmental needs of the country. A crucial question in this debate which needs to be asked is : is purpose necessarily single? Surely there can be a multiplicity of purposes with different institutions fulfilling different purposes? "(Webbstock 1997 :10).*

While there is considerable argument about the ways in which quality can manifest itself, few would accept merely identifying a gap in the market and exploiting it for commercial gain without offering genuine value, particularly bearing in mind the concerns expressed in the previous section.

Some definitions of educational quality have focussed less on the societal and institutional aspects of quality and more on the pedagogic and the personal. Ramsden (1986) and others have emphasised that "quality education means conceptual-change learning"(in Sparkes 1992: 134). This notion where education actually impacts on the learner's ability to function in a changing society has appealed to policy makers in the South African context. Stephenson and Wall (1992) suggest that higher education should be judged by the extent to which it gives students the confidence and ability to take responsibility for their own continuing personal and professional development, prepares them to be personally effective within the circumstances of their life and work, and promotes the pursuit of excellence in development, acquisition and application of knowledge and skills (in Webbstock 1997: 4). This will be central to the discussion in section 5.2.3 and 5.2.4. later on in this study.

When focussing on distance education, the issue of quality is even more pressing. Distance education has had to fight for legitimacy in the face of scepticism from residential providers and traditional academics. In fact distance providers have long had to answer the calls for quality assurance mechanisms and accountability which have only recently become part of conventional academic life. Perhaps this is because entrenched notions of

academic freedom have sometimes shielded face-to-face courses from scrutiny in traditional universities while the artefacts of a given distance programme are concrete and visible to the general public in a way that a tutorial or lecture room is not. Perraton (1995) urges that before distance providers become despondent about the intellectual legitimacy of their form of education provision, they should consider how well many programmes of conventional higher education would meet similar criteria(181).

Nevertheless this does not obviate the need for providers to have a clear sense of what constitutes quality distance provision. Given current alarm over poor quality distance provision in South Africa, policy makers have gone somewhat further in attempting to devise a formal set of criteria against which a distance education system, provider, programme, course or materials could be measured. A quality standards framework for South Africa outlining the norms and standards of a well-functioning distance system has been drawn up for integration into legislation. Key sections deal with, for example, course design where a quality programme would show

- an appropriate and integrated selection of outcomes, assessment strategies and content
- learner support built into the course
- an integrated and pedagogically justified media mix
- a range of educational methods.

Quality course materials would

- include approaches which are varied, practical and appropriate
- promote learner centredness and learner responsibility.

Quality assurance norms and standards are often used as policing devices to ensure minimum standards rather than to promote genuine excellence : it is positive to see that the policy debate around this area has taken this into account and seeks to actively encourage high standards and quality provision. Nevertheless, it remains to be seen whether this stance can be maintained in the face of the demands of a society concerned with immediate reparation for past wrongs, rather than the gradual and careful construction of enduring quality standards

Although such attempts to describe quality norms are helpful and laudable, they do not answer this central tension in quality provision in distance education, that of increased

demands for accessible, affordable education for more and more people, which is also high quality, personally appropriate and often overcoming barriers of time and space. The various Audits have pointed to the futility of a proliferation of low cost (to the provider at least), low quality provision. On the other hand, it's no good having superb quality provision priced out of reach of most potential students (Perraton 1995). This would suggest that one way of measuring quality would be to consider the availability of a programme of education and its success in reaching its audience. This, says Perraton, takes us to a policy dilemma:

*"the measures we need to take to raise the quality of a process of distance education all increase interaction between students and tutors or amongst students, and reduce the scope of prepared materials : they do not allow us any economies of scale and are likely to increase the cost of any distance programme and yet if we want to maximise the appeal of our courses and if public subsidy of study is limited or non-existent, we will want to keep down our fees and therefore our costs. We face a dilemma between better programmes and programmes that more students can follow"(182).*

This dilemma would seem to me to be precisely the problem confronting distance education as discussed in previous sections. It is easy to offer 'cheap and nasty' distance provision and make it available to a huge section of the population. It also seems possible, as 'private' school and college systems around the world have shown, to offer extremely high quality education if money is no object but these will perforce be elitist operations open only to those few who can pay. Neither extreme seems desirable for South Africa nor congruent with the vision for distance learning as articulated in the policy documents.

Once again the tension between equity, access and quality is highlighted. It is a tension felt and acknowledged by many responsible providers in the education field. The University of Natal, for example, has a strategic policy called ' Quality with Equity' which attempts to balance these two seemingly contrasting imperatives:

*"(the university) dedicates its excellence in teaching, research and development to progress through reconstruction... by delivering quality teaching which enables students from all backgrounds to realise their academic potential and to obtain degrees of a continuing international standard... undertakes quality research to national and international standards and provides development services which service clients needs"(Mission Statement, University of Natal)*

These are noble and worthy sentiments but how they might be worked out in pragmatic reality is not spelled out. This dilemma is not unique to South Africa but, suggests Webbstock (1997), is perhaps exacerbated by factors such as the scale of the problem, and the urgency of the need for change, as well as features peculiar to the situation such as the existence of what can be regarded as different and unequal higher education systems within one country.

## **CONCLUSION**

This first chapter has set the scene in which distance education using media and technology will be expected to play its part. The current pressures in South Africa to redress past inequities and to open access to higher education have resulted in high expectations being placed on distance education, as evidenced by a perusal of policy documents. Running alongside these imperatives, however, is the desire for high quality provision and an equal concern that current provision in South Africa, while extensive, is of problematic quality. In spite of the contested notion of 'quality', as discussed in this chapter, policy makers remain convinced that it is possible to develop effective distance programmes which will be instrumental in alleviating the various crises experienced by the higher (and other) educational sectors.

## CHAPTER 2 : MEDIA AND DISTANCE EDUCATION

### 2.1. THE ROLE OF MEDIA IN QUALITY DISTANCE PROVISION

The previous section has shown the potential tension between accessible distance provision and quality distance provision. This section will focus on one particular aspect of provision – that of media selection – and its contribution to quality distance education.

#### Factors in quality distance education

Section 1.4. has discussed some of the conceptualisations of educational 'quality'. Getting down to more practical detail, there are a number of local policy documents as well as a large body of writing internationally that deals with the components of an effective distance education system. A closer examination of some of them will show the variety of factors that need to be borne in mind in setting up quality distance education.

In 1994 SAIDE published 'A Well-functioning Distance Education Institution' as a working checklist that could be used to assist the performance of any distance provider, whether as residential institutions moving into distance teaching or dedicated distance providers. The checklist deals with distance provision in a holistic way, providing criteria that focus on the course, counselling, teaching and learning, administration, staffing structure, self-improvement and academic structure. According to this document, in an effective distance institution

- the student is placed at the centre of the institution's service mission, rather than administrative convenience
- student support is given emphasis
- the course, rather than a teacher, is identified as the main education 'provider', with the proviso that the course comprises much more than just the package of study materials. The course comprises the learning structure and conceptual pathways embedded in that material, which should be well-designed, friendly, comprehensive and interactive.
- although it need not be technologically complex, the course should utilise a range of media (SAIDE 1994).

The Quality Standards for Distance Education Discussion Document, issued by the Ministry of Education in 1996, follows a similar if expanded pattern in identifying critical

areas for distance provision : policy and planning, learners, programme development, course design, course materials, learner support, learner assessment, human resource strategy, management and administration, collaboration between organisations, quality assurance, information and marketing, and results (DoE–Quality standards 1996). Interestingly, the area of 'media choice' or 'technology' does not appear as a separate area in the Quality Standards proposals but is rather imbedded in a number of the other areas identified such as policy and planning (in that technological choices tend to be long-term and require advanced planning), learners (the type of learner being targeted influences on media selection and usage), course design and course materials (here media choices impact both on the conceptual design of a course as well as playing a visible role in the actual study package). This is a conceptually subtle arrangement and while it places technology in its perhaps proper place in the scheme of things, there is a danger that some providers may completely miss the importance of media choice because they are not being forced to focus on it explicitly.

Many of the aspects covered in these documents are, of course, common to any kind of educational provision, and most quality higher education institutions will have procedures in place to deal with them. Some, such as learner support, take on an increased importance in distance provision while others, such as materials development and the use of technology, have come to be seen as the distinctive territory of off-campus courses.<sup>7</sup> The area perhaps where a traditional face-to-face university has least expertise is that of materials-based course design and development and, in particular, the selection and integration of media. Face-to-face delivery tends to be essentially dependent on the static, speaking teacher or, very occasionally, the speaking student. Few conventional academics are extensively experienced in integrating various media into their teaching, beyond perhaps the overhead projector or a few handouts. Any traditional higher education institution seeking to move into the field of distance provision would need to pay particular attention to this area. Unfortunately, in my experience, this is seldom the case. Whenever proposals for media implementation or technological expansion arise in academic planning meetings, most academics seem to back off, perhaps because of unfamiliarity or a mistrust of technology. While any other proposal concerning curricula, admissions, access and so on will receive more than its share of scrutiny and debate, a plan for delivery will often be accepted without demur or

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<sup>7</sup> That this is a mistaken notion will be more fully explored in section 7.2



contestation. Often media choices are made separately from mainstream educational planning. On the other hand, for many dedicated distance providers, technology is the dominant feature of their activities and demands most attention, often at the expense of a focus on pedagogy. The consequences of these widely divergent approaches are serious and will emerge throughout this dissertation.

### **The place of media**

For many, the technology used is the most obvious feature of a distance system. What distinguishes one provider from another may not be that its educational goals differ greatly or that a very unique group of students is targeted but rather that different technology has been selected to deliver courses. Some institutions even name themselves in terms of the media they use, such as 'School of the Air' in Australia and Mauritius, or China's 'Television University'.

Soren Nipper (1989) in his seminal analysis of the 'three generations' of distance education development divides each generation in terms of the technology used, not in terms of changing contexts or educational purposes. The first generation he describes as 'correspondence' where the technology used was written text delivered by post, and attention was focused on production of materials. The second he refers to as focusing on 'distribution' technologies, particularly broadcast media. The third generation uses so-called 'new technologies' which are computer-based and allow for communication and interaction. Thus it is the evolving capabilities of technologies which are seen as the catalysts for each successive wave of distance provision (in Bates 1991).

In spite of the tendency amongst some distance educators to see technology and distance education as synonymous, and to assume that distance education is the obvious and only context for discussion about educational technology, (SAIDE-ET2000 1996 : 5), selecting which medium (or indeed media) to use in setting up a distance system is clearly only one of many choices that need to be made, and in the opinion of Butcher (1995), not a particularly important one.

*"Distance education is not simply about technologies. This places undue emphasis on only one minor aspect of distance education. In addition to technologies there is a range of features which make up well functioning distance education provision"(11).*

Judging from their own case descriptions, in many poor quality distance programmes little emphasis has been placed on these vital areas for decision making whilst decisions around technology have preceded and dominated all others. There are many possible reasons for this. Technology often appears to require the most capital investment and is thus often the most attention grabbing aspect of setting up a distance provision system. Technology also carries a degree of glamour, perhaps fuelled by marketing agents for big corporations, which a particularly efficient system of record keeping or particularly sensitive ways of tutor training do not have. Section 3.1 describes more fully the consequences of over-emphasising the place of technology at the expense of an education focus.

Thus a difference of opinion exists as to the proper role and place that media and technology should play in an effective distance education system. A strong influencing factor would appear to be the background of the providers and designers of the system : if it is traditional campus-based provision, then technology is downplayed and sometimes ignored , while many exclusively distance providers give the technology used a dominant place.

A closer examination of the ways in which distance education has defined itself may help to illuminate the relative importance of media in distance provision.

### **Definitions of distance education**

Keegan (1986) in his book "Foundations of Distance Education" classifies theories of distance education into three groups, those of independence and autonomy, those of the industrialisation of teaching, and those of interaction and communication. In each of these, and in most other major definitions of distance education, the mediating role of technology is given a central role. Garrison (1989) in surveying various definitions of distance education concludes that "technology and distance education are inextricably linked"(235). Handy (1991) described distance education this way : "Economics has made it necessary and technology has made it possible" (in Johnson 1993:68 in Clayton 1995:342).

In keeping with the technological focus common in much North American provision of distance education, the US Department of Education (1989) defines distance education as "the application of telecommunications and electronic devices which enable students and learners to receive instruction that originates from some distant location"(30 in Schlosser and Anderson 1994:1). Bruder (1991) is even more specific when he defines distance

education as "the use of telecommunications equipment such as the telephone, television, fibre optics, cable broadcast and satellites to send instructional programming to learners"(in Bates 1995: 76).

Other definitions focus more on the educative process but still assign technological media a central role. Delling (1966), for instance, defines distance education as planned didactic activity "achieved by bridging the physical distance between student and teachers by means of at least one technical medium" (in Keegan 1986 : 58). Jarvis (1987) describes it thus: those forms of education in which organised learning opportunities are usually provided through technical media to learners who normally study individually and removed from the teacher in time and space" (101). Moore (1984) sees distance education as "the family of instructional methods in which the teaching behaviours are executed apart from the learning behaviours, so that communication between the teacher and the learner must be facilitated by print, electronic, mechanical or other device"(in Keegan 1986 : 6).

This central notion of the separation of teacher and learner (meaning that learning takes place in a different place and at a different time from where and when the teaching was originally designed) is also identified by Keegan (1986) as one of six key characteristics of distance education, but two other characteristics focus on technology. The first deals with the use of technical media (usually print according to him) to unite teacher and learner, and to carry the educational content, and the second, the provision of two-way communication (usually by technical media) so that the student may benefit from dialogue (30).

Shale and Garrison identified as an essential criterion that distance education uses technology to mediate the necessary two-way communication (in Keegan et al 1993 : 11). Some critics of this definition have rightly pointed out that much distance education exists without two-way communication at all. For Otto Peters, it is the industrialised nature of education based on the extensive use of technical media that for him was the central characteristic of distance education (Keegan 1986:6). This was in contrast to the individual interpersonal communication characteristic, as he saw it, of contact education.

It would seem from these definitions that the technology that mediates the learning process commonly appears as a central defining characteristic of distance education systems. Because of the separation of teacher and learner in time and space, something needs to

bridge the gap and that 'something' is usually defined as a technological mediation of some kind.

Conboy and D'Cruz (1988) point out that generally these definitions concentrate on processes and methods rather than the purposes of distance education, and they express concern that this reflects a preoccupation with the development and purchase of technology at the expense of pedagogical issues (97). While some (such as Butcher 1995) argue, and perhaps correctly so, that the foregrounding of technology decisions to the exclusion of all others is unhealthy and short-sighted and will not lead to the quality education being striven for, the converse is also true. If technology is seen as being so central to distance education, then decisions around media – good or bad- will have a significant impact on the learning experience the learner will have. Thus, the issue of the media choices made and the use to which technology is put sits squarely at the heart of issues of quality in distance provision and is one worthy of focus.

Section 1.3 voiced the concerns around the quality of much distance provision in South Africa. The next section will look at the performance of technology-based education, showing how in many ways it has failed to live up to its promise.

## **2.2 THE FAILURE OF TECHNOLOGY TO LIVE UP TO EXPECTATIONS**

Although technology and media have been defined as central to distance education provision, the use of technology-enhanced learning at a distance seems to have failed to live up to expectations of many. The "majority of educational projects using 'high-tech' solutions [appear] not to have been particularly successful" and despite more and more technologies and tools becoming available over the years, this has not always added to the amount of learning taking place (SAIDE-ET2000 1996: 6). This disappointment is exacerbated by what Robinson and Wall(1992) call "the gap between the rhetoric of claims for what distance education can do and the reality experienced by students in the system"(13). Mason and Kaye (1989) agree that many new technologies fail to live up to their educational potential because, they say, "they are over-promoted"(10).

In 1967 Schramm et al published a seminal review of 23 case studies of educational projects using 'new media' (in Perraton 1988: 337). Thirty years later most of those projects have long since ceased to function.

*"Some failed dismally. Others achieved considerable success in educational terms but were wound up because of lack of political support or more often simply because the money ran out. Some have been overtaken by newer and more exciting technology"(Perraton 1988 : 337).*

For these and other reasons, the tendency would seem to be for distance or technology-based projects to have a short lifespan.

Bates (1991) confirms that

*"the history of education is littered with the corpses of technology-based projects that were killed because of the high operating costs, problems of adaptation to local conditions, lack of skilled personnel to operate the technologies and lack of effectiveness"(1).*

Seligman (1992) warns that there are "many large scale educational projects, both traditional and distance all round the world that have used new technology solutions (but that have not met their high expectations"(8). Mackenzie (1996) describes many current technology-based projects as "expensive, often shaky when put to the test and clearly do not provide immediate answers to the education challenges faced by developing countries in the world and in South Africa"(41).

Gultig (1992) calls for scepticism when considering the claims made for distance education, given that "many variants are characterised by the thoughtless use of technologies and the reduction of a complex learning process to crude information transfer"(1). Concern is also often expressed about the ignorant and indiscriminate use, abuse and lack of use of media within the educational context. There is a tendency to "resort to 'throwing' technology at a need or problem"(Isaac 1995: 32) rather than embarking on a careful consideration of the most appropriate strategies.

Although much current debate in distance education is around the potential of new technologies, the actual usage of the newer media in operational distance teaching programmes remains modest, and print still remains the medium of choice for most providers (Inglis 1995:364). 97.1% of 140 distance education programmes in Western Europe in the 1980's still used the traditional technologies of printed text and correspondence, albeit supplemented with other media (Perry 1984 in Curran and Saunders 1992 :37) while 70% of providers world-wide listed print as their primary medium

(Bates 1988). Comments already mentioned from the various audits of South African distance provision emphasise the almost exclusive reliance on text in many courses.

Even where new technologies are introduced, their full usefulness is seldom tapped. In many instances technology is used as an 'add-on' to existing conventional methods of provision, rather than substantially altering the nature and form of education offered. For example, the use of video conference technology in the US is widespread but in many instances is used for distributed learning where a traditional lecture is beamed to a number of 'out-sites'. "The cyberspace age with all its alleged advantages for education and Open Learning and Distance education in particular remains more spoken and written about than experienced" (Gourlay 1996:3).

Furthermore, the use of advanced technology can often limit access rather than opening it up as the costs involved in state-of-the-art technology (such as Internet, computers and CD-Rom) are very often beyond the financial means of traditionally disadvantaged learners, even in developed countries (Isaacs 1996 : 33). These types of learners are also often lacking in the skills required to interact comfortably with the new technologies. This point will be further developed at later points in this dissertation.

Generally the number of skilled personnel familiar with the new media is comparatively small and many traditional academics find the technology intimidating and complicated. Technology conferences are often reported as bedevilled by presentations by academics purporting to show the new technologies in action but who most of the time fail to get the equipment to work!

It is often in developing countries, where the need for educational solutions is greatest and where distance education has the greatest expectations placed on it, that the greatest restrictions exist for the effective usage of technology. Not only are costs prohibitive, but technologies (often surplus or outdated in their country of origin) are sometimes installed as part of an aid package without appropriate technical and human resource structures being in place, precipitating "a complete collapse of educational technology utilisation, resulting in the technology becoming obsolete without it ever being used"(Isaacs 1996:32).

The TELI review in its survey of technology-enhanced educational initiatives in South Africa found that most "focused on extending the traditional classroom environment and very few

broke new ground in teaching and learning methods"(DoE-TELI 1996: ix). This will be explored more fully in section 3.4, but points to the underutilisation of very expensive, much vaunted equipment.

Gourlay, Principal of the University of Natal, has pointed out that "whatever technology has done for some of us, it has not changed the lives of most of us" (1996:4) and urges both governments and educational providers to acknowledge that fact and build their planning around that reality.

That reality was graphically described in these recent statistics taken off the Internet :

- More than 80% of people in the world have never heard a dial tone let alone sent an email or downloaded something from the Web.
- According to the latest UN Human Development Report, industrialised countries with only 15% of the worlds population are home to 88% of all Internet users.
- Less than 1% of people in South East Asia are online even though it is home to one fifth of the world's population
- The situation is even worse in Africa. With 739 million people there are only 14 million phone lines- fewer than in Manhattan or Tokyo – and 80% of these lines are in only 6 countries (one of which is South Africa)
- There are only 1 million Internet users on the entire African continent compared with 10.5 million in the UK alone
- Four-fifths of websites are in English, a language understood by only 1 in 10 people on the planet (<http://news.bbc.co.uk/hi/english/specialreport> June 1999)

Any innovation brings with it not only potential growth and progress but also problems and disadvantages. Technology is not, contrary to some naive views, a neutral tool which can be unproblematically applied for the benefit of all. Bates (1996) in particular has highlighted the threats of the new technologies to the educational process, including

- the commercialisation of education
- the increasingly American nature of that activity
- debates around ownership of knowledge
- a widening of the gap between rich and poor
- the development of a globally dominant network of elites

Interestingly enough, a further concern he expresses is that education is, through technology, becoming increasingly superficial (in Kenyon 1996:38 ). This flies directly in the face of some of the breathlessly enthusiastic claims of how technology is going to transform education overnight into a meaningful and life-changing force.

Because technology and the education it has facilitated has disappointed many, there is the understandable tendency to dismiss the role that media can play in education and to regard media other than print as expensive and ineffective luxuries, best avoided in favour of more traditional practices. This response, Perraton (1988) points out, is just as naive and tragic as the claims made about the innate power of media to solve basic educational problems (337). It seems highly irresponsible for decision makers to refuse to engage meaningfully with the problems of media selection and use. For a start, technology is unlikely to go away, particularly as each new technical development precipitates fresh waves of enthusiasm and grandiose claims. A coherent strategy in dealing with these developments would be helpful. Secondly, the current policy position in this country makes it clear that much is still expected of technology, in spite of disappointments elsewhere. For responsible educators striving to meet national needs through quality education at a distance, the issue of the skilful deployment of media technologies becomes crucial. Thirdly, most definitions of distance education seem to imply that it would be impossible to offer this type of education at all were it not for the contribution of some sort of mediating technology. Given that technology seems set to remain as a feature of distance education, it seems vital that the mistakes that have led to the disenchantment expressed be avoided while maximising the potential contained in the use of technology.

It is puzzling that such a crucial area as the use of media and technology appears to be so problematic. Certainly it is an issue which has received its fair share of attention from concerned researchers, writers and practitioners in the field. Most books on distance education will have a chapter or section focussing on media choice or on issues surrounding technology and delivery. One might anticipate that decisions around media and technology choice would thus receive adequate and skilled attention. However the literature seems to suggest that in many instances decisions around media choice remain last-minute, ad-hoc and ill-informed.



Bates (1993) argues that, in the absence of generally agreed criteria for media selection in education, crucial technology decisions have tended to be made primarily for commercial, administrative or political reasons, such as

*"the availability of spare broadcasting capacity, an offer from suppliers of free or cheap equipment or services : the comfort level of academics with technologies that replicate the lecture format or the enthusiasm of a key decision maker for a particular technology"(33).*

The South African Department of Education's report on technology-enhanced education (1996), known as the TELI report, made the observation that while technology can be used to improve the quality of education, when introduced on the basis of poorly considered decision making it can also reduce the quality of education. Skilful deployment of new media options can help to redress imbalances created by previous regimes and in developing new teaching and learning strategies, but the manner in which technology is used can also entrench those imbalances (viii). Media choices need to be approached in a nuanced and sophisticated manner if these pitfalls are to be avoided.

Concern has been expressed that despite the wealth of experiences from around the world on which this country can draw in planning and implementing technology-enhanced learning, it appears many of the mistakes made elsewhere are being repeated here rather than 'leapfrogging' over problems as was hoped would happen. The TELI report (1996) points out that one of the consequences of South Africa's years of isolation is our lack of familiarity with and knowledge of others' experiences around the world which has serious implications, given that sound decision making depends on good information (94). The country runs the risk, cautions the report, "of buying into very expensive yet educationally ineffective technological solutions"(94).

*"This is a situation which the country can simply not afford. Thus it is the responsibility of planners and decision makers at all levels in education and training to engage more seriously with the lessons to be learned from other people's and countries' mistakes, rather than simply repeating them"(SAIDE-ET2000 1996 :15).*

To 'learn from others' mistakes' is easier said than implemented.

- It can be as risky to import cautionary tales as it is to adopt wholesale solutions from elsewhere: just because a strategy failed in one context does not mean it has no usefulness elsewhere

- Furthermore, many 'failures' have occurred because of inadequate planning : there is likely also to be inadequate evaluation of that failure, thus depriving others of insights into practices to be avoided
- It is also tempting when faced with a problematic case study to look only for practical reasons for a practical failure when in fact it may be that the theoretical underpinnings of the project were suspect or based on a crude understanding of the educational issues at stake

Bhatnager (1985) highlights a problem in the way academics approach technology where papers tend to be descriptive rather than analytical and where technology is accepted uncritically and is not subjected to the same interrogation that other aspects of the system receive. An initial literature survey undertaken for this dissertation of over a hundred case descriptions showed that this approach was indeed widespread. Most papers focussed on what was done and how : the 'why', when it was addressed, tended to focus on the technical or logistical problems, often stated as 'we needed to reach 25% more teachers to upgrade their qualifications' rather than an articulation of what the outcomes of the programme would be for individual learners. Thus a technical solution which reached those 25% more students and 'delivered' the programme was deemed to be appropriate and was not subjected to further interrogation. If there was in-depth thinking around pedagogic issues, this was seldom articulated in the reports of these projects which also raises questions of the value and worth ascribed to these aspects. This make it very difficult to identify the critical factors used in the selection of media for educational purposes.

Acknowledging these difficulties, it nevertheless behoves institutions embarking on distance provision to fully investigate the useful role that media and technology can play and to "be aware of their potential and their limitations and even more to understand the conditions that are necessary for their successful use"(Perraton 1988 : 337).

## **CONCLUSION**

This chapter has shown the centrality of media in distance provision, both in theory and in practice. This unfortunately means that where distance education has disappointed, in many instances it is the choice and use of the mediating technology which is at fault (or at

least , is a major contributory factor). Thus a closer examination of in what ways and for what reasons providers make poor decisions would be useful. This will be the main focus of Chapter 3.

## **CHAPTER 3 : REASONS FOR POOR DECISION MAKING**

There appear to be a number of reasons why distance programmes are plagued by the haphazard decision making around media choice alluded to earlier. These include

- too much focus on the technology and its capabilities (section 3.1)
- too little cognisance taken of pedagogic and educational issues, (section 3.2)
- the fragile state of distance education theory generally, (section 3.3)
- a tendency to locate distance provision in an outdated paradigm (section 3.4)
- a lack of understanding of the true capacity of current innovations (section 3.5)

as well as a number of less widespread problems such as

- educator reluctance when faced with technology (section 3.6)
- shaky understanding of the cost-benefits (section 3.8)
- the lack of dialogue between educators and technologists
- too limited an understanding of social and cultural barriers in distance education (section 3.9)
- and a tendency to look for a single 'best' solution (section 3.7)

Furthermore,

- developing countries experience particular difficulties as the gap widens between rich and poor countries (section 3.10).

Each of these will be explored further in the sections indicated, although the reality is that an unsuccessful use of technology may stem from the simultaneous occurrence of several of these reasons. An institution which overvalues media capacity is unlikely to spend much time on reading up on distance education theory or in talking to educators and will probably be satisfied with a single media option. Nevertheless, it is helpful to consider each of these types of thinking independently.

### **3.1. AN OVER-ENTHUSIASTIC BELIEF IN TECHNOLOGY**

Nationally and globally there is an enthusiastic focus on what Seligman (1992) calls "all that miraculous hardware"(3) and a naive fascination with the raw capacity of technologies. Educators are prone to "being mesmerised by these new technologies, placing an almost blind faith in their ability to provide solutions to educational problems" (SAIDE -ET2000 1996: 6). There is a fascination with hardware capacity and technical wizardry, and a naive acceptance of its application as a panacea for previously intractable educational ills.

*"As a profession we seem awe-struck by the power of technology and we often respond to innovation at a superficial level. We focus on the capabilities of the technology rather than what learners do effectively with technology" (Hannafin et al 1985 : 21).*

Neither is this a new phenomenon : education has repeatedly faced challenges from successive new technologies. We may laugh at the absurdity of the excessive claims Thomas Edison makes for educational film in the New York Times of 1919, but substituting 'interactive video' or 'personal computers' shows that his style of optimism still flourishes.

*"Film teaching will be done without any books whatsoever...the pupils will learn everything there is to know...by making every classroom and every assembly hall a movie show, one hundred percent attendance will be assured. Why, you won't be able to keep boys and girls away from schools then!" (in Hlynka and Hurly 1987 :159).*

At one time or another many educational strategies - filmstrips, language labs, video disks - have been hailed as 'ultimate solutions' to the endemic problems of education. Each successive technical development has generated a wave of rhetoric and argument but none, says Gustav (1964) is as good as its zealots claim or as bad as its detractors assert (38 in Hlynka and Hurly 1982 :160).

Bates (1991) criticises what he terms the "rather breathless style of futurism full of wide-ranging, attention-grabbing 'mega-statements' and both dire and optimistic statements about the new post-industrial 'information society' now rushing upon us"(10). Examples abound of these. The following sample highlights the general tone of these types of comments.

*"The Soweto Technology Project will place virtual classrooms in over 5000 schools in South Africa. The exciting part of this project is that teachers will have the opportunity to design and author their own CD-based multi-media courses"(Baloyi 1996 :21).*

*"New technologies offer users the opportunity to reinvent society, its institutions, and the notion of the nation state in new and refreshing ways "(Sharif 1996: 66).*

*"interactive distance learning via satellite provides the students with lectures in which multi-media technologies are used to enhance the quality of the lectures. Telecourses can be provided which act as enrichment programmes. 24-hour database facilities assist students with individual and group work after the interactive distance education lectures. The system is versatile, flexible and cost effective and provides all South Africans with an equal opportunity education"(Potgieter and Ziv-Tal 1995 :442).*

*"Never before has the power of the computer been coupled with the assets of video. Add to this users being able to control the speed at which they're taught and consumers being able to select the information they receive and you begin to get the picture!"(Fort 1984 :39 quoted in Schaffer 1985 :26).*

The problem with these types of statements is that, whether they are accurate or not, they are enormously seductive and impressive in their enthusiasm and absolute conviction that technology - and one particular manifestation of technology at that - will be able to work a miracle. The claims, however, are usually so grandiose that it is almost inevitable that the technology will fail to deliver.

Bates (1991) warns that there is no super-technology : each will have aptitudes but there will be aspects of education to which each is not suited. Nevertheless, many people, tempted by the potential of a particular development, adopt and install a system based on a misleading set of considerations and thus fail to adequately assess the technology's limitations.

*"The excitement of something new, coupled with the promise of improvement over old ways is hard to resist. We get so carried away by the positive potential of an innovation that we forget, ignore or simply don't notice the other side, the potential negative latent effects"(Hlynka and Hurly 1982 :158).*

This susceptibility of educators to media crazes has precipitated a predictable and justifiable backlash in the form of increasing cynicism and disillusionment, and educational innovations are often viewed as little more than high-priced fads destined for inevitable demise. This has hindered the genuine progress of educational provision. The failure of educational technology to have a notable effect on mainstream educational methods in preceding decades, say Hlynka and Hurly(1982), has led to a certain ambivalence and scepticism among educators(159). Maddux (1989) calls this the 'pendulum syndrome' where as much as each new innovation is greeted with extravagant and unlikely claims, so it falls victim to a howl of negative opinion when it inevitably fails to live up to these unrealistic expectations. This, he says, has resulted in the initial deification and subsequent abandonment of promising educational innovations (23).

While many pieces of equipment have highly attractive and useful capabilities, it is often forgotten that appropriate software is needed to operationalise that capacity. There is often

a singular dearth of useful and appropriate software to run on all these machines. Maddux (1989) cautions that hardware quality and capability is already light-years ahead of educational software quality and capability and that an over-obsession with the latest breakthroughs in hardware capacity (a commercial event) has downgraded the focus and financing of software development (an educational event) (24).

One of the consequences of the ongoing research and development by industrial corporations in technology is that the life span of a given piece of equipment is getting shorter and shorter. The computer industry is a good example of this where there is constant pressure to upgrade, resulting in vast capital expenditure being wasted as successive generations of machinery become obsolete. While this may be good business practice, it does not lend itself easily to education, particularly the development of large distance systems where the lead up time from research to design and implementation may be several years by which stage the proposed technology is already obsolete. This leads to disenchantment and frustrations on the part of educational providers as they struggle to remain up-to-date.

It seems sensible to remember that the educational media industry is just that - an industry with a need to show as much profit as possible. This motive will be paramount, which does not inevitably mean that educational purposes may not also be well served. The development of video conferencing technologies was initially fuelled by the needs of multinational corporations and industries, and the Internet started life as a military innovation but both have subsequently developed significant applications in the world of education.

Some writers have reminded those who disapprove of the engagement of business with education that commercialisation is having some positive effects on education by speeding up innovation, challenging the empires created by some institutions and their favoured methods, and encouraging partnerships in order to reduce the costs of education (SAIDE-ET2000 1996:12).

Nevertheless, Gultig (1992) reminds us that technology, served by advertising and popular hype, is "THE product of the 90's, marketed aggressively and wrapped in a great deal of glamour and mystique"(8) and thus caution is necessary when being urged into systems that may be inappropriate, obsolete or over priced as the gadgetry passions of some

educators have been profitably exploited by commercial interests in the past, resulting in low quality distance education provision.

### **3.2. THE NEGLECT OF EDUCATIONAL ISSUES**

The seductive power of technology has led to a wide range of problems in media selection, including a 'cart-before-the horse' syndrome where educational needs take second place behind technical decisions, as well as a distortion of education intention in order to better fit the capacity of a piece of equipment.

There is a natural tendency to think that merely because a gadget can do a certain task, the purchase and installation of that gadget is not only necessary but urgent. After all, this is what television shopping channels rely on. Many educators, on being told that a new video conferencing facility will enable them to reach unlimited numbers of students in a huge number of out-sites at all times of day or night, may not stop to consider why they would want to do that or whether student needs would be met, or whether the educational purposes thus served are of priority, or what kinds of learning and teaching environments would be created by utilising such a technology.

Seligman (1992) asserts that educational providers often have answers before the questions have been adequately formulated (3). Technology has often been accused of being a "solution parading around looking for a problem to fit!" (Heese and Badenhorst 1992 : 71 in Gultig 1992 : 8). Often questions around student needs, educational impact, appropriate design and planned usage only emerge once the equipment has been procured. Hannafin et al (1987) claim that it is our fascination with 'the toys of the trade' that obscures these kinds of important questions (13). There is a focus on the capacity of hardware to 'deliver' rather than on how the learners will use the learning material once 'delivered'. Gultig (1992) accuses the most vociferous proponents of distance education of ascribing almost mystical powers to technology and suggests that crucially educational arguments for distance education are missing (7). In many instances a technology appears to have been used because of an individual's or an institution's desire to explore possible roles for a new technology rather than because that medium offered specific potential solutions to targeted learner needs (SAIDE-ET2000 1996:6).

The existence and availability of a given technology is often sufficient motivation for its acquisition, and identified education needs are pushed into the background.



*"It seems to me that educators who overemphasise the importance of hardware almost inevitably under-emphasise the importance of critical learning variables. Put another way, such teachers emphasise what the technology can made to do, rather than what the learner can be empowered to do"(Maddux 1989 :24).*

There is a further tendency, given the excessive enthusiasm for technology described already, for educational provision to be modified and shaped according to technological capabilities. Seligman (1992) suggests that

*"ideally it should be technology that is the dependent variable being influenced by policies and adapting to the educational and social economic and cultural needs. Unfortunately decision makers in many countries too often take the deterministic view of technology. The hardware technology systems are given, it then follows that policies and materials must be moulded or changed to suit these given systems"(3).*

It is significant that in a description by Karpiak (1995) of the University of Guelph-Waterloo's approach to distance education, he saw fit to emphasise that it is "based **not** on the adaptation of educational needs to existing technology but rather in the modification of technology to suit educational priorities"(383). This is clearly a sufficiently uncommon scenario to warrant specific comment.

Thus some of problems in making sound decisions about media arise out of an overly technological focus, as described in these first two sections of this chapter. "The experience world-wide is that there have been far too many examples of technology driving the decision making processes, with the result that outcomes have not met expectations"(DoE-TELI 1996: 23). The students and the requirements of the teaching-learning interchange need to be at the centre of the distance education process and not the demands and constraints of the medium. This point will be returned to further in Chapter 5.

### **3.3. A WEAK THEORETICAL BASE**

The easy dominance of technology over educational issues should not be surprising. Distance education is widely viewed as largely untheorised and its theoretical base as being particularly fragile.

Given that forms of distance education have been in place since the 1800's, there have obviously been attempts made by scholars to develop adequate theoretical explanations. Wedemeyer in the 1940's, Otto Peters in the 1960's, Holmberg, Keegan and others have all written extensively, defining and describing the phenomenon of distance education. Peters (1993) does warn that these theories tend to be theories of 'legitimation', and that because distance education has always been in the position of having to justify and validate its position and activities, these theories will have a strong apologetical trend as they mirror the field's attempts to gain status. For this reason, he says that many 'definitions' and theories of distance education are prescriptive (how things should be) rather than descriptive (how things actually are).

One of the strengths of these theories, but one which makes generalisation of any model difficult, is that they are extremely context specific, describing distance education as practised in specific countries or projects, often the 'home base' of the particular theorist. For example Peters' theory of distance education as an industrialised mass-production line generating a high quality commodity has clear applicability when describing institutions such as The UK Open University or the FernUniversitat in Germany (both large, state funded, materials-based universities in developed nations) but is less satisfactory when applied to, say, the Tanzanian Teacher Education project (a small scale, virtually no-technology project in response to a specific short-term crisis). Concerns over student autonomy and openness dominate theoretical debates in one context but are less pressing than issues of cost-effectiveness and massification in others. Some theories place sophisticated technological mediation at the heart of core assumptions which clearly hinders the validity of that paradigm for some applications in the developing world. Schlosser and Anderson (1994) in surveying theoretical trends point out that the explanatory power of a theory varies depending on time and locale and that "for this reason it is so difficult to name a 'best' theory of distance education. It may be asking too much of any one theory to adequately address distance education in all its manifestations"(14). This makes it dangerous for providers in search of a theory to simply pick up the currently dominant theory and drop it into their own institutions – it rather requires a comprehensive understanding of all the various theories which have been developed to explain distance education .

Keegan et al (1993) point out however that it is only fairly recently (in the last three decades) that distance practice has begun to rely on and relate to theory at all. Many

writers would contend that this linkage between practice and theory remains tenuous (76). Holmberg (1986) says that most efforts in the field have been practical or mechanistic and have concentrated on the logistics of the enterprise (in Keegan 1986 :63). Moore (1983) also cites concerns that the progress of distance education is hindered by lack of attention to 'macro factors'. There is no systematic theory, he says, which makes it possible to classify practitioners' individual experiences in relation to their essence. As commented on earlier, literature reviews reveal there is a tendency amongst practitioners to evaluate their practice pragmatically rather than theoretically. SAIDE's report on the major Education Technology 2000 conference highlights that discussion there was characterised by an absence of "a real attempt to problematize terms such as "educational technology" or "open learning" although even cursory consideration of their meanings raises several problems relating to the way they are used"(SAIDE -ET2000 1996 :5). Even the major success story of 20th century distance provision, the UK Open University, when threatened by funding cuts in the 1980's could not generate convincing theoretical arguments for its survival: instead its continued existence was secured only on economic grounds (Woodbridge and Le Roux 1996:27).

Gultig (1992) rejects this decision making position driven by simple economic necessity because he says this will not succeed as quality education for all : "cut rate education like factory shops sells second-rate goods to the poor and offers no guarantees" (7). The economic imperative, he argues, while important is a second-order consideration, with educational principles such as the kind of people we want from an educational system taking precedence. This would seem to imply a much more stringent use of theories which explain the phenomenon of distance provision.

The lack of firmly based theory has clear consequences according to many writers including

- a lack of identity and a sense of belonging on the periphery, (Keegan 1986)
- the lack of a touchstone against which decisions on methods, media, on financing and student support can be made with confidence (Schlosser and Anderson 1994 : 5)
- Holmberg (1986) points to the need for theoretical insights that can "tell us what in distance education is to be expected under what conditions and circumstances thus paving the way for corroborated practical methodological application" (3).

Otherwise, as Keegan and other commentators contend, distance educators in the field are condemned to the currently characteristic problem-solving model of an ad hoc response to a crisis situation.

A particular weakness of distance theory for educators wishing to deal with technology has been the traditional preoccupation with 'how' distance education does what it does. This leads, say Shale and Garrison (1990) to an undue emphasis on the 'distance' aspect of distance education and the form that provision takes and thus in turn neglects "the critical issue that distance education should be about 'education' with the morphological constraints arising from distance being simply a physical and therefore methodological constraint"(25). Where distance is seen as the central defining problem of this form of education, there is little focus on educational theories but rather a search for a technology which will 'conquer' that time/space gap. Shale and Garrison go on to argue that in such a context, there is implied equivalence between the technological media used to contend with distance education, and the term itself, and the concept it represents. "Viewing distance education from the perspective of the technological media used to achieve it obscures the fact that in all instances the goal is education"(31).

As distance education evolves towards an ever more sophisticated use of technology, Inglis (1995) highlights how important it is that the theories upon which the practice of distance education is based encompass the rapidly advancing technologies used (366). Green (1993), in recognising that one of the most important developments in educational theory and practice in recent times concerns technology, asserted that this development would inevitably require, as many have observed, "decisive shifts in how we think about and conduct curriculum and (education) at every level"(in Thompson 1995: 472). The educational questions raised here have been addressed many times over many years by a variety of education philosophers, but Jonathan (1990) argues that each generation may need to readdress these fundamental issues anew (in Clayton 1995: 341). While this may be true for all spheres of education, distance education theorists (Clayton 1995 : Inglis 1995: Birchall 1995) suggest that the current new wave in technological communications development may have precipitated the need for urgent re-examination of the aims and purposes of education in the light of what is now possible. Much of our pedagogic theory at the interface with technology and new modes of delivery is viewed as out of date.

*"The rate of development of the technology seems at present to be outstripping the rate at which we can develop pedagogic understanding. What we need is an understanding of how best to deploy different technologies for the learner"(Birchall, 1995:324).*

It should be remembered that distance education has changed dramatically since its first appearance and that any theory needs to be carefully located in its chronological time-slot in order to fully contextualise it. Inglis (1995) warns that theories that informed distance education in the past cannot be assumed, as they stand, to hold relevance for new modes of delivery (367) .

If theories which adequately explained forms of distance education in the 1960's can no longer be assumed to suffice and given that there seems to be a reluctance to subject distance provision to rigorous theorising, current practitioners tend to look elsewhere for answers to their questions, and seldom towards educational theory. While cross-fertilisation of ideas from many disciplines can be a fruitful exercise, Inglis (1995) criticises the reliance on theories informed

*"by relatively naive understandings of the functions that technologies ought to be supporting, understandings generally derived from fields such as computer science, engineering, and broadcast and telephone communications, and which are derived from a conception of the role of technology as providing media for information delivery" (366).*

Inglis (1995) calls for a new theory of distance education but warns that if it is to have any usefulness for guiding practice, it needs to "go beyond the common conception of the role of telecommunications media as the delivery of information to the more advanced conception of facilitating dialogue"(367). This point will be further elaborated in Chapter 6.

Earlier sections have alluded to the diverging focus which different providers bring to their task: dedicated distance providers often define themselves solely in terms of the technology used while mixed-mode institutions often downplay the role of media. Distance specialists seem to be either technical whizzes or systems administrators : educators on the ground are not often specialists in either so there is very little linking between philosophy/policy and implementations strategies. A conceptual split exists between technologists and engineers on the one hand and educationalists on the other. Educators possibly feel out of their expertise depth and are not familiar enough with the capabilities of the various media to make informed choices. In many instances there is a perception that these issues should

be dealt with by specialists although educationalists would be reluctant to leave other important aspects such as assessment to 'outsiders'.

Such dialogue as exists between the two groupings seems ineffectual because of the jargon laden discourse unique to each discipline and inaccessible to the other, for example, when dealing with technological specifications which is particularly alienating to educators. Few educators are willing to acquire the technical know-how needed to converse effectively with communications engineers (Inglis 1995). Equally culpable are those technologists, who, in possession of the necessary technical expertise, fail to develop appropriate conceptions of the roles that the technologies need to play in education. As a result, says Inglis, "the systems we see being implemented are frequently found to be either educationally functional but hobbled by design oversights or masterpieces of technology which fail to meet the requirements of teachers and students"(366).

Because both technologists and educationalists are not often clear about the theoretical underpinnings of their endeavours, they find it difficult to make nuanced choices which are congruent with that philosophical position. Certainly when faced with the insistence of technological specifications hard-sell by manufacturers, educational issues which should be paramount often crumble and prove inadequate leaving extreme pragmatism dominant. If there is a lack of helpful and generally agreed-on theory on which to make rational decisions, then other factors will de facto prevail. "Lacking an adequate theoretical framework in which to place innovations, the pendulum continues to swing wildly from euphoria to cynicism (Gustav 1964 : 38 in Hlynka and Hurly 1982 : 160).

### **3.4. TRADITIONAL PARADIGMS**

New technologies are not playing as significant a transformatory role as hoped, perhaps because distance education has sometimes stood outside of major debates in education as a whole, and has tended to lag behind in a more traditional, outdated paradigm. This is often at odds with its claims towards openness, as well as failing to exploit the true capabilities of the new technologies.

In studying the literature describing many education initiatives, internationally and locally (acknowledging there will be significant exceptions to the pattern), it seemed apparent that technologies are not primarily used to make education more flexible and learner centred but instead to provide "more technologically advanced ways of delivering top-down

education"(SAIDE- ET2000 1996:10) and "to enhance the role of the traditional teacher using new gimmicks"(7). Various technological media are added onto the existing system to take the traditional classroom to more learners without examining ways in which those tools could provide a more meaningful and potentially rewarding learning experience. Most initiatives do not represent a significant shift towards opening up educational opportunities for learners, the dominant paradigm still being very traditional and centred around the teacher. A 1992 survey in Australia, a country considered by many to be at the forefront of distance and mixed-mode provision, found only limited change in the approach to teaching and learning in technology-enhanced projects, and concluded that the potential of new approaches to herald a definitive shift to learner centred education was still to be realised (Australian National Board of Employment, Education and Training in Jenkins 1995:428).

Much criticism of American distance learning is based on its distributed nature- that is, using the various forms of teleconferencing to bring the 'talking teacher' to scattered groups of students. One of the advantages of this approach is that it cuts costs significantly because there is no need to produce specific learning materials in advance. For the lecturer concerned, it feels like 'business as usual' except that the class is much bigger and at the end of some technology. However critics maintain that the talking teacher is neither a financially viable nor educationally effective way of massifying education (SAIDE- ET2000 1996:5). Bates (1991) says that the distributed model is premised on the notion that " the classroom model of a lecturer delivering information is an adequate teaching model"(13). He goes on to argue that there is a good deal of evidence to suggest that this form of distributed learning is really only effective when dealing with highly experienced and motivated students, skilled in learning approaches and already familiar with the basics of the subject area – all reasons, he says, why distributed learning (or tele-education as it is sometimes called) is most successful with postgraduate education and professional updating (13).

The tendency to restrict technology enhancement to traditional practices is reflected locally: the TELI report (1996) says that in most cases, "old ways of teaching and learning are being supported by new technologies to drill, test or convey information in a largely one-way fashion"(35). The dominant approach still seems to be to

*"consider learners to be empty vessels to which knowledge must be transmitted in a largely one-way communication by the teacher. Often communications media, such as video conferencing, are used to transmit the 'live' talking teacher to large groups in a*

*number of geographical locations with very little opportunity for meaningful interaction* (SAIDE- ET2000 1996:8).

Kenyon (1996) asserts that if technology is to be able to provide opportunities for different learning and teaching styles, then it cannot be used merely as 'hi-tech chalk'(38). Furthermore, merely adding on a technology to an existing system without any attendant change is likely to prove additionally expensive. It is also a gross underutilisation of very expensive equipment to distort its capacity for purposes better suited to other media.

This outdated, traditionalist use of technology is at variance both with national policy and the publicly stated mission statements of many institutions. International trends such as globalisation and the emergence of information economies suggest the need to educate learners in new ways. (This will be discussed further in Chapter 6.1). There is an incongruity of using advanced technologies to distribute methodologies that "have their origins in the schoolhouse of the early 19th century"(Sharif 1996:7).

### **3.5. DELIVERY <sup>8</sup> versus LEARNING**

Linked to the notion of a naive fascination with technological capacity is the lack of pursuit of the educational question of how teachers can teach (using technology) and how learners can learn (using technology). The TELI report (1996) points to this change to a stress on learning (as opposed to provision of opportunities and resources only) as an important policy change in South Africa and globally.

*"Whereas the commitment to educational provision is judged on criteria such as the numbers of schools built, textbooks, computers and numbers of students enrolled, the commitment to learning can be judged only by knowing whether and how learning is or is not taking place"(28).*

This is obviously very difficult to appraise : it is clear however, that the approach of a simple head-count of numbers of students reached by the delivery mechanism will not suffice.

Many distance providers fail to consider the actual capacity of technologies to create **effective** learning environments rather than simple **efficiency** in the transmission of knowledge. For example, China's Television University is a very efficient institution

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<sup>8</sup> Hodgson defines "delivery" as referring to the arrangements by which learning materials are made available to learners. (1993).



reaching very large numbers of students indeed : "whether the learning is effective may depend on how effectiveness is measured which in turn will depend on one's pedagogic values"(DoE-TELI 1996: 24). Many of the large distance universities are undoubtedly efficient : the economies of scale which are possible, the smooth running of systems of administration, the huge numbers of students being processed. In terms of their ability to turn out increased numbers of graduates within the approved budget, they meet the criteria for efficiency. Some of them, however, may be less able to satisfy criteria dealing with the quality of each individual's experience of the learning and the personal growth that most would say should attend higher education, nor may the institutions be able to meet some of the demands for flexible graduates with information-gathering skills demanded by changing markets. (This point will be explored more in section 6.1) The split between 'efficiency' and 'effectiveness' mirrors perhaps the dichotomy which this dissertation has set up between access (the availability and amount of education) and the quality thereof (whether that education actually has any positive benefits).

Gourlay, (1996) while acknowledging that the "superhighway in cyberspace is a wonderful and exciting addition to our world and puts people in different parts of the globe in the kind of contact one could never envisage in times gone by", has serious doubts as to whether it will educate and 'conscientise' in the ways required in current policy. This, she says would require "an intervention of a kind we have not seen in recent history"(8).

It is not enough merely to provide equipment which has the capacity to connect people together. Bates (1991) points to the need not only for sophisticated equipment and advanced communications technology but also for highly skilled users (teachers and learners) in order to maintain high levels of interactivity (14). He describes the negative experience of being part of an audience of several hundred at a remote site in a video conference, restricted to simply listening and watching. Being 'connected' does not in itself guarantee an effective learning experience. He further relates the depressing boredom of logging onto 'content-free' computer conferences "containing little but chit-chat and the exchange of personal opinions unrelated to any conceptual or pragmatic development"(14). Clearly, being able to be a 'participant' does not guarantee that the participation will be in any way meaningful.

This pre-occupation with delivery and the mere technical connecting of people militates against the selection of media on the basis of how well the technology will assist the learner in achieving quality understanding, rather than simple receipt of the information.

### 3.6. TEACHER RESISTANCE

Contributing to poor media selection strategies is a tendency to overemphasise the technology aspects of a system and underemphasise the human resources aspects. This is in spite of the reality that the influence of the staff or personnel involved in implementing that system can be paramount in determining the success of the media application. The simple availability or provision of equipment is not enough to ensure that educators will use it correctly or even use it at all. Many educators exhibit great suspicion and reluctance in using technology, and may even seek to undermine the application of technology by subverting it to their own familiar style. Delivering a lecture via video conferencing rather than face-to-face does not mean a teacher will engage any more with learners or be more receptive to questions. Academics who fail to return phone calls or answer student letters will not necessarily respond any quicker to e-mail messages. Baloyi (1996) exhibits great naivety about the capacity for resistance by teachers when, in espousing the value of the Internet for project work in schools, he says "innovative and creative project setting exercises (by teachers) can be **the only** outcomes of having this resource at their disposal"(23: my emphasis). I can think of many other possible outcomes of the mere provision of equipment: teachers are notoriously creative in finding ways to subvert official policy if they find it not to their liking. There are many stories about how undertrained teachers in disadvantaged schools, when presented with television sets and video programmes that were more 'expert' than they, simply 'lost' the tapes so as not to appear stupid in front of their pupils. The principle of academic freedom in universities is taken by many academics to extend to their not having to comply with anything they do not agree with, and many a crusty old professor has simply refused to have anything to do with technology or updated ideas on the delivery of education. Rowntree(1977) reminds us that even writing got a chilly reception when first introduced as an innovation, and quotes Socrates expressing this opinion : "This discovery of [writing] will cause forgetfulness in the learners' souls because they will trust to the external characters and not remember anything themselves...they will be hearers of many things and will have learned nothing"(111). These are quite different concerns from those expressed today about computer chat groups or using audio cassettes, but the resistance of teachers and lecturers can have an enormously damaging effect on any programme which is reliant on a disputed technology.

This resistance of educators is often understandable given that they are seldom involved in any consultation over media strategies before a system is decided on and are rarely provided with any training once the system arrives. Seligman (1992) contends that

*"the problem is not always with the hardware. It is often appropriate and could do the job expected of it. All that is needed for equipment is money. What is taken for granted and is undervalued is the human resource, the training needed for technicians, materials developers and producers, the need for the teachers in the system to understand the system and not to be frightened of the unknown, and these require time and effort"*(8).

### **3.7. SINGLE MEDIA SOLUTIONS**

In spite of the huge range of media available to distance providers, many opt for a single technology, which seems to imply that there is a conviction that a single technology will be able to do all that the programme might require. This seems fallacious and unrealistic and is based on a lack of consideration of the different range of learner and teacher styles, educational goals and corresponding methodologies, and again reduces education to a single equation which can be simply answered by one technology.

Examples of this lie at both ends of the technology spectrum. Many institutions –including South Africa's UNISA – have for years relied only on printed written text in order to deliver the course. This implies that the course developers believe that everything the student needs to know or understand can be captured in that text, as well as the written word being able to meet all the student's affective and social needs. Only recently have some of these institutions added other media such as telephone help-lines, audio tapes or contact sessions.

At the high-tech end of the scale, mention has already been made of the over-reliance of many providers in the US on one medium – that of satellite relaying of traditional classroom lectures (Bates 1991:12), sometimes referred to 'video conferencing'. However, in many ways 'conferencing' is a misnomer as this implies a round-table conversation which is impossible when the large numbers of students present are considered. The 'extension' students are provided with everything that the on-campus student is – which may be nothing more than a reading list and an exam schedule. But there is also a failure to consider the less formal resources which an on-campus student has – the library, face-to-face access to the lecturer if necessary at the knock of a door, as well as the collegial

support of fellow students. Many off-campus students are working part-timers and so find their study by satellite a lonely and unsatisfying affair. A more complex arrangement of media provision might meet more of the diverse needs of these students. (The effects of combining a package of media will be discussed more in section 7.1).

When one considers the complexity of the process of becoming educated, it seems unlikely that every aspect of this could be met by any one technology, however brilliant.

### **3.8. COSTS**

This is another area which receives a fair amount of general attention in the writings on distance education, and careful costing is certainly an important aspect of quality distance provision, particularly when considering the choice of technologies. An in-depth study of the costing of distance education is beyond the scope of this study, but what is important when considering the reasons for poor media selection is that the interface between cost analyses and technology choice is neglected. At the Education Technology 2000 conference, as is common, "presenters simply did not make any reference to the issues of cost or were unable to indicate clearly what the costs were of the particular technology they had chosen"(SAIDE-ET2000 1996 :12). Where there is information on costing it is often difficult to specify the costs of one media over another, particularly with regard to current cutting-edge innovations where there is little in-the-field research at all.

It is also difficult to identify the hidden costs of technologies (such as course development, student support, updating of materials) rather than the simple initial hardware installation costs. The TELI report (1996) points to the consensus world-wide that introducing media hardware into education is generally the easiest part of the process, and often is the cheapest in the long-term (Butcher and Perold 1996 : 96). More expensive and time-consuming is the labour-intensive preparation of course materials and software to accompany the hardware. Bates (1991) has developed a rough costing formula which in general predicts 1 unit of cost for delivery, 10 units of cost for production and up to 20 units for student support (13). Conboy and D'Cruz (1988) cite figures which show the falling costs of hardware relative to software and as a percentage of total costs. For example, in 1978 computer hardware costs made up 25% of computer-aided instruction as compared to only 11% in 1984 and falling all the time (102).

There are so many permutations even within major media groupings (such as broadcast television, or print-and -telephone applications) that generalisations become difficult. For example, a particular project may be given free broadcast airtime (which keeps institutional costs down) but the broadcast times may be at off-peak times and thus highly inconvenient for students who then have to invest in a video recorder (which raises student costs).

Certainly it is very hard to ascertain the correlations (if any exist) between costs and quality of student learning. Mackenzie (1996) cites the example of the CD-Rom proudly presented at a conference which took two years and US\$90 000 to develop but looked very much like "a very boring, old-fashioned history lesson", making the point that merely putting information onto CD-Rom is not sufficient for good learning (43). This inability to show that costly technological interventions increases student learning, SAIDE warns, is particularly worrying in the light of current demands for introducing technologies into education provision in order to become more cost-efficient (ET2000 1996:13).

It should be remembered that 'cost-efficient' does not necessarily mean cheap or even cheaper. Where institutions or governments are looking for low-cost solutions, it is unlikely that a quality service will be provided to students. It is a common fallacy that technology-enhanced learning is a 'cheap and easy' option for mass education and the TELI-report points to the high cost of producing good educational programmes - in the order of DM 100 000 per 45 min programme to broadcast fully interactive programmes (DoE-TELI 1996: 238). In fact in some instances the use of technology actually raises unit costs to a higher level than would have occurred in face-to-face circumstances. This is not always evidence of bad management however : rather, that low cost mass provision is not always the goal. For example in the US context, learners have constitutional rights to a wide range of subject choices but in sparsely populated areas, this often proves impossible. A distance system using expensive technology such as video conferencing may therefore be set up to share scarce resources, which may be very costly on a per capita basis but which satisfies the obligations and intentions of the providers.

It is not surprising that poor decision making around technology and media choice occurs if, as it seems, key decision makers are not in touch with the actual cost benefits of applying technology but continue to enthusiastically espouse its cause nonetheless, particularly on the basis of providing cost-efficiency. It seems almost inevitable that expensive mistakes are so often made.

### **3.9. CULTURAL BARRIERS**

Distance education, as exemplified in the definitions looked at earlier, tends to define its mission as overcoming the barriers of time and space. This is, however, often simplistic and fails to take account of other types of barriers that may exist, such as discrimination on the basis of race, gender, age or physical disability, or 'opportunity barriers' such as the inability to take time off work or restrictive family responsibilities (SAIDE –ET2000 1996: 9).

Mooney and Carpenter (1979) suggest that the conquest of distance is no longer a technical problem for distance education and that providers should now concentrate on the more difficult aspects of emotional and intellectual distance (in Hlynka and Hurly 1982:164). Failure to consider these types of barriers in media choices will counteract the effect of opening up access to learners and may in fact provide further stumbling blocks in their pursuit of learning. Indiscriminate and inappropriate technology choices seem as likely to disempower as to empower the very people the system seeks to reach (DoE-TELI 1996: viii).

In South Africa particularly, there needs to be a much greater cognisance taken of the historical inequities which have resulted in barriers such as a lack of 'appropriate' qualifications, and, most importantly for media choice, the use of pedagogical approaches that restrict accessibility to learning and expertise (SAIDE-ET2000 1996:9). For example, many of the learners most in need of a distance education system in South Africa will not be computer literate, thus rendering Internet facilities or programmed learning packages difficult to use unless accompanied by skill building activities too. At a more subtle level, many South African learners have only been exposed to rote learning strategies in their schooling and might battle to adjust to the plethora of information, some entirely irrelevant, on a CD-Rom or the Internet. For learners coming out of a heavily authoritarian schooling system where asking questions was not encouraged, it may be asking a great deal to expect those students to freely and confidently interject in a multiple-site video conference debate. Conboy and D'Cruz (1988) rightly point to the fallacy of considering only financial factors in determining the cost-efficiency of a technology : there needs to be a consideration of cultural factors too (96).

### **3.10. THE DEVELOPING-DEVELOPED WORLD DIVIDE**

One of the difficulties in generating generally applicable guidelines for media selection which might go some way towards preventing the gross mistakes that are sometimes made,

is the increasing technological gap between the developing countries, where some of the greatest need for distance education occurs, and the 'First' World, where there is the greatest access to resource strategies. While this gap between rich and poor countries has always existed, the development of new technologies has only served to widen and entrench that gap. "People and countries with large resource bases are much better placed to take advantage of the educational benefits arising from new technologies in teaching and learning than are people and countries with few resources"(SAIDE ET2000 1996 :10). Gourlay (1996) points out that in some countries even 'archaic' forms of communications such as post or telephone are unavailable or unreliable (6).

Some commentators have noticed the development of an 'us-and-them' mentality, with a "patronising neo-colonialist attitude on the part of developed countries and feelings of either paranoia or blind acceptance on the part of developing countries"(SAIDE-ET2000 1996:16). This type of atmosphere is unlikely to engender co-operative ventures that might solve some of the recurring problems around distance applications of technology.

Both Bates (1995) and Jacobs (1996) warn that indiscriminate 'Americanisation' of educational systems is not necessarily the answer to educational problems in other contexts. The importance of making technological decisions based on relevance and appropriacy to context cannot be stressed enough. Although many writers point out the problems in the "willy-nilly exporting of programmes made in one part of the world to another, there is still a dominant fascination with globalisation" (Perold 1996:54).

The new technologies demand a hugely expensive and sophisticated infrastructure and assume basic facilities such as electricity, ISDN telephone lines and national access to satellite links. These are clearly not 'givens' in most developing educational systems and thus much debate in distance education simply fails to have relevance in developing countries. In the South African context applying such technologies may in fact increase marginalisation and perpetuate dis-equalities amongst those communities not able to access the technologies, let alone the education being delivered by the medium (SAIDE - ET2000 1996:15).

Given the international enthusiasm for these new technologies, the impetus for development and better application of more traditional (perhaps less glamorous) 'old' media has waned, in spite of pleas from developing countries (SAIDE- ET2000 1996).

Perold (1996) cites an interesting example of a provider in Namibia saying that the simple strategy of an efficient telephone service between far flung learner centres would have the most significant effect on interactivity between students and tutors, thus substantially increasing the quality of the learner experience (in SAIDE-ET2000 1996:55).

There is often pressure in developing countries from less informed people, or those with other agendas such as politicians and business people, to adopt high-tech solutions for their public relations impact or because there is a perceived need to be 'up to date'. Perold (1996) points out that much more work needs to be done in educating decision makers in selecting appropriate media in order to achieve clearly identified goals.

As a backlash to the perceived pressure to adopt inappropriate imported solutions, and arising out of resistance to technology as a quick-fix, there is often a fair amount of anti-technology hostility amongst those responsible for development in Third world countries. The former US Secretary for Commerce, Larry Irving, tells of being labelled a 'technofascist' and 'cyber colonist' when first mooted the role the Internet could play in developing countries. In another example, a World-bank sponsored project broadcasts (at vast cost) courses by world-renowned professors to African universities. But there is resistance from locals: "If the World Bank really wants to help African universities then the first step would be to encourage and support the Africans to return back. In the end it is only Africans who can solve their problems"(Meghistab Haile, from Ethiopia). "Our priorities are hygiene, sanitation, safe drinking water", said a nurse in Kathmandu, "How is the internet going to change that?" (<http://www.news.bbc.co.uk/hi/English/specialreport/> June 1999.) While this view is entirely understandable, there is the argument which says that access to increased knowledge about new strategies for better sanitation (via the Internet or using new technology) might indeed help the situation.

So long as attitudes like the ones described prevail on both sides of the developed/developing divide, the technological gap can only widen and the discrepancies in access to information worsen.

## **CONCLUSION**

This chapter has examined possible reasons for poor decision making regarding the selection and integration of media into distance programmes. It has shown that flawed thinking in a number of crucial areas (namely understanding technology, understanding



educational and theoretical principles, and understanding the context in which that technology will be applied) combine to make it very difficult for a provider to come up with financially sensible and educationally effective decisions about which media to use and in what combination.

The next chapter will show that this type of flawed thinking is not limited to those in the marketplace of distance provision, where the pressures of actually delivering education on a daily basis might legitimately make decision making more confusing. In Chapter 4 it becomes clear that the researchers and theorists involved in educational technology and media research have also fallen prey to some very muddled and unhelpful thinking.

It should be noted here that I am not suggesting that poor decision making around technologies is going to be the sole reason for the failure of many mediated learning projects to live up to expectations. The reasons why a given distance education system is ineffective or of poor quality are likely to be complex, and are unlikely to be limited to only one of the errors listed in this section. A provider who fails to foreground educational principles when making media choices will probably also underestimate the need for student support. Shaky economics around technologies will in all likelihood be accompanied by an inability to handle other aspects of funding an educational enterprise. Thus poor media choice for the reasons listed here will probably be only one contributory strand in a general picture of incompetence. Nevertheless, for the reasons discussed previously, the misuse of technology can have a powerful effect on the quality of learning experience for the student.

## **CHAPTER 4: MEDIA RESEARCH AND DISTANCE EDUCATION**

The previous chapter has examined reasons for poor media selection in distance learning. Many of these have to do with influences outside of education overriding pedagogic factors.

Section 3.2 and 3.3 suggested that this situation exists because of the inadequacy of the pedagogic criteria that do exist. The knowledge – about which media is best for which educational purpose - which should inform such criteria, one would expect to have been generated by research and by theorizing. However, this chapter will show that this is not the case.

The point has been made already that the area of media selection is not uncharted territory. Much work has been done, both in research and in the generation of theoretical models of media selection. This chapter will examine these in more detail, showing precisely in what ways these models are not helpful.

### **4.1. PROBLEMS WITH PREVIOUS RESEARCH**

Usually, when faced with a problematic area of endeavor, practitioners could reasonably expect to find answers in the research studies of the past and the vast body of research literature that must surely have been built up. However, a sample survey of the literature around media and education reveals one of the reasons that poor decision making exists in the first place: that while there exists an impressive amount of research study, much of it is contradictory and the conceptual terrain is riven by major dissent and disputes.

Rowntree's summary of work done to the mid-1970's reads: "very little of the vast published research on audio-visual media is of any help at all in deciding what media to use. Research into 'older' media, let alone combination of old and new is even less productive of insights"(1977:123). In reviewing media research, Schramm (1977) condemned years of work and over a thousand studies as a waste of time posing relatively useless questions. He also cautioned against unrealistic expectations of uncovering any straightforward means of selecting educational media (in Carter 1996:34). According to Carpenter (1971), "the search for rational means of selecting media for learning has frustrated educational technologists for years. Much research in the past has been largely unsuccessful in producing guidance for media selection"(in Bates 1981:220). Campeau (1974) complained that " media research has not provided decision makers with practical, valid, dependable guidelines for making choices on the basis of instructional effectiveness"(in Bates 1981:218).

Certainly little of the research findings published in the last 40 years is judged to be of practical help to distance providers on the ground, and much of it would leave the searcher more confused than previously. Faced with what Bates (1981) terms "the spectacular failure of experimental researchers to come up with clear guidelines for those with decisions to make about the use of [media] in education" (218), many distance providers back off and rely on other factors or, as Koumi (1994) suggests, rely on no model at all. He argues that, given the absence of user-friendly pedagogic criteria, it is not surprising that the allocation of media remains a random activity subject to excessive influence by political, economic and human factors (57).

This state of affairs becomes even more surprising when one realises that the field is extensively researched. This section will examine the most influential of that research and examine the flaws which lead to its inadequacy in providing useful answers to those with decisions to make around media and technology.

In the first part (section 4.2) the focus is on the most common form of research, often termed 'comparative' where different forms of media are empirically measured against each other in laboratory-type experiments . A description of these studies is followed by an examination of the critique of Clark and others of these studies and the conclusion drawn by these writers. Thereafter we will examine more recent responses to Clark's position. The second section of Chapter 4 (section 4.3) examines the usefulness of various media selection models which have been developed by Educational Technologists.

## **4.2. COMPARATIVE RESEARCH**

### **What has been done**

From the earliest attempt in 1912, through a boom period in the 40's and 50's and continuing indeed to the present, the emphasis in media research has been on classical laboratory controlled experiments of a comparative nature, where a form of technology (usually televised learning or computer-aided instruction) is pitted against another teaching method, usually traditional face-to-face delivery and the subjects given standardised tests afterwards. Conclusions are then drawn about the efficacy or otherwise of the medium, and the superiority of the one approach over the other. Variables that might influence the results are carefully eliminated or controlled. Learning performance tends to be

quantitatively measured and statistically analysed for significant correlations (based on Bates 1981: 217).

Some studies found that the technological medium was more effective while others found that the traditional teaching method was: most however found that both were pretty much equally effective, or what has become known as the 'no significant difference' (nsd) result. Schramm (1977) in his analysis of over 1000 of these types of studies had this to say:

*"they are less illuminating than they might be...students can learn a great deal from any medium...little evidence as to which medium in a given situation can bring about the most learning...hints that one medium may be more effective for a given learning task or learner but little systematic proof" (in Bates 1981:218).*

In later years as statistical tools became more sophisticated, meta-analysis was applied to the results of the various studies in the hopes that if pooled, more significant results might be revealed. Unfortunately, the basic results still stand. For example, one meta-analysis study pooled 320 research studies on audio-visual media versus teacher comparisons. 74% showed the dreaded nsd (no significant difference) result : those that showed gains were in the region of only 1.5% gain in exam scores (Romiszowski 1988: 61).

It seems extraordinary that so much research can have yielded so little clarity. There are two schools of thought in explaining this phenomenon. One is headed by Clark, whose influential proclamations seem to carry the greatest weight in the distance education field, while the contrary position encompasses more modern and diverse thinkers, including experienced practitioners such as Bates and Koumi.

### **Clark's position**

Clark, like Schramm (1975) and Chu (1967), has conducted surveys of this type of comparative research at various times (1982,1983,1985,1991 with the most recent being in 1994) and his primary response seems to be one of irritation that researchers and practitioners are unwilling to accept the overwhelming outcome of 'no significant difference' and persist in trying to prove the superiority of mediated learning. He maintains that "there is consistent evidence for the generalisation that there are no learning benefits to be gained from employing any specific medium to deliver instruction"(1983:445). He goes on to present what has become a popular metaphor, likening the various media to

*"mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition. Basically*

*the choice of vehicle might influence the cost or extent of distributing instruction but only the content of the vehicle can influence achievement"*(445).

Any positive research correlations in favour of particular media, he maintained, were the product of uncontrolled effects such as novelty value, or the instructional method used. As recently as 1994, Clark unequivocally stated that media will NEVER influence learning (Carter 1996:32), although cost benefits and mass distribution possibilities might be effected. His position has been supported by others (Reiser and Gagne 1983, Winn 1994 and Whittington 1987 in Carter 1996:34) who would all maintain that the medium employed as a delivery mechanism has a minimal effect on the way content is understood.

Clark does not critique the experimental method employed in these studies : in fact, he states firmly that " when examining the effects of different media, only the media being compared can be different. All other aspects of the treatments, including the subject content and method of instruction must be identical "(1983 : 448). This means, for instance that the 'treatment ' or lesson must be prepared by and presented by the same person, and that preparation time must be the same. This would prove to be a highly problematic proviso for other critics such as Bates, and is explored more fully below.

A central point of Clark's analysis is the separation of medium and method, or as he puts it, the teacher and the teaching. He maintains that the significant influence on learning achievement is the method, aptitude and task variables of instruction, not the medium which delivers them. Thus he would say that it is the opportunity to review material that may influence learning achievement, not whether that review is made possible by a teacher going over a point or by the learner rewinding a video. Clark would draw no distinction between a live lecture and a video taped lecture (because, he argues, the **medium** makes no difference) but would suggest that learning differences would be identified between an uninterrupted lecture and a lecture where there was opportunity for questions and interactions (a change in instructional **method**). Whether the latter was delivered via a video or broadcast television or live (the medium or delivery technology) would make no difference. The results of many comparative studies were confounded by confusing the two, he maintained.

Clark wonders why media are still advocated for their ability to increase learning when the research indicates clearly that such benefits are not likely (1983:456). He warns that there will be still be a pre-eminence of "invalid but intuitively appealing beliefs which are triumphs

of enthusiasm over substantive examination"(1994 :27) He posits that the vested interests of the educational media industry would fight against his research findings, as well as being unpopular with those with high expectations for technology-based instruction. His advice is that researchers refrain from exploring the relationship between media and learning, and pursue more fruitful areas with still unanswered questions.

This might seem a reasonable position given the inconclusive nature of the research. Others, too, would support an abandonment of comparative research but for different reasons. These writers (Bates, Kozma, Carter, Koumi and others) have critiqued the experimental methods used in the majority of the studies surveyed, as well as questioning the basic theoretical and pedagogic underpinnings of the conclusions drawn. These will be detailed below.

### **Critique of Clark's position**

- **Theoretical problems**

Interestingly, Bates who is often seen as speaking for practitioners, criticises much of the research surveyed above for its lack of a theoretical framework based on broader theories of learning and teaching. This theoretical framework might, he suggested, be based on accurate observation of the nature of mediated learning which would lead to the development of carefully articulated assumptions which would in turn guide experimental design as to the likely direction of results, important variables and so on (1981:219). The absence of theory, he says, renders the research like a rudderless ship. Koumi (1994) endorses this, saying the cart has been put before the horse in that researchers have rushed into comparative testing in a theoretical vacuum without particular assumptions to test (44).

- **Methodology problems**

Bates (1981 and elsewhere) is critical of the comparative style of research outlined above as too much of the wrong kind of research carried out by inappropriate methods and which in fact cannot answer the kinds of questions practitioners want answered. In order to use the scientific method appropriately, he said, there needs to be "the possibility of clear cut results and a high level of proof" (216). This he feels is unrealistic given the state of our current knowledge of how media work. He further complains that the privileging of this kind

of research gives the impression that because this type of research has been unproductive, nothing is known about the effectiveness of media. He contends that this is not so,

*"but the knowledge has not been gained through artificial laboratory type experiments. Neither does 'no significant difference' mean that there IS no difference : merely that the experimental design is too crude to measure it"(220).*

For example, too small an exposure time, (many of the early studies typically had a single lesson exposure) fails to show differences over time.

Objections are also raised over the fact that newer technologies are virtually always tested against a baseline of the traditional face-to-face classroom teaching style, perhaps initially in order to gain acceptance for new technologies in more conservative circles. As such many studies were stuck in what Clark termed 'proprietary quarrels' as to whether or not distance education was equivalent in quality and effectiveness to proximate classroom education. Educators tend to assign universal effectiveness to the traditional methods and then scrutinise the reliability and impact of anything new against that (Hlynka and Hurly 1982:160). The possibility that new media might allow education to move in entirely new directions with entirely new outcomes was never really addressed.

Comparative research projects are criticised for only focussing on easily measurable performance aspects, (emphasising quantitative measurements expressed in the form of written or verbal responses to cognitive questions ) with many longer-term outcomes and the affective domain being ignored (Bates 1981: Hlynka and Hurly 1982 ). Hlynka and Hurly describe it thus: "the two competing methods are placed side by side as if in a slot-car race, the sole criterion usually being student performance in standardised tests. The affective domain is largely ignored"(160). Bates explores this point further arguing that cognitive learning may be only one of many learning intentions that an educator has (223). Certain media may be better at outcomes such as motivation or appreciation, rather than concept formation or linear explanation. Furthermore, the form in which learning was measured (the written or verbal test being the most popular because this facilitated quantitative statistical manipulation) in itself favours certain media which are better at communicating those forms of knowledge.

*"If we ask only for a written response to a visual presentation there is a risk that aspects of learning that may have taken place may go unmeasured. This will be disproportionately greater for some media than others" (Bates 1981:223).*

- **Choice of topics**

A further set of variables which the comparative researchers sought to exclude were those relating to differences in the media themselves in order that the two approaches could be equated. In other words, the experiments sought to test the comparative effectiveness of different media teaching the same things in the same way, the only difference being the actual medium used to do this. This, Bates said in 1981, in fact only tested the efficiency of each medium in **delivering** the same message and ignored the ability of each medium to treat the subject in a unique way. This desire to strip a medium of all that differentiated it from its competitor was akin, said Bates, to chopping two legs off a horse in order to see if it could run faster than a man! In his view, differences in how a particular medium could be used are not just an experimental nuisance to be controlled or eliminated: they are the justification for their use and what renders them effective in the first place (220). In his writings Clark suggests that to allow unequal preparation time for computer-aided instruction would be the same as testing a Grand Prix racing car with its team of developers against the family car given a service very now and again. However, it could be as logically argued that if you are primarily interested in which is faster, and preparation time is an influencing factor, then you cannot exclude these factors.

Koumi (1994) also complains that in order to create equal 'scientific' tests, topics are chosen which lend themselves equally well to both types of instructions. Romiszowski (1988) concurs:

*"the subject matter chosen for the experiments may pre-judge the results. Naturally you compare two media on a topic where both have reasonable chance of success. No one would set up a comparison [where] one medium is clearly inappropriate. So you choose an experimental topic which does not seem to favour either medium particularly and are then surprised when no significant differences are found" (60).*

Koumi (1994) calls these 'media-robust' topics and says it would be more useful if topics were selected which demanded a particular technology in order to be taught effectively or indeed taught at all (43). Bates (1981) contends that if you exclude all topics that favour variation in the media, particularly for more unconventional media such as television, "then you are bound to land up with 'no significant difference': it's an artefact of the design"(220).

Campeau (1974) also suggested that a particular medium achieved some of the instructional objectives of a particular lesson while another medium would achieve some of



the others. By averaging the results of the scores over the lesson as a whole, existing differences would be cancelled out in the experiment as a whole (in Romiszowski 1988:60).

- **Presentational factors**

Another variable which the researchers sought to exclude but which in fact seems to be of major interest for providers is that of style or design variables: in other words, what kinds of presentational approaches work and which ones don't. By insisting on the same designer for each medium, presentational attributes tended to be muddled, particularly as most designers were contact teachers, not media experts. Thus televised learning packages tended to be amateurish and computer programmed learning crude. None of the teachers used in the traditional 'control' lessons were plumbers or horse trainers, however! More useful results might have been obtained by comparing the very best television programme on a given topic with the very best contact teaching lesson on the same topic.

*"In order to be fair to each medium, we would need to employ highly creative practitioners and allow them allow adequate time to exploit the full potential of each medium's symbol system. The result otherwise will be underachievement of the potential of the media"(Koumi 1994:42).*

Bates also points out that very little work has been done in comparing the same medium testing two different television programmes on the same topic (1981:222). Whittington (1987) agrees, saying that very little research has been done to identify the unique capabilities of a particular medium, in order to determine how to exploit them for best effect (54), or indeed which combination of media works well for particular tasks. This would be more productive than focussing on a search for the best, 'universal' medium, a search which Salomon called naïve (1974 in Hlynka and Hurly 1982:160). Less effort should be expended on 'proving' various media experimentally and more on using actual materials to develop and refine criteria for deploying each medium to best effect (Koumi 1994:44).

Mason (1994), involved in media evaluation much more recently, raises an interesting objection to comparative research studies. He contrasts generally favourable responses to the use of technologies as evaluated by feedback from **genuine** students actually enrolled in programmes with the negative or inconclusive results from **artificial** quasi-laboratory studies where regular face-to-face students were usually asked to take part in these studies by sitting in on some classes 'next door' to test the various media. Because these students had no real need of the new technology, they raised a whole series of complaints and

objections which are of less significance to a genuine isolated distance student faced with the absence of any educational alternatives and offered the possibility of some better way of learning. Thus a campus-based student offered video conferencing may complain about the difficulty of picking up verbal and visual clues or object to the presence of a camera: the remote student is delighted at the prospect of seeing a real face and hearing live sound, after perhaps exclusively text-based courses. These kinds of factors were not considered at all in the vast majority of comparative studies but may account for some of the contradictory results. "Where these systems are used outside any context of need, the results not surprisingly show less user acceptance (38). The technology merely constrains rather than facilitates"(120).

- **Conceptual problems**

However, many of the objections raised by critics of comparative research activity point to more significant problems or, as Koumi (1994) more strongly put it, to more crippling flaws than merely shoddy methodology (42). They reveal a sharp conceptual divide. Carter(1996), for example, criticised the body of research literature as being "outside of an enlightened learner centred approach...[it does not] consider media to be embedded within a learning context"(35).

A major split between the comparative researchers (including Clark) and other theorists would be around the issue of controlling all variables. For many researchers,(Jonassen et al 1994, Carter 1996) the desire to create 'sterile conditions' is not only futile but also misguided. Learning, they would argue, is a highly situated phenomenon, heavily dependent on the context in which it occurs. The variables associated with context (whether they attach to the teacher, the learner, the technology interface and so on) are all highly influential on the quality and quantity of learning likely to take place. To exclude or control these variables would be to distort the experience. An acknowledgement of the learning context, in its widest sense, is needed for accurate results.

However, the context of learning is a very complex issue and is not easy to incorporate into laboratory-type settings. Laurillard (1993) warns that the relationship between teaching and learning is 'fuzzy' and that the character of students' learning is elusive, influenced by among other factors, previous life and learning experiences (70). Carter (1996) describes the learning environment as "multi-strata'd" of which learners and media are part (33). Kozma (1991) describes learning as consisting of a multiplicity of complex relationships

among cognitive, social, affective and environmental processes (in Carter 1996:32). Bates (1981) argues that it would be virtually impossible to design authentic experiments because of the very large numbers of variables and conditions in an educational context that could influence the results. Among these, he contends are management and policy decisions which are likely to have as significant an effect as any other on whether the mediated learning is effective (222). Franklin, perhaps, provides the best summary with his comment that "the interconnectedness of many of these processes, the fact that they are so complexly interrelated, defies our normal push-me-pull-you, cause and consequence metaphors"(in Thompson 1995:471).

Current researchers into learning styles and multiple intelligences would also argue that these are major variables which cannot be excluded. Some learners will find it easier to learn from one medium than another i.e. they may be visually predisposed or prefer the sequential style of text-based material. Other learner effects may be more temporary (e.g. a learner may be unaccustomed to learning from a particular medium or may be in a particular mood or the particular style of presentation may be irritating and so on). It seems clearly fallacious to view learners as all of a type and the averaging out of scores obtained (as was the practice in the comparative studies) simply serves to obscure the very real differences that learners experience in encountering mediated learning.

Some critics of the 'no significant difference' findings have based their arguments on neurological research (Solomon 1984, Locatis et al 1989 in Carter 1996) whereby passive technologies such as television produced less biochemical changes in the brain, thus restructuring the brain's natural learning processes. These and other studies (Simpson 1994) indicate that the more active a learning environment was provided (say, through a more interactive medium where the learner could engage in manipulating the environment) the more probability that learning would occur (in Carter 1996:35). It is important to stress that these researchers are talking about inherent predispositions of the medium, and not the actual instructional method used by designers (which is where Clark placed his emphasis).

The greatest divergence seems to have been around the basic conception of media held by researchers and reviewers such as Clark. Current thinking around media, largely located in a constructivist paradigm of individual knowledge creation, seems light-years away from a crude conceptualising of technologies as mere vehicles, and the strict separation of communication into medium and method seems simplistic.

The whole area of media is currently approached in a far more holistic fashion. While researchers such as Gunawardena (1992) described each component (instructor, content, learner, media) as separate entities disconnected not only from each other but from any social and environmental context, theorists like Walker criticised the separation of aspects such as curriculum, pedagogy, delivery, productions, materials development and research (Carter 1996:34- 37). Context, too, is viewed in a much more complex way, comprising not just the physical environment of the learner but as described by Jonassen et al (1994), "a fusion of conveyances, teachers, instructional design, the environment, the teaching context and the learning context, and the social context"(in Carter 1996:33).

In a constructivist paradigm, (where each learner constructs an individual understanding of the knowledge encountered) all learning is considered to be mediated, not just those forms of instruction that are conveyed through technological media. Even in a face-to-face lecture, the knowledge inside the professor's head or contained in the data sheet has to pass through various mediating 'filters' (which range from the verbal communication of the spoken word to the previous experiences of the learner). Any form of mediation, whether it be via teacher, textbook or television, has as part of its package forms of power, contradictions, political structures and sanctioned, official, legitimate knowledge (Apple 1993, Fiske 1986 in Carter 1996:36). Different means of communicating have been valued differently, and some forms of media such as textbooks have been accorded a higher authority than others. Furthermore, media do not simply and transparently convey information as Clark and others would have us believe. As such then, these mediated forms of knowledge present as legitimate fields for contestation of meaning, for the 'reading in' of other forms of meaning, which may or may not be in line with the original pedagogic intention. Thus the learner is transformed from the passive 'guinea pig' of the laboratory experiments to an active participant in the development of understanding.

Jonassen et al (1994) conceived of an intellectual partnership in the knowledge construction process which included the learner and the media-as-facilitator (in Carter 1996:38). Hillman, Willis and Gunawardena (1994) suggest this learner-interface interaction be added to the three classic types of interaction described by Moore (1989), viz.. Learner-content, learner-learner, learner-teacher.<sup>9</sup> They felt it self-evident that the media employed would

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<sup>9</sup> Moore's point is explored more fully in section 6.1.

influence the efficacy of the communication and thus the learning that flowed from that communication (in Carter 1996:35).

Carter has traced this line of thought through previous theorists such as Bruner (1966) Dewey(1963) and Postman (1985) who would all have concurred that when ideas and information are mediated, the medium employed relates formidably to how an idea or the truth of an idea is perceived (35). Postman (1985) maintained that definitions and truth are derived at least in part from the character of the medium of communication through which the information is conveyed (in Carter 1996). Wacjman in 1991 stated that technology to be itself a form of knowledge shaping not only ways of knowing but ways of doing as well (14 in Carter 1996). This is significantly more nuanced than Clark's view that the method of instruction was somehow separate from the medium itself and that learning was directly attributable to variation in that method. Evans and Nation (1993), prominent researchers and theorists in higher and distance education, believed that "pedagogy and technology are and always have been- fundamental and **inseparable** elements of education"(198) . Norton (1992) conceived the medium **as** method. Kozma, chief opponent of Clark in the debate, preferred to regard method and media as integral, with learning occurring in harmony with, and because of, a particular combination of methods, technologies and initiatives taken by a learner in within an environment (in Carter 1996:32).

White (1980) has complained that research into educational media has been too much concerned with effects and not enough with the way in which knowledge is selected and organised in different ways through the media. Norton (1992) sees a technology as a 'discourse' and said "any technology used to structure, process and communicate knowledge must be understood as a discourse form with the potential to affect what we know and how we know it"(43 in Carter 1996:36). These theorists seem to be confirming what many practitioners have felt intuitively, that various forms of media require accommodations in terms of learning and ways of knowing. Norton would argue that this is because any technology operates as a 'symbol system', each of which varies as to the kinds of awareness and understandings made possible (1992:43 in Carter 1996:36).

Simpson (1994) disagreed with Clark's assertion that it was content not media that determined learning by arguing that the content was dependent on the media as without it, the content could not be communicated or indeed even represented (in Carter 1996:35). Bates (1981) also queries whether content meaning is invariable when presented via

different media : is, for example, a written description of a scene the same as watching it in person, or the same as watching it as a recorded event via television? (223). Heidt (1978) and Schramm (1977) also make this point .

Thus media cannot be seen as simple vehicles delivering messages or as a means to an end but as active environments which function as a framework for knowledge, furnishing and providing that knowledge, but also shaping and moulding it, regulating and organising it (Simon 1992:42 in Carter 1996:37). The process of learning is not simply **via media** but **within** and **including** media (Jonassen et al in Carter 1996:33).

Carter argues strongly that meanings and understandings about the relationships between media and learning can also be found outside of the type of research favoured by the majority of researchers and demanded by reviewers (such as Clark), funders and publications. Clark's derogatory statements ascribing further interest in questions around media and learning to overly enthusiastic intuition is a clear example of valuing and privileging certain categories of theory building (i.e. the rational, analytic, empirical and positivist) while denigrating other ways of knowing, questioning and researching which depend more on the subjective, intuitive and qualitative, for example those endorsed by feminist theories (Carter 1996:36). Viewed from other standpoints or perspectives, the underpinnings of the entire research activity around comparative media analysis becomes suspect. Supporters of non-linear approaches such as chaos theory and feminist theories when designing research "do not attempt to control through quantification and mastery of causality but rather build on intuition about how a system works and how to interact with it more harmoniously"(Briggs and Peat 1989 : 175 in Carter 1996:37). Evans and Nation (1993) have criticised the field of media research for limited representation of feminist theory, critical pedagogy or post-modern critique. Carter has pointed out that questions around media and learning are not trivial, as implied by Clark, and calls on media educators, involved as they often are at the cutting edge of new technologies, to be "more open to exploring and integrating a variety of ways of knowing to perceive education more holistically"(38). These processes, being dynamic and infinite, are unlikely to generate the certainty and proof demanded by Clark and his supporters with their insistence on the rational. Their sort of dogmatism has however meant that a mistaken belief in the uniform potential of all media has evolved, while much useful knowledge about media effectiveness (often more useful, it would seem than the hundreds of comparative studies referred to in this chapter) derived from reflective practice, intuition, grounded theory and experience has

not been validated or valued and thus has not been fed into practices around media selection.

In looking at the issue of comparative media research and the many and varied debates sparked off by it, perhaps this is a pertinent summary : "Researchers at last agree that they have asking been the wrong questions all these years. But they do not yet agree on what the right questions are"(Romiszowski 1988: 61).

### **4.3. MEDIA SELECTION MODELS**

Many distance education providers would concur with the desire expressed by Anderson (1991), an adult literacy provider in Australia, for "a framework for the evaluation of media: an objective tool for examining the range of technologies deployed"(10). In answer to this need and in spite of the lack of useful media research on which to base them, a large number of media selection models have been developed over the years.

Some twenty or more models appeared in the 1970's with at least a few more in both the preceding and following decades. Most were developed by prominent theorists in the Educational Technology field such as Briggs and Wager (1981), Gagne and Briggs (1979), Romiszowski (1974), and Bretz (1971). Romiszowski (1988) in surveying the field in the late 1980's, says that in reality the similarities between the various models outweighed their differences as each one suggests similar steps. (This makes possible a high level of generalization which this section will use, rather than examine each model in turn.)

Once again, however, this proliferation of models proves singularly unhelpful to the distance education provider seeking an objective, structured way to make decisions. Perraton (1988) dismisses these models as being "totally useless for planners of open and distance learning systems since these [models] are based on an algorithmic, reductionist approach resulting in tiny decisions at classroom level"(337). The TELI report (1996) criticizes these models as being located largely in systems approaches and behavioral psychology and thus many of these approaches can be highly mechanistic and algorithmic (DoE-TELI 1996: 63).

Indeed, it is rare in the literature to find education providers who have actually made significant use of media selection models. Even Romiszowski (1988) admits that his media

selection model was largely rejected by the school teachers for whom it was designed, although it was more readily accepted by technical training instructors (76). Certainly, there is little mention in distance education case study literature of such models being used. Consequently, there is also a scarcity of information showing whether the use of such models has resulted in better choices being made. Reiser and Gagne(1983) report on only two such studies: one, a small study in 1974 by Romiszowski of his own model, showed that trainee teachers who used his model made 'better' media choices than did experienced teachers who used an intuitive approach. Another study by Braby, however, found that in comparing 10 different media selection models only two were judged more effective than intuitive approaches (11). Thus, there is no clear answer as to which, if any, of the various models on offer would improve the situation of a confused distance education provider.

This section will first describe in general terms how these media selection models work and then provide a more detailed critique of the problems attached to them and finally will try to delineate what, if anything, can usefully be extracted from them.

### **Description of models**

Examples of several types of media selection models appear in Appendix A.

Educational Technology (the use of uppercase initials indicates the field of study, as opposed to the generic phenomenon), with its heyday in the 1960's and 70's but now largely unfashionable, is the "study and application of techniques, systems and tools used, though a systems approach to maximize the efficiency with which knowledge and skills can be passed on" (Hodgson 1993:34). This means "the identification of the most effective instructional methods given the outcomes the instruction is intended to achieve and the conditions under which is it to occur"(Glaser 1983 in Winn 1990 :53). Hawkridge (1976) less flatteringly described Educational Technology as "an applied science which eschewed 'theoretical-deductive' in favour of 'empirical-inductive modes of thought, with programmed learning of the Skinnerian variety as its essential basis"(8 in Evans and Nation 1993:199). The discipline gave rise to the creation of complex models designed to direct the educational planning process, particularly at micro level i.e. identifying specific and minute educational objectives to be achieved and then designing the 'educational events' which would bring about achievement of those objectives. The field would not deny its behaviorist roots, being firmly located in the stimulus- response paradigm. "This brings with it the need



for systematic and efficient decision making, planning and management of learning"(Winn 1990:54), and thus in turn the generation of complex media selection models.

Reiser and Gagne (1983) describes the models as presenting media as either flowcharts, matrices or worksheets, each bringing with it a particular decision-making pattern. When a flowchart is used, questions about the learning situation are asked (usually requiring a 'yes/no' answer) and as each is answered, the number of candidate media is reduced, until finally the designer is left with a small choice which can be made on pragmatic grounds such as costs or availability. The other option is to present all the media and all the selection factors at once, in a chart or matrix, and following various cross-listings, a media decision can be made. Worksheets work in a similar fashion, but ask consecutive questions and delay supplying media choices until the end.

### **Weaknesses of these models**

Given that most if not all of the developers of media selection models subscribe to behaviorist school of thought which also gives rise to the laboratory type research mentioned already, and in the light of comments such as that of Gagne et al (1992) that as a general rule most instructional functions can be performed by most media, (208) a basic question that springs to mind is why bother then with creating media selection models? If you buy into the 'no significant difference' principle, then surely it does not really matter which medium you choose. The very same Gagne quoted above also places emphasis on the primacy of choosing media "based on their effectiveness in supporting the learning process"(222) although the research would indicate that this is a faulty correlation, and then builds a whole matrix around the premise that different media may in fact not be equally good at performing different instructional tasks (64). This is an inconsistency not addressed in the literature.

It is important to locate these models in their conceptual home, that of behavioural psychology and a largely stimulus-response view of knowledge transmission. Gropper, for example, outlines this approach to education as it being necessary first to identify the responses that learners should be required to make, then to choose the means of eliciting those responses and then to select the media that can best be used to accomplish this end (in Reiser and Gagne 1983: 24). Educational objectives are usually stated in behavioural terms (for example: "learners are expected to state some verbal knowledge " (23)) with little if any attention being paid to unmeasurable learning outcomes. Teaching is referred to as

instruction, viewed largely as the presentation of effective stimuli which will then bring about the required learning. Discovery learning does not feature in these approaches: instead there are injunctions such as "if learners will be required to identify items belonging to a certain class, then they must be presented with examples of items belonging to that class"(Reiser and Gagne 1983: 23).

The strength of models such as these is that they are at least, one would hope, rigorous in their approach to the learning situation, that while they may be reductionist, they do at least do what they claim to, which is to provide a step-by step- progress through identifying the learner, the task and the setting. However, surveys by Reiser and Gagne (1982) showed that while all of the models focused on some of these factors, only 50% of the frameworks actually directly considered all of these factors, not very encouraging for models which claim to analyze the learning event rationally and exhaustively.

Many of the designers of these models rationally and exhaustively state that media choices should be made on the basis of their link to the desired learning objectives and that these decisions should come first. Thereafter, once a short-list of appropriate media is generated, pragmatic considerations such as cost and availability can then discriminate between the various media. However, one might argue that these practical factors could rule out all of the suggested media thus rendering the whole process redundant and a waste of time. Even Romiszowski (1988) acknowledges that these economic, practical and human constraints should be considered before continuing with the detail of the instructional design process (90). In practice, this is very difficult to do with many of the models, (particularly flowcharts) because they prescribe a rigid sequence in which factors must be considered.

These then are some of the macro objections that might be raised in response to media selection models : we now move to an examination of some problems at a micro level.

- **Complexity**

One of the primary reasons for the under-use of these models may be that their level of complexity is off-putting, particularly to those with "limited expertise in the use and application of technologies to education"(DoE-TELI 1996: 63). Even someone familiar with the concepts involved is likely to be defeated by most of the models. Koumi (1995) complained that "those [models] that attempt to be exhaustive are invariably so complicated as to be cumbersome"(55).

Some developers have disputed this: Gagne et al (1992) claimed theirs was easy to understand and use, and Reiser and Gagne (1983) pointed out that flowcharts were easier for beginners to use than were matrices and worksheets because the route through was pre-determined. But Romiszowski (1988), perhaps the most prominent of the developers, acknowledges the alienating complexities of these approaches when he says, "the procedure attempts to be systematic and in the attempt may be accused of being a trifle long-winded" (85). But longer procedures have been suggested. Briggs (1970) outlines a media selection procedure which fills a book of over 200 pages! (76). Tiffin and Coombes developed a selection matrix which crosses 43 media with 23 different selection factors giving nearly one thousand possibilities! Anderson's model comprised not one but 7 different flowcharts. "This model was extensively used when first developed but I know of no one who uses it regularly. Perhaps its complexity defeats its purpose" declared Romiszowski (1988:85) with some degree of understatement. These may be extreme examples but the underlying principle of breaking down a learning event into its smallest component parts means that a one hour lesson may contain 5, 10 or even 20 quite distinct behavioral objectives "which will in turn require different instructional methods, which will in turn demand different media characteristics"(Romiszowski 1988: 64) and thus potentially different media choices. "Media are best selected for specific purposes within a single lesson" says Gagne et al (1992: 211). This turns the educator into a media magician pulling a new technology out of the bag every few minutes: an absurd and expensive picture.

A further difficulty users would find is that in order to make sense of the models, it is necessary first to take on board the terminology and technical terms (e.g. rules, principles and concepts) and the particular meanings attached to them by the developers of the models. This is often the hardest part of mastering the model (Romiszowski 1988: 85).

Not only are the media selection models extremely complex but they could legitimately be criticized for being overly prescriptive and rigid. In spite of some designers like Romiszowski (1988) presenting the model only "as a framework [which] should [not] be followed in every respect every time"(76), in reality, once 'in' a flowchart, one quickly get lost if one deviates or skips some steps. This is compounded by the designers not always making their reasoning clear in the options they provide. "They rarely indicate why certain media have been recommended and only occasionally is a rationale provided,"(Reiser and Gagne 1983: 19) thus further mystifying the process.

- **Simplistic crudity**

This complexity and rigidity might be excusable if the process were truly worthwhile and helpful. However, in spite of designers like Gagne et al (1992) claiming that their models are "fine-grained and analytical"(221), a closer examination reveals in most algorithmic frameworks an unsatisfactory level of crudity and an oversimplification of crucial factors.

Reiser and Gagne (1983) consider it an advantage that flowcharts "only require the user to make selected responses, usually of the 'yes-no' variety, and, unlike matrices and worksheets, the user is [not] required to weigh several factors simultaneously in order to arrive at a right choice"(13). Critics might consider this process a gross oversimplification of the teaching and learning situation, where seldom does a yes or no suffice. Most questions in education seem to require at the very least an 'it depends' answer and juggling several factors is a daily requirement. Education providers do want something simple enough to be helpful but not at the expense of corresponding meaningfully to reality.

Even Romiszowski, writing some 20 years (1988) after the first appearance of his model, concedes that he may have been at fault "in trying to reduce to an algorithmic procedure something which is in reality is, in a large part, a heuristic, creative process, a weighing up of a host of interacting factors"(85).

The media selection models claim to consider all important factors pertaining to a learning event. However, the range of factors considered is often trivial or incomplete. In the Gagne-Briggs-Wager model (1992), for example, the factors are

- Teacher versus self-communication
- Direct communication or broadcast from a central station.
- Whether or not the learners have sufficient text literacy to read printed materials
- The seriousness of error consequence (207)

This is clearly an inadequate consideration of the complexity of learning events. For example, there is no consideration of whether the learner is part of a group or not, nor is there any consideration of the kind of learning that might be taking place.

Where there is consideration of more significant factors, they tend to be consigned to the periphery of the model or muddled up with other factors. Romiszowski (1988) makes both

of these mistakes when he lists under 'Other practical factors' questions such as 'size of group? size of room? **how easily can the material be interrupted for pupils' response and activity? Is the presentation adaptive to the learner's response? Is sequence fixed or flexible? Is the instruction repeatable?** Is a back up easily available? Is a budget provided for spare parts? (my emphasis indicating more significant questions). Here, major questions around pedagogy are grouped together with mundane issues of spare light bulbs. While it is clearly important to consider the size of group when selecting media, this is a fairly basic question and relatively easily answered. Questions around the type and nature of the learning interaction facilitated by a given medium are not in the same category at all.

The models' approach to media also seem simplistic, often just providing a list of commonly used technologies such as film, radio, broadcast TV, closed-circuit TV and so on. Romiszowski (1988) warns that searching for a classification or taxonomy of media based on these commonplace labels is counter-productive (60) and seems to recommend approaching media in terms of their individual attributes or characteristics. Some designers do claim to have provided a sophisticated analysis of the attributes of media. However, these are largely limited to such illuminating comments as "some media permit visual displays: others do not"! (Gagne et al 1992: 212). Some however do list subdivisions of these basic categories, such as Branson et al's alphanumeric, graphic, pictorial or three dimensional visual display (Reiser and Gagne 1983: 16). However, when one considers that these characteristics apply to virtually all visual display media (posters, slides, film, television, video, computers can all show all of these subcategories of visuals), this becomes less useful. Most models list characteristics of display or 'stimulus' only: a few suggest other dimensions such as types of response the media will accept (Tosti and Ball 1969) or feedback capabilities, or ability to accommodate other events of instruction (Gropper in Reiser and Gagne 1983:14). On closer examination, though, some of these more promising categories prove to be once more disappointingly simplistic. For example, McConnell (whose model appears in Reiser's 1983 survey) lists a factor called 'flexibility?' which actually means 'portability' i.e. the extent to which the medium can be carried around; 'student control over learning?' sounded most interesting but only referred to student options as to place of learning, not control of content, methodology, pace or other pedagogic factors. McConnell also lists 'editability?', an aspect of major interest to providers, but 6 out of his 7 candidate media indicate 'No, editing requires much effort', making rather a nonsense of having it as a factor at all.

The analysis of the learning task too is largely inadequate and seems restricted to the most basic of practical tasks . The media requirements are often "too broad to inform the decision making process properly e.g. does the topic require a three-dimensional presentation? Is color necessary? Is movement necessary?" (Koumi 1995:55). These may be essential features of some lower-level objectives but are seldom relevant at the level of abstract thinking, common to higher education. Reiser and Gagne (1983) give the reasons for considering introducing visual motion such as a video as "pertaining to the need for depiction of human performance and to the associated idea that learners will recognize or copy the movements shown"(17). Their view that video is only used for demonstrating an action like artificial respiration or setting up a machine seems incredibly limiting and ignores any empathetic, motivational, or affective influences that seeing 'the real thing' might have.

In the same vein, the correlation drawn between the nature of the learning task and the medium selected (which is the cornerstone of media selection models), is often expressed as crudely as "the learning of a task which requires differentiation of visual features, can best be done with a visual medium" and likewise "a task which depends on receipt of an auditory message may best be accomplished with audio media"(Reiser and Gagne 1983:14). No one would argue with these statements but they scarcely rise above the level of common sense and are so obvious as to be unhelpful.

Whenever a difficult topic is confronted (such as attitudes), the designers of the models tend to cop out. "Branson et al suggest that when the desired outcome is an attitude, an instructor is often the preferred medium"(Reiser and Gagne 1983: 20). This is of little use to the distance provider who cannot bring in face-to-face contact every time attitudinal and affective outcomes are desired. Gagne et al (1992) provide a little more substance in suggesting that attitude modification is best brought about by "the display of a human model and the model's message about personal choices : the pictorial motion of human activities"(212).

The models attempt to be applicable to all possible learning situations, which means that the level of individual appropriateness is likely to be low.

- **Learner Factors**

Educational Technology has as one of its basic premises that learner needs should be matched to the learning task and to the medium selected. However, many designers of the models seem to have a very limited notion of the kinds of learner factors that need to be considered.

Many of the frameworks divide learners into good and poor readers (often arrived at by standardized age-related reading ability tests, which seems ludicrous for anything beyond primary school provision) or into high and low IQ. Media are then selected on that basis in a very mechanistic way: if the learners are poor readers, then use pictures instead. That the learners might **have** to use text or that the learning intention might be wanting to improve the learners' reading skills, not circumvent them, does not seem to merit consideration.

Age, too is considered an important differential and while few educators would argue that learning events need to be tailored to the age, developmental stage or experience of the learners, many would fail to see the logic of this carried into media choice in the way advocated by these models. An example: "The kinds of media to be employed in a first grade class are quite limited in variety in comparison with those appropriate for a class of high school students or a class of adults"(Gagne et al 1992:202). These writers maintain that real objects should be used with young children and more abstract media such as film or television with older learners. Here we see Clark's point about the confusion between media and methods being made clear. Obviously, the **way** in which material is presented on video determines its accessibility for young learners, not the technology itself. The ease with which young children take to computer technology is evidence that age in itself is no barrier to a particular technology. The 'messages' that the medium carries and the presentational factors shaping that message need to be age-appropriate. Children are easily able to follow the narrative line of animated cartoons designed for their age group: this does not mean that they would understand sophisticated political cartoons, even though these are not moving and thus, according to many media selection models, are less complex!

Cultural factors are largely ignored by the media selection models surveyed, in spite of some recent experiences and research findings which have shown that some cultural groups with different exposures to media and with different views of representation may not

easily be able to interpret some media forms (such as cartoons or maps) in the way the designer intended.

These kinds of more complex aspects of the learner group are not considered in media selection models at all. Romiszowski (1988) does caution though, that not only are many of these differences not always easy to identify in a given group, but any group is likely to have fair spread of some factors such as learning style, mechanical ability or IQ. He points out the impracticality of developing individualized materials and recommends instead compromising by "developing one set of materials that will suit most of our students reasonably but few of them perfectly"(71).

- **Feedback**

Most of the models are only concerned with presentational media and largely ignore interaction and feedback. Where it is considered, it is in a very simplistic 'right or wrong' way. Bretz et al, for example, claim that almost any medium can offer what is termed "corrective feedback" i.e. providing the correct answer can be stated so that the learner can compare it with his own (Reiser and Gagne 1983: 20). Gagne et al (1992) concur with this saying, "precise feedback to the learner about the correctness or incorrectness of performance is a matter of great significance to learning effectiveness"(212). This view of feedback gives rise to media such as programmed learning or computers (or at least the 1970's version of these) being rated highly for their 'feedback' capabilities, whereas for many practitioners in higher education today, these technologies are useless for anything but the most mechanistic of knowledge recall. Nowadays the media required for interaction or feedback are those which can allow the learner and teacher to engage in meaningful two-way dialogue. This point is extended in Chapter 6.

In addition to the limitations outlined above, many of the media selection models are outdated because their popularity had waned before the advent of the computer age and thus few include electronic media, with categories being limited to audio, print, visual and real objects. Romiszowski (1988) avers that while the models themselves do not necessarily need updating, the context of the models has changed beyond belief (of course, other theorists would argue that this fact alone would require modification of the models) in that, apart from new media that have been developed, "the explosion of distance education provision has changed the nature of the decision-making process from the sole prerogative



of the teacher or 'micro' instructional designer, [to] the responsibility of some central group of 'macro' planners "(62).

### **The TELI report Framework**

Comment must be made on a much more recent (1996) attempt to provide a useful media selection framework which appears in the ministerial TELI- report. As the only significant local and recent model available for providers, it warrants closer analysis. Its basic structure is of a linear question process, divided into seven sets under the heading "The Teaching and Learning environment Module" (which deals with aspects such as learners, teaching and learning processes, communication, courseware, teaching and learning sites, and the educational provider). Once this is completed, the user moves into the "Integrating Technologies into the Teaching and Learning Environment Module" which also tackles the task from a variety of aspects such as maintenance, effect on learners, the teaching and learning processes and administration. Thereafter a further short module on Costing is provided.

With the benefits of hindsight and influenced by general curriculum development principles, the TELI framework avoids many of the more glaring errors of the models described in the previous sections. It attempts to explain by way of sideboxes and references the various terms it uses such as 'information literacy' and is clearly laid out, thus avoiding some the mystification of the process common in Educational Technology models. It takes an expanded view of the educational provision, focusing on aspects such as administration, physical infrastructure, and assessment as well as the actual teaching and learning process. It speaks directly to many of the reasons for poor decision making raised in chapter 3. For example, it explicitly requires the model-user to consider staff development needs so that staff will feel comfortable with the medium. It includes learners, academic and technical staff and administration in its considerations. It is clearly embedded in a consideration of educational factors, not technological ones. Once in the Integrating Technologies module, it gives advice as to how to respond if your potential technology seems to be presenting problems for example, 'return to the curriculum development section and reconsider your teaching and learning processes'. Overall, this framework is a vast improvement on any of its predecessors.

Nevertheless, it still does not answer a provider's plea for a document that will say which medium should be selected, and as expected there are a number of flaws with its design which might make its optimal use difficult. For instance,

- It tries to be too multi-purpose – it applies to both existing technology set-ups and potential ones ( thus there are two pathways through which while explained are confusing and messy).
- It also applies to all possible applications whether institutions, programmes or individual courses and modules. Thus many of the questions do not apply to your particular context and others that would be specifically useful are not included.
- It also makes the same mistake as many of its predecessors in that it is long (over 40 pages) and complex ( a rough count yielded nearly 500 questions)
- This necessitates an academic style of numbering (5.4.3) which might be alienating for users unused to this convention.
- Some of those 500 questions are huge, such as "what approaches and what methodologies underpin the course?"(Item 3.1 Teaching and Learning module) or "will the technology support the modes of communication needed for the teaching and learning processes?" (Item 3: Technology module). This dissertation will argue in Chapter 5 that this is exactly the kind of question providers need to be clear on, but its inclusion as just one of many questions (alongside other technical questions such as "does the learning site have a regular water supply? " or "will this technology require renting out of facilities?") might prompt a more superficial answer than the issue merits.
- Sometimes the significance and implications of answers are not always clear. As an experienced curriculum developer it is possible to read between the lines to the hidden significance of the question but it might be more transparent to explain the reason for asking the question or why a particular aspect is important.
- Some items seems to come earlier than expected, such as identifying notional study hours near the beginning of the process while in reality this is often a refinement near the end of the process and while an important technical task at that point, doesn't seem to have much bearing on the initial selection of media. Other items seem confusing such as the appearance of "course materials" as a separate entity from the technology selection process. Does this refer to the content or knowledge base for the course or is it slipping in the implicit expectation that there will be a text-

based block of "information" that the students will need to receive? This seemed to me to be a pre-emptive assumption.

Some of the other problems of this framework seem to be inherent in the linear nature of such models. An iterative dialogue is very difficult to sustain although the framework does try by introducing some items in brief early on in the process with the promise to return to these in later stages. But this is always a clumsy device and doesn't convey the sense of holding several ideas in tension all at once. The linear flow-through structure also presents problems when one hits one of those huge questions which would require a whole separate activity to answer, or when technical details can't be provided immediately : can one continue with the next question (which may be an easy one) or not? The linear structure also means that as you get immersed in the detail of particular questions, you tend to lose sight of the bigger structure, of why this question was important in the first place. This is perhaps an unfair criticism as no easy alternatives spring to mind, except perhaps for a computer simulation-type structure with split screens which physically keep the big picture in view and show your progress through it. Perhaps advanced technology might make media choice models easier to navigate!

The TELI framework might perhaps have its greatest usefulness as a discussion framework for a team of developers to work through as the questions posed would prompt useful discussion around issues, where contradictions and different perceptions might be revealed and the combined problem-solving of the group could be applied to thorny areas. As the framework currently appears in its printed linear form, it looks like something an individual would fill in, and although it avoids the obvious mistake of providing dotted lines or blank spaces, it does imply that there **are** answers to be found, which promotes rather more clarity and definitiveness than is often possible in education.

A provider using this framework would be forgiven for selecting a single medium and then running it though the checklist in the 'integrating technology into teaching and learning' module. Given that this module covers the whole range of possible provider activities from administration to all teaching and learning activities, this would seem to be asking a lot of an individual technology. Although the framework tries to minimize a single medium approach by using terms such as 'technology/ies', the framework does not explicitly explore the notions of a package of media, each fulfilling different tasks. This idea will be more fully proposed in section 7.1.

The TELI report is quite explicit about its view that technological choices are embedded in wider curricular development issues and this is reflected strongly in the Technology decision-making framework where the bulk of the model is given over to wider curriculum issues and a smaller and less extensive section to specific technology issues. This will prove disappointing to many providers who feel their grasp of curriculum aspects such as learner profiles, educational outcomes and so on is fairly sound but who lack sophistication in their understanding of technology. An appendix is provided by the framework with some details of how various media work and what they offer in different educational applications but this is fairly limited.

Some of the crucial questions assume a great deal of prior thinking and knowledge. Issues such as one or two-way communication are not simply technical decisions but require a thorough understanding of the kinds of learning each facilitates. Item 3 in the technology module asks 'will the technology support the teaching and learning processes of the course as required?'. That of course is the crucial question : the answers are not easy to find as this dissertation has been at pains to point out. The TELI model seems, on the one hand, to be aimed at a novice in curriculum development but assumes a high level of technological familiarity – the very opposite of many providers in higher education. To be fair, the TELI model is not specifically designed for this sector of the educational market (it uses examples ranging from early childhood development to industrial training) but this points to the difficulties of making one model fit all.

The TELI technology selection model is an honest attempt to rectify some of the weaknesses of previous decision-making processes and certainly asks the right sorts of questions. If a provider were prepared to take those questions and truly investigate the possible answers to them, researching and reading around the issues raised, ideally in a team context so that various types of expertise are at hand, then that provider would be in a very informed position able to make curriculum and media decisions without needing to follow the model in a linear way.

## **CONCLUSION**

Many educators recognize that in the pursuit of what Carter (1996) terms "the praiseworthy goals of pedagogy"(38) such as the progress of students, the efficacy of provision, and developing empowering course designs, questions around media selection are neither

misguided nor unimportant. Many providers feel instinctively that choosing appropriate technologies is an important area and much time is spent thinking and writing about these issues.

It is clear, however, from the preceding two sections that there are few answers, or even guiding principles, to be found in the formal academic work previously done in this area. Some educators have then, perhaps in desperation, subscribed to what Koumi (1994) calls "the myth of the equi-potentiality of media", that, if all are equally effective, it doesn't matter which you choose which leads in turn to a devaluing of the need for workable criteria for optimal media deployment (41).

Some experts have argued that the area of technology has been consistently over-emphasized in the history of distance education, a valid assertion acknowledged at various points in this dissertation. However, as Carter (1996) argues,

*"the potentially negative effects of some educational technologies heavily in use today argue for pro-active research initiatives in order to understand the issues and caveats involved in the potential for media influence on learning"(38).*

After all, she goes on to say, "media are implicated in epistemology, ways of knowing and sense making, and a search for knowledge" (38) and at a more pragmatic level are often what enables distance education to be offered in the first place.

And so the debate continues. What, then, is a distance provider facing media decisions to do? Part 2 will attempt to provide some answers to this question of how providers of education using technology might go about making sensible and effective media choices.

## PART 2

Having analyzed the difficulties in providing quality distance education using technology, and having focused on the flawed approaches adopted, this second part of the dissertation will turn its attention to making better decisions (in Chapter 5), underpinned by a better understanding of the various issues in education and in media which impact on technology-enhanced learning (in Chapter 6). In Chapter 7, two suggestions in particular are made, understandings of which I believe to be crucial in successful decision making.

The chapters in Part 2 will suggest that an educational provider contemplating the use of technologies needs to focus on the following aspects :

- refocusing on the educational aspect of distance education, including clarifying the values and principles which underpin the educational paradigm from which we operate
- examining current trends in pedagogy and educational approaches
- developing a more elaborated understanding of the nature of technology as a whole and the specific characteristics of particular media in order to achieve a better fit with our educational priorities
- considering the implications of the current convergence between traditional campus-based higher education and distance provision.

This study will not end by offering clear-cut global prescriptions on 'how to' make better choices: this would run contrary to much of what has been discussed in this dissertation. Laurillard, in her seminal book "Rethinking university teaching" (1993), suggests that because it is impossible to offer normative prescriptives for effective teaching other than of the most bland and generalized kind, the best route for improvement is to "offer a way of thinking about teaching and the introduction of media which is informed by a more elaborated understanding. The assumption here is that when teachers **think** differently, they can **act** differently"(9 my emphasis). This is the emphasis that Part 2 makes : the need to think more carefully and in new ways in order to move forward into action. The path taken in this dissertation thus far, and on into Part 2, will have foregrounded the important issues sufficiently that a provider would be in a better position to make more appropriate decisions, based on a careful consideration of all relevant factors. That seems to be the best we can hope for, given the uncertainties and complexities of real-life education.

Previous sections of this dissertation have emphasized the various splits, dichotomies and tensions that exist between aspects of distance provision: technology versus pedagogy, medium versus method, distance versus traditional. Part Two is based on the premise that truly effective educational provision requires not an increased polarization where one factor finally dominates over the other, but instead a coming together of these factors, a synergistic combining of seemingly diverse factors in order to achieve a satisfying balance – indeed a juggling act.

## **CHAPTER 5 : MAKING BETTER CHOICES**

The previous sections have outlined flawed approaches to media selection for quality distance provision based on a series of misconceptions or skewed perspectives, detailed in Chapter 3. Chapter 4 discussed some of the misleading conclusions around media choice which the 'scientific' approaches of previous research have encouraged. It is to be hoped that the act of discussing flawed approaches in these chapters has in itself pointed the way towards more helpful understandings of the issues raised. For example, identifying and exploring an overly-enthusiastic belief in technology (in 3.1) should in itself take us some steps towards a more realistic view of what technology offers education. In the same way, closely scrutinizing the theoretical flaws in much laboratory-based comparative research (as in 4.2) should strengthen a reader's own stance on the importance of context on learning. It is a cliché that understanding the problem takes one half way to the solution, but certainly more appropriate and effective decisions are easier to make once there is awareness of the pitfalls involved.

This chapter suggests some general approaches to decision making in mediated learning which include

- a consideration of the process of decision making
- the need to balance educational and technological imperatives
- an openness about the role played by our own beliefs about education and media
- maintaining a balanced criticality about the contribution of technology
- accepting the inevitability of compromise
- the difficulties and value of team approaches

### **5.1. APPROACHES TO DECISION MAKING**

Although previous sections have criticized particularly rigid ways of structuring media selection decisions, Seligman (1992) warns that without some sort of planning, there can be little hope of success. "Ad hocism might get you through small projects but when the requirement is huge, all systems need to be planned" (11). The SAIDE Audit (1996) suggested that at the crux of the kinds of quality problems described in its report was that courses were not designed properly, including the time spent on planning strategies such as students support, developing materials and revising course curricula. While conceding that planning is essential, Lockett (1995) maintains that, because the teaching-learning



process is complex, what needs to be avoided is the naïve "assumption that such plans can be unproblematically implemented... and the assumption that planning has a prescriptive relationship to teaching and learning" (9). Instead, she suggests, planning and implementation should work together in "a dialectical relationship which is recursive and self-reflective"(9). Attempts to 'read off' from theory principles which can confidently be applied in any context will, in all likelihood, lead to less effective decision making than a constant returning to theory, adjusting a particular programme until a 'best fit' is achieved. (Winn 1990). Eastmond (1993) puts it in slightly more accessible terms: "these [planning] activities are seldom conducted in a strict linear fashion... as with most human processes the actual practice will seldom follow the theoretical steps exactly and often will be varied for good reasons" (104). Keeping this reality in mind, he says should avoid compulsiveness about strict adherence to a particular sequence of events, instead a "flow in the general direction" is more attainable. (105) Because needs assessment, programme development and evaluation are inseparable, he proposes a holistic series of cycles as a planning model. The answers generated by such a creative process are, he suggests "seldom definitive but rather are snapshots of a process in motion"(91). Approaches like this to planning and media selection are a much more creative process than the rigid algorithms suggested by some experts, as described in section 4.3.

Mason (1994) also reminds us that while there is no pleasing all of the people all of the time, it is possible to make good decisions. "Some programmes are demonstrably better than others, some introductions of media into organizations are more successful than others, and some students learn more and enjoy their learning more with some courses than others"(123). If it is possible to make bad media decisions (and this has been shown to be so in the earlier chapters of this study), then it must also be possible to make better decisions.

A number of writers in the field of distance provision, both theorists and practitioners, urge decision-makers to rely on thoughtful intuition or the hunches of experienced persons. Peters (1993) speculates that examination of so-called common-sense knowledge or 'lay theories' might reveal a great deal about what is really important in distance education. He also points out that in real life, people's actions are governed "not by elaborate theories but by assumptions and notions which grow out of experience" (11). Bates (1981 and elsewhere) describes how, in the world of face-to-face education, professional teachers are constantly expected to develop through training and experience a high degree of

awareness of the success or otherwise of their actions. He makes the point, however, that "the greater the distance either in time or space between a decision and its consequences, [all of which are features of distance education] the greater the degree of uncertainty about those consequences" (226). He thus urges that personal intuition needs to be supplemented by "a deliberate and systematic search for accurate and reliable information"(226), although there is little currently available. Laurillard (1993) concurs : because the generation of teaching strategy is a creative process, she says, it must be "informed by what we know from research but not determined by it"(82). Neither does Thorpe (1995), a well known course designer from the UKOU, advocate a formula approach – each course team or designer has to "face anew the creative task of working out how an explicit emphasis on the students' own learning can be expressed through the course at hand"(183). Perraton (1988) points out that there is no single optimum choice for the selection of media or, for that matter, other aspects of provision since the only common feature of most distance learning systems is that they all differ! Providers need to custom design their teaching systems to suit their particular circumstances(338), which is unwelcome news for those lazy or insecure providers who hope to find some already perfected set of decisions which can be imported 'as is'.

In order to facilitate this iterative process between personal experience and researched theory, Bates (1981) asks for a much greater dissemination of information from the reflected experience of practitioners on the ground which, while it might be 'quick and dirty' data, would have at least an even chance of being more right than no information at all, or, as we have seen, so-called precise and scientific information (226). Earlier in this study, mention has been made of the downplaying of knowledge which has not met the supposedly rigorous standards of laboratory research, and the negative effect this view has had on media selection practice.

Hodgson (1993) acknowledges that in times of rapid and ongoing change it is hard to make rules for decision making. Rather, she suggests, "we can only be aware of all the possibilities, decide what is possible and appropriate in a particular set of circumstances, keep abreast of innovation and try to make each decision a one-off event that does not constrain future options"(87). The ever-increasing range of technologies has "both widened choice and made it more difficult to make decisions" (Bates 1991:14). Eastmond (1993) alerts us to what he calls 'the paralysis of analysis' - the inability or unwillingness to actually make decisions when faced with such an array of options, holding out for the ultimate best

one (96). He suggests that, instead of searching for definitive answers to every single question (which is not possible in his view), important concerns should be addressed as well as possible and then the process should move on, to avoid becoming bogged down in detail (92).

There is no doubt that decision making about technologies in distance education is a complex area and one with a high degree of 'error consequence' where a great number of factors need to be optimized, including economic, pedagogic, personal and technical aspects. These factors, in their infinite variety, cannot easily be related to each other quantitatively, neither can any analysis of the relationship between these factors be viewed as the 'last word' on the topic as they are subject to constant flux and change, demanding revision (Eastmond 1993: 96). While Anderson (1991) suggests that a learning situation and its interplay with human relationships is so complex that the only way to understand it at all is to constrict the number of variables considered (11), it is clear from the preceding chapter on media research and models, that attempts to reduce and simplify this process are so unrealistic as to be destructive. It seems then that educators will have to deal with the field courageously, in its complexity, and not in some easier reduced form. Bates (1995) says, "in the end, an intuitive decision has to be made, but based on a careful analysis of the situation"(59), what Eastmond (1993) calls an informed enlightenment (92). Even Romiszowski (1988), the doyen of instructional designers, sees the value of 'hunches' at various points in the process(93). Unfortunately at many universities, dominated as they often are by accountants and scientists, this type of thinking is often eschewed as sloppy and unacademic, as a failure to think things through. Eastmond however describes it as "wisdom in the broadest sense"(87).

Laurillard (1993) justifies her refusal to provide prescriptive advice about the selection and use of media in higher education by pointing out that such advice could only be of the most general and thus bland sort. Instead she says, a better strategy is to engage in thinking about how people learn, about how media interacts with that, and thus develop a more 'elaborated understanding' (9). This is based on the assumption, quoted earlier, that thinking differently and developing understanding is a prerequisite for acting differently. Chapter 6 in particular focuses on some of the significant issues educators might profitably spend time pondering before acting.

While seeing a need to focus on the various subsystems and components of distance education, Carter (1996) argues for a holistic approach to thinking about distance education, rather than perpetuating separations and disconnections. This seems analogous to a juggler keeping several balls in the air. Focusing on any one ball for too long causes the whole system to literally fall down. In the same way, a decision maker might need to maintain an understanding of a number of factors pertaining to media selection all at once, not allowing any one to dominate or hold up the system. To hold onto the technology ball means that the pedagogy ball is dropped or the learning theory ball slips away. It is possible that in order to make sensible media choices in the intuitive, holistic way suggested, decision makers need to deepen their understandings of all facets of their educational endeavor, whether that be in the technological, personal or educational sphere. This will be focused on particularly in Chapter 6.

## 5.2. THE INTER-RELATIONSHIP BETWEEN EDUCATION AND TECHNOLOGY

*"A pedestrian who is hit by a car doesn't say, 'This is simply a case of technology versus people. ' He wants to know who is in the driving seat" (King 1983) I want educators – rather than technological idealists- to be in the driving seat and above all I want to make sure that learners are not run over by the technology"(Bates 1991:10).*

This section will focus on the kinds of thinking an educator needs to engage with in order to be in the driving seat of technology-enhanced learning, while still being able to put the considerable potential that media offer to good use. Ramsden (1992) has defined the aim of teaching as making student learning possible (5 in Laurillard 1993:13), which, says Laurillard, places much responsibility with the teacher as the mediator in all varieties of learning (distance or other).

Earlier chapters have highlighted the easy trap of losing sight of the educational purpose of our endeavors in the often overwhelming barrage of technological information we face. The sheer amount of money involved, the numbers of potential students and our relative unfamiliarity with the terrain can lead to an obscuring of our original intentions. This can lead to an unhealthy focus on the **means** of education, rather than the **aims** of education (Jonathan 1990 in Clayton 1995:342). The TELI report (1996) makes the point, cited earlier in this study, that "despite more and more technologies and tools becoming available over the past decades, they have not always added to the amount of learning taking place"(DoE-TELI 1996:55). The report suggests that this is often because of a lack of clarity around what it is we wish to achieve, the outcomes of our educational process.

*"So the starting point is not to take the educational process for granted nor simply to add more and newer tools to it. The starting point is to define the objective of the teaching and learning process – what will it enable learners to do – and then to establish how best to help learners achieve these outcomes"(DoE-TELI 1996:55).*

The choice, says Bates (1988) " is not 'what technology?' but 'what kind of teaching do we want to provide?'"(12).

This may seem a basic tenet of any approach to meaningful teaching – after all, it forms the core of much initial teacher training – but the cart-before-the-horse syndrome of putting the technology in place first and then deciding how individual teachers and learners might use it, is astonishingly common. It is akin to deciding that because group work is a 'good thing', that it will be used in today's lesson and only thereafter considering the topic to be covered, the particular class involved and the day's particular educational goals, none of which may be consistent with the use of group work. On the other hand, an ignorance of or disdain for methods such as group work may mean that even where its use is clearly indicated, the teacher will not utilise it.

In the current climate of outcomes-based education (OBE), an education-first approach to the implementation of technological tools should be welcomed. Earlier in this dissertation the point was made that outcomes-based approaches are based on "an explicit recognition that education should be measured by what the student knows rather than how or where he learns it"(US Commission on Non-Traditional Study in Perraton 1982:7). However this seems to have led to an approach that therefore the method doesn't matter, so why not use the most cost-efficient/cheapest, administration friendly, or attention-getting technology? This ultra-pragmatic reasoning ignores the reality that in reaching the desired outcomes, the route followed is indeed crucial. An inappropriate methodology will almost certainly make it very difficult, if not unlikely for learners to attain an outcome fully. The only difference is that in OBE, the route is not predetermined and is supposed to be purpose-designed by an experienced teacher in touch with the expressed and researched needs of the learners in attaining that educational goal.

Replacing the focus on technology with a focus on the needs of the learners presupposes that educators are clear about those needs, and that policymakers, teachers and learners are in accord about the educational goals they are pursuing. Too often, institutions implement a technological solution to solve a particular technical problem experienced by

the administration (such as 'the size of the class requires too many tutors which is too expensive') without considering how the solution ('use videoconferencing with one lecturer') may in fact be impeding learners from attaining the educational and cognitive outcomes desired of them (video conferencing may indeed reach the entire class all at once but what does that do to the quality and type of student learning?) Here the foregrounding of a technical problem with a technological solution has over-ridden questions of educational value.

Laurillard (1993) also points out that in the area of research and development funding, the emphasis on technology has meant that research always starts with the medium ('investigate the best way of using computers') rather than starting with what most teachers begin with, the need to deal with a particular topic or section of content. "There is very little research on the best way to teach a topic and, through that, the use of computers as an incidental part of the strategy"(7). As a consequence there is very little knowledge about how technology could meet particular educational outcomes or how medium-specific design features can support particular types of content.

Both Perraton (1982) and the TELI report (1996) share the view of many that the introduction of any technological medium needs to be educationally justified.

*"Whether the strategies are old or new, involve distance or face-to-face education, hi-tech, low-tech or no-tech, the important thing is that they are appropriate and will achieve meaningful outcomes effectively and efficiently in identified circumstances"(DoE-TELI 1996:vii).*

This, suggests Perraton (1982), is what separates out writing learning materials from writing a novel, and educational videos from broadcast television : the criterion on which success is judged is that it teaches effectively (26). Koumi (1994) warns against the presupposition that because an audiovisual presentation is visually appealing and effective in audio-visual (i.e. technical) terms, the stated cognitive objectives are thereby automatically achieved (50). The TELI report (1996) adds that given the high cost of many technologies, and the unfamiliarity of many students with the media, the additional benefits must be carefully weighed against other educational possibilities, bearing in mind the particular educational purposes intended (54). Bates (1988) lists these as "what kinds of kinds of learning or teaching or administration benefits will (the technologies) bring? What benefits will be lost

by replacing 'older' technologies (such as print?)" (4) and Ringsted (1995) lists questions as

*"the appropriateness of that technology for the client groups, the availability of appropriate physical and human support services necessary to operate it effectively, its reliability, and the broader organizational and human resources implications that follow from its use"(453).*

There seems also to be a sense in which the technological tool used should be seen as part of a wider educational process, rather than as placing the entire responsibility for learning success on the medium itself. Clark's assertion has some validity (for all its flawed research base) when he suggests that it is instructional methods that make the difference, not a particular and unique medium. For some writers this has taken the form of reasserting the role of the face-to-face teacher. This seems valid in some contexts for example, in videoconferencing where the competence of the lecturer in traditional skills such as clear explanation, subject knowledge, presentation and so on are still as important as ever, as well as new skills such as drawing in participants from remote sites. Here indeed the teacher is "exercising control over the educational effectiveness of whatever medium we select because it depends to large extent on our skill as teachers"(Hodgson 1993:83). This is perhaps downplaying the point that there are some aspects of video conferencing which are not influenced by our skill as teachers at all and which are a product of the technical capacity of the medium (such as jerky sound and motion caused by small bandwidth, the relatively small size of the viewing screen, sound directed cameras and so on). Furthermore, not all technologies have the teacher present in such a physical way (for example, computer conferencing or text-based materials) and the skill of the teacher then becomes more imbedded in the design of the programme.

Others urge that we should consider then how to integrate the time-tested components of good instruction with the capabilities of whichever medium we happen to be working in. The TELI report (1996) cautions that the value of any technology in enhancing learning depends on how people (both teachers and learners, one would imagine) integrate it into the learning process (56). Thus the processes of teaching and learning seem to be more important than the technology per se (Hannafin et al 1987:15). This does not of course mean that the technology is not important – rather that educational intentions and approaches and the medium used to facilitate these need to be closely integrated at all stages of the planning process, and at the actual point of delivery in the teaching and

learning event. While the former (educational aims) should clearly drive the process, the latter (the technological medium) will still have a great impact on the successful attainment of those goals and thus cannot be ignored or seen as neutral.

It is a pity that so many providers have a sense of competition between technology and pedagogy, whereas a healthy balance, a juggling of the two imperatives, can in fact improve both our use of technology and our educational understandings. Some writers have suggested that such an iterative dialogue between consideration of our educational intentions and the capacities of technologies can lead to a fruitful furthering and extension of our educational vision. Ringsted (1995) posits that "the changes and possibilities due to new technologies give rise to fundamental new concepts for education"(453). Clayton (1995) suggests that we need to question whether our existing goals are adequate for the current and changing world that our learners face, and whether there may indeed be further goals (such as participative democracy) which may become increasingly feasible to pursue as a consequence of new communication technologies (342). While warning against the artificial creation of 'media-suitable objectives' prompted by the allocation of a particular medium and which are not central to the intellectual focus of a course, Koumi (1994) also supports the inclusion of genuinely important objectives enabled by the availability of certain technologies and the knowledge of what they can do, which he says would broaden the horizons of course developers in an academically respectable and cogent fashion (56). Looking beyond intentions and outcomes, "the intelligent and appropriate use of technology adds to the available choices of learning strategies"(DoE-TELI :1996:17), thus access to a variety of technologies can add to the number of possible routes to achieving educational outcomes by increasing the range of possible methods.

Because of the way in which increased awareness of technology can be 'good' for our understanding of education, Bates (1988) says it would be as wrong for educators to ignore the possibilities offered by new technologies as it is for technologies to determine educational priorities.

### **5.3 THE NEED TO EXAMINE OUR OWN BELIEFS**

Much of the above is premised on the notion that providers, educators and designers are clear about their own understandings of education. There is a danger in launching into new forms of educational delivery when our own understandings of the essential nature of our activities remains fuzzy and taken for granted. An overly-technological focus is often driven



by hard pragmatics while ignoring the philosophical and principled approach which should underpin quality education. This next section will show the need for those facing decisions in the field of technology to closely examine the values which inform and direct their educational endeavor.

Bates (1988) argues that the weighing up of relative benefits and losses requires a deep understanding of the kind of teaching and learning we want, which transforms the choice of technologies from a merely technical decision into one involving value judgements(4). Evans and Nation (1993) maintain that the choice of teaching strategies (and by logical extension, the technologies that facilitate these) is as much an ideological choice as it is scientific-rational (208). The TELI report (1996) points out that far from being neutral, the choice and use of technologies in education can impact on a number of socio-political factors such as ownership of information, power relations and economic benefit, and dependency and cultural dynamics (DoE-TELI 1996:107). This is indeed a far cry from the algorithmic media selection approaches featured in 3.3 which are presented as rational, scientific and objective one-size-fits-all model and where the nature of learning and knowledge is viewed as a non-issue.

Burge and Roberts (1993) emphasize this when they say

*"in general technologies should be tools to help human activities. But like models of teaching they are not neutral tools. Their use will reflect whatever values the educator holds – consciously or subconsciously- about his/her relationship to learners, and their use will inevitably bring about advantages and disadvantages (35 in Mason 1994:37).*

Evans and Nation (1993) suggest that end-choices (such as methods or media to be used) may be determined by our choice to follow an approach based on, say, Constructivism rather than objectivism. If a technology is sought which will sustain the transmission of information, then factors such as ability to transmit data of various kinds, accuracy of transmission and so on will be valued while a provider located in a dialogic paradigm will seek out technologies which can support interaction (Inglis 1995:366). A lecturer who sees his or her role primarily as the sole arbiter of learning and dispenser of knowledge is less likely to judge computer-mediated communication tools as useful than is a lecturer whose view of his or her role is that of facilitator and networker (Nipper in Mason and Kaye 1989:16). It's unlikely that technologies which so significantly shift the locus of control from

teacher to learner would even merit serious consideration in a heavily transmission oriented institution as these particular capabilities would not be valued or sought after.

Sometimes the underlying motives and paradigms of the provider are revealed by the choice of terminology used. For example, Peters (1993) cites the designation 'study without leaving production' which was used in the former Soviet Union as the name for distance education. "This is indeed telling. Obviously it was invented by bureaucrats for whom the most important feature of distance study is the possibility than students can study without discontinuing their labour. There is no other designation for distance education which points to its economic advantage so bluntly"(14) or which makes its ideological stance on the goals of education so clear.

Looking beyond distance study for the moment, Laurillard (1993) points out that in much mainstream higher education, the implicit assumption is that teaching is about imparting knowledge thus lecturers are appointed on the basis of their subject expertise, and not on their ability to communicate that meaningfully to students. For this model of the nature of teaching, quality can be improved by a focus on increasing subject knowledge. Only if a view of teaching-as-linked-to-learning is held do issues of improving methods, providing appropriate support and selecting useful media become important.

Where a designer has little clarity on a provider's underlying paradigm, contradictions can distort the effectiveness of the educational process. Sometimes the messages contained in packages of materials are directly undermined by the delivery strategies and teaching methods contained in those materials. For example, many packages for teacher retraining in South Africa are purporting to transform teachers into more democratic, participative, learner centered educators, yet the materials given to students are highly authoritarian and didactic in approach. Robinson and Wall(1992) ask "Are the messages or values the learning materials claim to convey congruent with how the distance educator or institution behaves? What models of teaching and learning are implicit?"(13). In other words, our corporate or individual beliefs about the nature of learning will often be apparent in our curricula structures and materials, whether we have consciously examined them or not.

Rowntree's (1977) provides an illustration of the hidden messages embedded in the choice of methods and media : "just as a doctor prescribing tranquilizers will teach some people that medication is the way to improve personal relations, so a teacher's extensive use of the

lecture method will teach students that the way to learn is rely on the pronouncements of an authority" (126). The choice of teaching methods and approaches will generally reflect the educator's assumptions concerning the purpose of teaching – is it to promote learning?- and the role of the learner in the process (Phillips 1995:184). The decision to strongly emphasize discovery strategies might make the lecture method an unlikely choice (Rowntree 1977:103) while the focus on the accurate dissemination of factual information might suggest a printed text medium. Robinson and Wall(1992) suggest that what distinguishes correspondence courses from 'true' distance education with two-way communication is not simply media choice or method of delivery but what these represent of different underpinning values at a more fundamental level (3). One thing is certain, asserts Rowntree (1977), "our strategy will strongly determine which objectives get achieved... hence our strategy must depend on the objectives we hold most important"(102). He quotes Christy James (1972) as saying "it is not true that provided you learn, it does not matter what and how you learn since in large measure it is these which determine what kind of person you become" (106). Lockett (1995) says that while learning outcomes are important and should be stated and aimed at, the learning processes to achieve them (and the values they reflect and sustain) are more important (10). The selection of content – and I would add methods and media- need to be justifiable on moral as well as cognitive grounds (10).

At the other end of the process from selection and planning, evaluative judgements of the effectiveness of a particular approach can only be taken in terms of what the programme was setting out to achieve, which will in turn be dependent on the underlying philosophy and priorities of the overall system or institution.

Laurillard (1993) has been quoted as emphasizing the need to change how we think in order that we can change what we do. It seems equally sensible then to acknowledge that the current thinking we have of educational outcomes and the educational models in our heads will be a strong influence on decisions we make.

The emphasis on the means of education, driven by current demands foregrounding access and delivery rather than quality, encouraged by the technical nature of electronic communications systems, has obscured the need, particular crucial at the current moment to readdress key questions about the purpose of education (Clayton 1995:342). Certainly

at this trans-millennial moment, the views about learning that shaped distance education in its correspondence days no longer seem to have much currency.

Given that a number of strongly contradictory views exist in the literature in response to questions like 'what is the purpose of education?' ' what is the nature of knowledge?' or 'what kind of learning is worthwhile?', it would seem crucial that providers facing planning decisions (not only of media choice) engage in some rigorous thinking in identifying their particular spot on the continuum of opinion.

A full discussion of the issues raised by a consideration of the above questions is clearly beyond the scope of this dissertation. What Chapter 6 will try to do, however, is to raise a number of issues which seem particularly pertinent for providers of education at a distance or those confronting the integration of technology into traditional education.

#### **5.4. MAINTAINING A BALANCED STANCE**

This dissertation has criticised extremes of opinion about the role of technology in education, both those who are over-optimistic about media capacity, and their converse, those whom Seligman (1992) calls modern-day Luddites who eschew all technological innovation. Both schools of thought, he maintains, tend to oversimplify the power of technology to shape our lives and our work(2).

*"In every age we face the challenge of new technology. In every age we have those who see technical wizardry as a panacea to problems previously insoluble and others, confirmed sceptics, for whom there is no solution like the old one"(Seligman 1992:1).*

Amongst these latter, he cites a professor at the Open University in the early 1970's predicting that colour television would never catch on, while a decade later another UKOU professor predicted the same gloomy outcome for video cassettes. As he says, "even in the most forward looking of institutions, strategic thinking is not universal"(1).

It seems important to maintain a open mind to the contribution that a technological intervention brings to the education system, neither seeing it as automatically benevolent nor ascribing to it the sinister designs on life as we know it, a view popularized in the tabloids. Amidst all the hysterics about the new age of electronics dawning, it is important to remember a point made by Bates (1981) who says that on average a 10-year delay exists between a prototype of a new technology emerging and it actually appearing in

homes or in distance education systems. "In other words, the future is with us now: the technologies that are going to be in widespread use in the next decade already exist, at least in prototype form" (3) and many technologies that are being greeted with much hype as cutting edge inventions will never make that transition to mainstream use. Videodisks are a case in point where an innovation that was greeted with excessive enthusiasm has failed to find a place in any but a few applications and has been rapidly superseded by more appropriate technologies.

It is easy to find what Mason (1994) calls "enthusiastic and crusading literature"(124) about specific technologies but it is also possible to seek out more balanced, informed and objective reviews of media applications. Mason's own work "Using Communications Media in Open and Distance Learning" is a laudable case in point – but because it doesn't proselytize, the reader is required ultimately to come up with his or her own conclusions, which is hard work. It's much easier just to 'buy into' a writer's pet technology, enthusiastically endorsed, than it is to weigh up the pros and cons of a given medium, and then set that against a particular context and application.

Mason also warns of the necessity to keep a balanced view of the realities of any kind of educational provision. This can be particularly difficult when embarking on an innovative project : "the danger in analyzing and evaluating any educational medium is that the spotlight of attention dazzles [us] to the peccadilloes of everyday practice and activity in the wider world of education and training"(124). After all, he asks, how many students actually read all the material of a course? Or for that matter, what is the typical attention span in a face-to-face lecture? (124). As education providers we are operating in a very messy imperfect world, and while it is necessary to maintain an alert criticality when faced with technological promises, it can be as destructive to wait for some idealized fail-proof solution before proceeding.

Clayton (1995) reminds us to identify closely the changes that a technological intervention brings, through questions such as what the effects might be on society of the way technologies (such as expert systems, hypertext, intelligent tutoring) are storing, structuring and labeling knowledge. She asks, "are there any negative effects on understanding which may arise from a greater capacity to retrieve information?"(341). Different educators might have different answers to these kinds of issues, but developing a critical stance in this way

will certainly help to keep educators in control of the process, rather than being taken by surprise by unforeseen consequences of technology use.

A balanced view is also essential in the kind of reflexive decision-making process outlined in the start of chapter 5.

### **5.5. THE INEVITABILITY OF COMPROMISE**

It may seem odd in a study which aims to promote quality distance education to find a section with this title. Nevertheless, if sound planning and sensitive decision making is to be had in reality rather than merely in theory, then a realistic view of the difficulties inherent in the process must be acknowledged. To underestimate the complexity both of the decision making and of the implementation thereof places the provider in a vulnerable position, as well as intensifying the disillusionment when things inevitably fail to perfectly fit the preconceived ideal. This "will surely lead to a repetition of the mistakes made elsewhere" (SAIDE-ET2000 1996:15).

A perusal of the literature makes it clear that tensions exist between what is **aspired** to, and what **is**, between intentions and outcomes, "between stated principles and the implementation of these in practice" (SAIDE-ET2000 1996:13). No one should underestimate the difficulty of implementing the very high ideals espoused in the various pieces of policy current in South Africa. While the vision is clearly spelled out, the amount of ground that has to be made up before anything like equitable provision and quality education is attained is enormous and militates against even small positive steps forward. Other factors which act against effectively implementing these principles include resistance from educators and learners, administrative barriers, unsupportive institutional arrangements and many logistical problems, including limited finance. (SAIDE ET2000 1996:13).

Does this mean that the principles outlined in the vision should simply be ignored when they prove difficult or elusive? Of course not, tempting though this may be. Any movement towards better quality provision will have to be within the very clear structures provided by the various policy documents. But this will call for sustained effort and a clear commitment to rigorous planning, careful implementation and honest evaluation.

Even in other parts of the world without the peculiarities of the South African context, there is acknowledgement of the need to accept that compromise is sometimes (even usually) necessary. Very few institutions have a completely free hand in choosing media – sometimes costs of a particularly desired medium are prohibitive, sometimes the institution cannot abandon previously acquired equipment, and even in developed countries many students have access difficulties with sophisticated technologies.

Shaw (1995) points out that a delicate balance needs to be maintained to avoid any individual factor skewing the decision making process (457). For example, the lowest cost technology may not in fact be able to do everything which is required of it, while choosing a medium which has extremely high costs may mean that the institution can only afford limited quantities of it, thus restricting its effectiveness to small pockets. This principle can be applied to many of the other factors (such as access or potential for two-way interaction) which need to be considered. Most will have some ripple effect on other aspects of provision necessitating analysis in combination.

Koumi (1995) warns that in the real world many factors – political, financial, contextual - may force a 'second-best' medium being adopted, even though another would be ideal. "But it is better for this to be done knowingly than by oversight"(57). This is the crux of being open to the possibility of compromise – if it is part of planning, then the detrimental effects of a compromise can be contained by the careful consideration of appropriate alternatives should the need arise : if done unwittingly as part of an amendment by a separate resources committee, for instance, because they were not party to the thinking behind the selection in the first place, they may choose a substitute which has none of the key pedagogic or technical features desired. This also presupposes that the original choices (and any subsequent compromises) are made on the basis of a thorough knowledge of what each medium offers pedagogically.

The nature of distance teaching and technologically mediated education will also force some compromises in terms of the desired instructional methods. Winn (1990) cites the example of deciding that Socratic dialogue will best achieve a desired outcome but which is not possible through correspondence methods, thus "the distance educator would have to settle for a less effective method"(54). While this is true to a certain extent, it should be pointed out that this type of compromise is not limited to distance or correspondence provision. The average classroom teacher (or academic for that matter) may not be not

skilled enough to sustain genuine Socratic dialogue, if it even came to mind as a possible method, while the large size of classes would mitigate against a one-on-one dialogue as well. In other words, compromise is an inherent part of any educational planning, not just distance provision. Winn's view of a particular method being automatically 'excluded' by distance methods is also quite limited. More creative would be to consider what the essence of Socratic dialogue is (a logical step-by-step unfolding of understanding by question and answering) and then consider how that might be conveyed by various media. For instance, an audio-tape with transcript might demonstrate the process better than any muddled lecturehall attempt at the same 'Socratic dialogue'. Thus while a traditional academic might say that the method has been compromised by transferal to another mode of delivery, others (myself included) would argue that certain elements (spontaneity, personal involvement for one individual) have been lost while others (clarity, repeatability, audio and text reinforcement) have been gained. These "tradeoffs between instructional methods and the constraints imposed by delivery technologies need constant attention from educators"(Winn 1990:54).

## **5.6 THE ROLE OF EVALUATION**

An essential aspect of a successful media selection process is the need for more sophisticated evaluations. Mention has been made earlier that few technology-based projects (particularly those which have failed) manage to disseminate any evaluative findings about the reasons for certain decisions and the consequences thereof. Even where evaluations are carried out, they do not always yield the kind of information needed. Many evaluations are limited in the scope of what they investigate. Robinson and Wall(1992) point out that narrow concepts of effectiveness such as pass rates and numbers of students completing courses, or exam results are often used. "There is little research done of a qualitative nature on the change process in relation to the outcomes which occur as a result of distance learning courses" (8). They cite the example of teacher training where, while there is evidence as to the efficacy of distance courses in developing academic knowledge, there has been little focus on whether such programmes are able to improve teachers' actual practice. Chang and Romiszowski (1995) point out that much evaluation of newer communications technologies has focused on "quantitative analyses of messages sent, and by whom, number and time of log-ons, message maps showing message chains" rather than for example, content analysis identifying the occurrence of higher order skills such as knowledge construction and hypothesizing (332). Summative evaluation of the right kind is very useful particularly when it attempts to answer qualitative



questions (using techniques such as insider profiles of the process of learning through the medium, profiles of social climate, what criteria apply to good grades and so on), rather than just quantitative ones (how many students, how much it cost, through-put rates, utilization rates of electronic media and so on) (Eastmond 1993: 102). Eastmond maintains that qualitative evaluation is more useful in understanding the process, and how that process might be influenced to provide a more satisfying educational experience (103).

No provider can expect the implementation of new curricula or structures or media to work perfectly but sensitive evaluations can help to slowly build a body of knowledge which can then contribute to future practice in a way that is not possible currently. "We need to learn the lessons of each implementation and then use those lessons learned"(Laurillard 1993:8).

The understandings gained from evaluations will of course need to be used very carefully given that what is learned in one context will have an uncertain relation to what will happen in a different teaching and learning situation, even within the same institution.

Eastmond (1993) in comparing formative and summative evaluation suggests that in the former it's the cook who tastes the soup and in the latter it's the guests (103). If this is true, then this dissertation would argue that the ideal would not only be a few more people tasting the soup alongside the cook, rather than depending on an after-the-fact judgement by learners, (often when its too late for distance providers to radically alter the technology systems invested in, or the materials developed), but also a more thoughtful consideration of the recipe for that soup! Closely allied to this is the need for pre-action evaluation or needs analysis. While determining needs can sometimes be taken to such extremes as to delay a project way beyond the point at which it ceases to have any relevance, a careful consideration of what problems the proposed intervention is supposed to be solving can point quite clearly towards certain media and away from others. It makes good sense to clarify the terrain into which one is moving before embarking on complex media selection procedures. The mere act of looking at distance education as an option is in some ways a pre-emptive decision about the kind of strategies which are appropriate.

## **5.7 TEAM APPROACHES AND DIALOGUE**

Mention was made in Chapter 3 about the difficulties educators and technologists have in talking to each other. This leads to fragmented approaches to decision making and a lack of understanding of the finer details of each other's fields of operation which leads to fine educational intentions being let down by poor media choices or alternatively, potentially

effective technologies being badly utilized. Another phenomenon common to much poor quality provision in South Africa is that of a single academic being responsible for producing the course materials (usually text) without input from a wider team of instructional and technical designers.

When contemplating the introduction of a technological medium, it becomes crucial that professionals in the field are accessed. "Quality production requires quality staff who understand the characteristics, strengths and weaknesses of the medium in which they work"(Perraton 1988:350). Perraton goes on to suggest that one of the reasons why print is so overused as a communicative medium in distance provision is because academics feel more at home on this medium than in, say, visual media. On the other hand, professionals in the broadcasting or computing fields often are naïve in their understandings of what constitutes legitimate educational purposes. It is better not to use a medium (or a method, I would add) which one does not understand than to use it badly (Perraton 1988:350).

Inglis (1995) points out that effective distance systems need cooperation between various types of specialists " particularly those who know the strengths and limitations of particular technologies and the technical requirements for their implementation, and those who can understand the ways in which technologies can contribute to supporting the teaching/learning process"(367) In other words, technical specialists and educational specialists need to be on the same team and working on the same project. Perraton (1988) points out that it is unlikely that all of the various kinds of expertise required for an effective media-based programme will be found in one person, "therefore a team approach is required where those with different expertise work together to create the whole package"(342).

Distance education has been criticized as a weakly theorized field, largely located in outdated paradigms of behaviorism and rationality. Much energy has gone into defending distance education as a unique field with its own legitimacy and territory This has cut practitioners off from what Evans and Nation (1993) call "the enduring vitality which is born of the confluence between practice and theory... which rests on an outward gaze which connects with theory, research and practice in other educational endeavors and in society generally"(196). They urge practitioners in these overlapping fields to more actively provide each other with ideas from within their own disciplines and to more energetically search for new ideas within other contexts. Their own attempts to do this have revealed that there are

"substantial bodies of relevant ideas which either complement or contradict each other which currently exist in benign ignorance of each other"(197). I would say that this type of ignorance is not benign at all and leads to some of the more gross misjudgments described in this dissertation. Providers have no hope of avoiding the mistakes of the past if they are not actively seeking input from others and from other fields of knowledge.

This kind of cooperative multi-disciplinary interdependence is not always easy to achieve. Chapter 3 spoke of the jargon laden discourse which any specialist field develops, and the zeal with which people defend their precious 'expert' turf. A very clear sense of common purpose – in this case, that of quality education for learners – can overcome this and redirect that energy into common endeavour. However the difficulties of communication should not be underestimated. Inglis (1995) points to the need for dialogue between professionals so that shared meanings, understandings and actions can develop(367). We have as much need of learning from each other as our students do.

## **CONCLUSION**

Chapter 5 has attempted, in broad sweeps, to show the kinds of approaches which are most likely to yield sensible and effective media selection processes. Some of these may seem almost contradictory - the value of team approaches may create some tensions about our own personal slant on pedagogic principles, while evaluations (particularly a narrow view of these) may seem to conflict with the promotion of intuitive, 'hunch based' based decision making as described in 5.1. Once again though, effective provision seems to require an ability to combine these various tensions and to hold them in an equitable, productive balance.

## **CHAPTER 6 : DEVELOPING UNDERSTANDING**

The previous chapter discussed several broad topics which underpin generally sensible approaches to selection and structuring of media for distance education. Section 5.2 highlighted a theme which has been emerging throughout this dissertation, that of the tension (and thus the need to integrate and balance) between educational goals and technological pressures. In order to maintain a creative balance between the two and to avoid the all-too common scenario where one triumphs over the other, it is important that providers and decision makers have an in-depth understanding of the currently significant issues in both fields. In other words, a sophisticated understanding of **both** education and technology is needed. Very few providers are completely ignorant of both of these aspects of distance education : rather, most tend to have a more developed understanding of either one or the other, resulting in a skewing of factors to be considered and thus a greater likelihood of poor choices. A more sophisticated and nuanced understanding of both can help close the traditional divide that exists between either an all-technology focus (often exemplified by dedicated distance providers) or an all-pedagogy approach (often a refuge for newcomers from traditional provision). While educationalists may never feel quite as at home with technology as with advanced theories of pedagogy, the effort to get up to speed on previously unfamiliar issues may shed new light on the more familiar ground of education, forcing a reconsideration of priorities and purposes.

This chapter has two main sections, the first dealing with primarily educational issues and the second focusing more closely on media issues. However in keeping with the attempt to synergise rather than polarise, both sections include consideration of the other, and both take as their reference point the provision of quality mediated learning.

### **6.1. A DEEPER UNDERSTANDING OF EDUCATIONAL ISSUES**

While many of the points made relate to education at any level, the focus of this study has been on the choices facing providers of higher education at a distance: the next section will examine some of the recent pressures on higher education, and the shifts in thinking and the concomitant shifts in provision that these have brought about

#### **New demands on higher education**

Chapter 1 and 2 described the changing terrain of educational provision, particularly intense in South Africa at this point in history but reflecting global trends. Much of the low-quality

provision at tertiary level described in Chapter 1.2 and 1.3. exemplifies the rush to fill the gaps without really understanding the ways in which higher education needs to change in response to a changing socio-political, educational, vocational and technological context. Many institutions have been taken by surprise by these new demands – Jenkins (1995) lists these as demands for lifelong learning, continuing professional development, the changing nature of the student body, a growing proportion of part-time students, pressures to expand numbers and increase access ('massify') without extra resources, as well as the possibilities offered by new technologies (427).

Pressures in the marketplace include widespread downsizing, unemployment and deskilling of the workforce leading to training, retraining and lifelong learning, the emergence of new types of jobs and workplaces, and the adaptation of existing skills to these demands (DoE-TELI 1996:21). Clayton (1995) asserts that the communications revolution and the development of an 'information society' may have already led to substantial changes in the way knowledge is created and transmitted, the status and classification of various kinds of knowledge, and the power relations between those with access to knowledge and information and those without (341).

The view that there can be shifts in how we view knowledge and learning is itself a relatively new position, in contrast to earlier (and indeed in some fields still current) views that knowledge is a fixed, unchanging, 'out-there' phenomenon and can therefore be passed on from person (expert) to person (learner) in a uniform way. In many ways the shift has been forced on educators by the rapid and often radical change in the world where the quantity and type of knowledge in currency has undergone significant transformation.

Employers are demanding new skills and understandings to support these new endeavors and the formal education systems have (albeit often creakily) had to shift focus. Clayton (1995) reminds us that the interrelationship between society and education is complex with each being influenced in subtle ways by the other. "As different values and ideas become dominant in society this will have consequences for the goals of education and the manner in which they are sought"(341). This is particularly apparent in higher education where, suggests Luckett (1995), " post-modern society has lost faith in the grand humanist narrative of education which is pursued for its own intrinsic value"(1). Gone, according to Luckett, is the requirement that a university education produce a well-rounded, well-socialized 'educated' individual : instead government, employers, and students are focused

on what hard skills their education will give them (1). The explosion in the quantity of available knowledge and the increasingly rapid redundancy of that knowledge has meant the requirement that graduates have at their fingertips a certain predetermined body of knowledge has fallen away to be replaced by knowledge-acquisition skills and knowledge-using skills. Walker (1994) lists the kinds of skills required by graduates as research skills, information processing skills, co-operative problem-solving skills and entrepreneurial initiative (in Lockett 1995:2). The TELI report shows the increased demand for skills such as those required to access, select and manipulate information and to plan, evaluate, change and advance outcomes in a wide range of contexts (DoE-TELI 1996:21). Candy et al (1994) specify these further as " an inquiring and critical mind, 'helicopter vision' (an interdisciplinary breadth of vision), information literacy, a sense of personal agency and a repertoire of learning skills (in Lockett 1995: 2). For most of us, our own higher education was not focused on these areas at all, not even, in many instances, at post-graduate level.

It is important to remember that many of these radical shifts in work-force roles, technological access and so on are not universally consistent, even though that is often the impression given. For many poverty- or violence-stricken developing countries, very little progress has been made towards basic requirements like clean water and primary education, let alone Internet access or service-based economies. A country like South Africa seems caught somewhere in between, with many pressing primary health, sanitation and basic educational delivery issues coexisting with advanced industries, sophisticated markets and a high level of technological take-up. This dichotomy is reflected by often confusing policy exhortations at higher education level, where alongside demands for access and equity (discussed at greater length in section 1) are exhortations such as this from the UDUSA Policy Forum, for

*"all disciplines in higher education to place more emphasis on problem-solving and analysis, rather than the reproduction of knowledge in order to contribute to the development of a modern capable workforce"(in Lockett 1995:2).*

This exemplifies the tension between meeting the needs of access and the equally important need for quality which has been emphasized already in this dissertation. However, 'quality' here seems to be concerned less with some elitist vision of standards than with the economic and political needs of a developing nation, which will not be well served by previously common models of educational delivery focused on content retention.

- **A traditionalist response**

Ironically, faced with increasing pressures to produce more graduates with fewer resources and with greater efficiency, many institutions turn with relief to distance learning – but retain their old familiar and traditional paradigm with the consequences described earlier in section 1.3.

Luckett (1995) describes the traditionalist paradigm as one which has drawn criticism for its "making the acquisition of knowledge instrumental and for its ends-means behaviorist discourse"(8) and cites Grundy as describing it as having developed from within a culture of positivism and a "fundamental interest in predicting (and thereby) controlling the educational environment through rule-following action based on empirically grounded laws" (in Luckett 1995: 8). Traditionalist approaches (including Educational Technology) have been challenged on a theoretical basis by ideas based on cognitive science (such as those of Bruner, Vygotsky and Piaget), technologically by communicative and information technologies, politically by the left, and morally by radical critics.(Hawkridge 1992 in Evans and Nation 1993:207).

Given these particularly pejorative descriptions by Luckett and Grundy, and bearing in mind the onslaught by theorists on a number of fronts, wherein does the appeal of the traditionalist paradigm lie for educators then? Perhaps it is the promise which traditionalist approaches offer of predictable outcomes, of efficient processing of vast numbers of students, of the economies of scale of technologically mediated delivery of learning, all of which are particularly tempting for beleaguered academics and university executives under pressure to do more (and hopefully better) with less.

Their approaches interestingly enough polarize in two completely different directions. On the one hand, some institutions install satellite systems which allow for distributed classroom learning (which has been discussed and described earlier) thus entrenching the reliance on a teacher, while others abandon the face-to-face teacher altogether in favour of highly designed (usually text-based) learning materials. The former is particularly appealing in a context like South Africa where the inadequacy of many classroom teachers is well known and, the reasoning goes, surely it is better to have an expert teacher, albeit electronically mediated and shared with many other learners than depending on an incompetent teacher actually present in the classroom. This approach has been criticized for merely making the deficiencies of lecture-led education more available to a wider

audience : Bates (1991) describes it as a retrograde step to return to a method based on the efforts of an individual teacher and which requires the student to be present at a set time and place, thus doing away with some of the benefits of flexibility (14). The TELI report acknowledges the importance of face-to-face contact (even electronically mediated) but advises that this should not be wasted on the simple transmission of knowledge from educator to learner (as is usually the case with mass distributed learning) but should rather be focused on various forms of learner support (DoE-TELI 1996:278).

This push deeper into traditionalist approaches can – and in many instances has- lead to a situation where "knowledge industries mass produce knowledge and learning as products – skills and competencies- which can be bought and sold by large and diverse groups of consumers"(Luckett 1995 : 8). Evans and Nation (1993) use Lyotard's post-modernist theories of "commodified knowledge" to explain how distance education can be seen as part of an industry from which students purchase packages of knowledge (207). Technologies can be harnessed to process these large groups of consumers – video conferencing can reach hundreds of learners simultaneously while optical scanners can mark thousand of multiple choice tests (Luckett 1995:8). Shale and Garrison (1990) have warned that this "easily leads to a regard for education as a commodity to be packaged and distributed where students have only to partake of the product to become educated"(67). The implications of such a point of view, they say, are enormous including instruction being reduced to the packaging of knowledge, teaching to telling, and learning to the largely solitary consumption of chunks of knowledge. The role of the teacher is viewed as a utility which can be used and 'captured' in materials and thereafter becomes redundant (68).

- **Packaged knowledge**

The idea of packaged knowledge has been one of the driving understandings in distance education, with Otto Peters' critique describing the process in industrial terms in the 1970's.

He regarded distance education provision as a rationalized form of industrial production as exhibited in the following ways:

- "a division of labor (with each individual in the course team having a different role in the production and dissemination of knowledge)
- mechanization (as the dissemination of knowledge was achieved through the assembly line production)
- mass production (since there was theoretically no limit to the number of students who could study the course once it was produced) (in Keegan1986)



He regarded this as a process of standardization and the beginnings of a monopoly of the educational market (in Jarvis 1987). Peters, Bates (1992) and others see the Open University, United Kingdom <sup>10</sup> as the paradigm case of institutions who adopt the industrial model. Hamilton (1990), who worked at the UKOU, concurs with this categorization because he says "as in the factory system there is an elaborate division of labor between, for instance, those who encode the curricula (course teams of writers), those who distribute the curricula (course managers) and those who decode the curricula (course tutors)"(in Evans and King 1991:71). Indeed he also allocates roles such as 'personnel managers' to the counselors who attend to 'industrial relations' problems such as the personal needs or learning relations of learners which are thrown up by the workings of the system. Thus, he says, the UKOU is a very sophisticated machine and when working smoothly is an enormously efficient and accessible 'knowledge factory' (although like any complex production line, the smallest glitch can cause havoc). But what of the learners in such a behemoth? Hamilton suggests that they "have very little control over the workings of the system. At times, no doubt they feel the smallest of cogs in the largest of machines(71). Harris (1976) contends that the need to ensure the smooth running of such a large system as the UKOU has diverted it from producing any answers to questions involved in designing meaningful curricula and pedagogies. He agrees with previous comments when he says "education at the UKOU has been reduced to a basically administrative process involving the production and distribution of educational commodities such as packets of knowledge and educational certificates"(44 in Evans and Nation 1993: 205).

Their industrial nature predisposes large institutions, according to Rumble (1992), to be "institution centered, designed to maximize the effectiveness of the educational process by treating learning as the processing, storage and retrieval of knowledge"(in Phillips 1995:183). Here we see the extremes of the separation of the teaching and learning act: the knowledge is 'processed' by the writing team, 'stored' through technological means, and only the 'retrieval ' is left for students to do. Interestingly though, where research has focused on the learners, strong dissatisfaction has been expressed with being passive in the learning and in the construction of the curriculum. (SAIDE-ET2000 1996:7)

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<sup>10</sup> known as UKOU to distinguish it from the other 'Open Universities' which have sprung up around the world)

- **Concerns over packaged approaches**

It is important to realize that Peters, in developing his 'industrial model', was critical of this new and alien form of teaching (although he recognized the imperatives that necessitated such strategies) particularly with regard to the abandonment of the two-way interpersonal interaction (usually oral) in a learning group which he maintained had existed in all cultures since Plato and beyond. Its replacement he described as "an apersonal mechanical or electronic process in which an artificially created message replaces educational communication" (Peters in Keegan 1986:78).

The apotheosis of this approach would be seen in those programmes (initially using correspondence means but now as likely to be textbased or computer–designed) which believe that "it should be possible to make [written or other] materials so effective that face-to-face contact would only have a remedial purpose as a final control procedure for problem students"(Harris 1987:52 in Shale and Garrison 1990:26). As early as 1901, the authors of a correspondence course remarked that it would hardly be necessary for students to ask questions since everything was fully explained in the course (Methode Touissat-Langeschedit in Shale and Garrison 1990: 26). Garrison (1989) quotes no less a personage than Plato to show the limitations of printed texts : "You might suppose that written words understand what they are saying but if you ask them what they mean by anything, they simply return the same answer over and over again"(96 in Garrison 1989:19). Even such a high status institution as the UKOU is known for assuring students that their courses can be successfully completed on a submarine – the implication being that no further input from peers, teachers or other resources outside that of the course pack is needed. UKOU materials have been described as "predisposing students towards surface learning and discouraging independent learning" (Woods in Van Wyk et al 1995:230) Van Wyk et al say the same observation could be made about another largely print institution, UNISA. Furthermore there is often no provision for any kind of meaningful two-way communication between learners, peers and teachers, thus rendering this type of educational communication largely one-way. The implications of this will be discussed in more detail in Chapter 6.

Another problem with 'packaged' approaches to distance learning is that in many instances the media are used to "present expositions so perfect as to inhibit all real thinking (or feeling) activity. Sometimes there is nothing for the student to do except nod in agreement and commit the message to memory" (Rowntree 1992:117). Thus, he says, media

messages can become one of the biggest deterrents to thinking in higher education. In many distance courses viewed as 'excellent', "there are no loose ends or incomplete analysis. If there is a significant inference or relationship to be drawn out, the writer does it"(118). The course developer, acting as the teaching voice, does the thinking, not the student. While it is clearly essential that any materials-based courses are clear, accurate, attractive, easily readable and understandable, there still needs to be the 'gap' where a student needs to apply individual thinking and mental activity, to puzzle something out personally. Rowntree also points out that texts seldom expose the process of arriving at the conclusions and assertions made in the text. "They never give a clue that [the writer] pondered, maybe even agonized over hundreds of decisions. The result is that the controversy of competing ideas is hidden from students"(118).

Evans and Nation (1993) in their book "Reforming Open and Distance Education" argue that the industrialist structures and instructional practices of such organizations prove "both self-perpetuating and virtually unshakeable in the face of educational approaches and technologies which advocate dialogue"(204). Harris (1976) describes the teaching system at the UKOU as having been shaped as much by political and practical expediency as by any pedagogical goals but that the need for efficiency has already entrenched these approaches as reified and unmodifiable in essence (44 in Evans and Nation 1993 :205). Here the irony of the confusion of terms in 'distance' and 'open' is most marked as Rumble (1989) points out:

*"the technological basis may lead to a **closed** system if undue emphasis is placed on 'programmed media' such as texts, broadcast, audio and video cassettes, computer-based instruction where the content is predetermined and communication is one-way, from teacher to student"(31 in Butcher 1995:10).*

While the effort made to enable any student, regardless of situation, to access key information is laudable, it seems fallacious to think that all aspects of the educational transaction can be captured and packaged in a static way. Mason (1994) draws a parallel between the overuse of the lecture method common in many face-to-face institutions and the over-reliance on high cost purpose-produced print material, equally common in distance education. Because of the need to amortize the costs of developing and printing the materials, the course must be offered unchanged to a high enrollment of student over a number of years. (While most institutions do have some mechanisms for additional upgrades to be added to course texts, many follow the UKOU pattern of a given set of texts having a shelf life of 5 to 8 years before substantial revision is undertaken.) This, says

Mason, not only makes it difficult to quickly mount courses in response to student, market or national need, it also makes it difficult to maintain currency (122). In some areas of the curriculum, this makes courses dangerously out-of-date. Because innovation is difficult, when newer approaches and technologies are introduced, they are usually 'added-on' to a course (rather than being integrated or indeed replacing older approaches), thus adding costs to the programme, increasing students' workload and remaining on the periphery as 'optional extras'(Bates 1991:11). Many students therefore fail to take advantage of these innovations.

In spite of such criticisms, developers of packaged courses point out that the economies of scale make possible extremely high quality development processes and that the creation of well integrated, coherently structured materials specifically designed for the isolated learner can make successful study a predictable likelihood. Shale and Garrison (1990) however dispute that this is a likelihood at all, pointing out that

*"the intersection of assumptions made by individual course developers, and the ambiguities of interpretations on the part of individual learners means that there is no absolute perfectly replicable nontrivial set of learning outcomes that result when students interact with it. In short packaged knowledge as objective knowledge is illusory"(28).*

Both Winn (1990) and Laurillard (1978) draw on extensive research to show that the way students approach given cognitive tasks is both individualized and context dependent (in Thorpe 1995:175). This leads Thorpe to conclude that "learning is dynamic and in many ways unpredictable. The idea that courses can be designed in advance to work equally effectively with successive cohorts of learners is undermined"(175). Winn (1990) concludes that continuing to work at perfecting instruction on the assumption that what works with one group will automatically work with subsequent groups, is a flawed strategy. As Thorpe points out, this has major implications for those models of distance provision which are based on "the finalization of teaching material in advance of its use"(175).

There is a further irony in the use of the term 'individualized' learning to describe much packaged distance provision. At one level, the learning is individualized (the learner works alone, at a time and place of his or her own choosing, as slow or fast as he or she individually desires, skipping tasks or pages at will). However, at another level, the learning offered by predetermined 'cast-in-concrete' courses is highly generalized in that many thousands of students over a number of years receive exactly the same material, and are

put through exactly the same highly structured intellectual pathways. The possibility of the student making the learning his or her 'own' in any meaningful sense is remote.

- **Implications of these approaches**

The danger here seems to be that highlighted at the outset of this study, what Lockett (1995) describes as achieving greater levels of equity in the delivery of mass education via technological means but in the process sacrificing the quest for greater quality.

*"The distinction between knowledge and information will disappear. If knowledge is bought and sold only for utilitarian functional ends, then it fails to become personalized knowledge and thus its capacity for developing morality and the ability to make critical judgements is undetermined" (Lockett 1995: 8).*

The possibility exists – indeed, surveys like the SAIDE Audit found it to be the predominant pattern - that the great power of technologies to do things in a new and better way may be subverted to sustaining old ways of doing things, in an outdated and inadequate educational paradigm but dressed up in a new efficient guise. In many ways the design of the car hasn't changed – it's just that the production line is now working much more efficiently. The consequence is that many more people can now afford an old-fashioned model of education which isn't going to take them very far on their journey.

Laurillard (1993) warns academics against passivity in the face of these threats to quality learning and highlights the need to "rebuild an infrastructure that will find the fit between the academic values we wish to preserve and the new conditions of educating larger numbers"(4). In other words, if education providers wish to avoid being forced into a 'fast-food' form of higher education, which is quick, cheap, available to take-away on every street corner but offers very little sustenance, than they need to be able to offer alternatives with sound 'nutrition' - that deal with the requirements for greater access, affordability and efficiency, which are market related and enhanced by technology but which still provide students with the skills, knowledge and values that they really need lifelong. A tall order perhaps but one which would preserve the integrity of higher education while facilitating transformation. The use of technologically mediated distance methods does not presuppose the retention of a traditionalist paradigm. In fact, Evans and Nation (1993) challenge practitioners, researchers and theorists on their tendency to conceptualize distance education as an education industry, of mass produced forms of programmed

learning which are "captive to educational technologists with behaviorist orientations where.. students are essentially alienated from their teachers and fellow students"(196). Instead they propose rescuing distance education by "educators using technology to create systems of teaching and learning which sustain dialogue between teachers and students" (196).

- **New understandings of quality higher education**

If the traditionalist view of packaged knowledge seems unlikely to meet the nation's need for flexible, principled graduates, then at this point it seems necessary to become a little more explicit about what alternatives might currently be deemed 'quality education'. Section 1.4 discussed notions of quality, making the point that it can connote quite different things to different groups. The contested notion of quality as discussed in that section needs to be borne in mind at all times in this next section. Nevertheless the following ideas need to be taken into consideration by providers.

Growing disillusionment with traditional methods of teaching and learning in the face of changing demands from society has led many educators to seek different ways of structuring learning. Thorpe (1995) reports that "the limits of behaviorism, especially for conceptual learning and the development of crucial understanding, are well rehearsed"(175). Many educators –both theorists and practitioners- have pointed to the anomaly that there can be teaching – and sometimes quite impressive and expensive teaching - without learners actually learning. Even Lord Perry, first chancellor of the Open University had this to say: "It seems to me highly significant that the term 'distance learning' has come to be used in preference to 'distance teaching'. For there have always been very many attempts to teach at a distance in a number of ways for a very long time. Yet we were never very sure that any of them were associated with learning"(in Neil 1979:6).

Shale and Garrison (1990) assert that effective learning is brought about by teaching which does not pass on content as if it were dogmatic unquestioned truth. They describe a critical thinking cycle, crucial to the educational process. It involves the critical analysis of beliefs, norms and accepted knowledge and understandings. The development of new perspectives, based on the integration of the newly acquired knowledge with the student's existing knowledge must be encouraged and finally this emerging knowledge must be validated through sustained and collaborative interaction with others– both teacher and peers.

Brookfield (1988) presents a perhaps frighteningly anarchic vision when he emphasizes the complex transactional nature of educational encounters, describing them as "a bargaining and negotiating process...endemic is spontaneity, serendipity and happenstance"(2 in Shale and Garrison 1990:28). A more reassuring view is offered by Bates (1988) who believes that higher education is as much about interpretation and the application of high-level intellectual skills such as analysis, application and original thinking as about reproducing accurately handed down knowledge (11).

- **Information versus knowledge**

One frequently emerging idea regarding quality higher education is the difference between information or raw knowledge on the one hand, and on the other, understanding and truly 'knowing'. This view holds that **education** (to do with understanding) transcends mere **instruction** (which remains in the domain of information), the former having something to do with the induction of personal knowledge in the learner. Johnson (1996) stresses that knowledge emerges from information derived in meaningful ways and that without this meaningful organization, information is like spare engine parts sitting in a warehouse but not integrated into a working car (in Perold 1996:55). Garrison (1989) describes knowledge as awareness developed through critical analysis and, quite logically, points out that if knowledge is organized and meaningful information, then its acquisition by our learners should surely be the focus of our activities as educators (16), not merely the conveying of information.

Many writers have focused on the tendency for technologies to be used in providing information rather than knowledge. Naisbitt (1982) says many distance learners are drowning in information but are starved for knowledge (in Garrison 1989: 16). Zeitun, in criticizing the flow of information on the Internet, says that information only becomes knowledge once it is understood and that this process requires the learners to be skillfully supported, not merely provided with the raw data (in Perold 1996:54). But in order to help learners develop this type of understanding, Garrison (1989) says we need to look "beyond the promise of communications and information technologies and begin to harness the power of technologies to induce knowledge"(18). Information, he asserts, is transmitted though one-way communication while knowledge is induced through two-way communication. The importance of interactivity and dialogue will be explored more fully in Chapter 6.

Parer (1996) affirms that "effective learning takes place within the context of existing knowledge, beliefs and skills as is articulated in Edmund Husserl's phenomenology"(172). He goes on to say that the (adult) learner grows by accepting new ideas within the context of those existing concepts and skills. Deep learning, he says, occurs when concepts are reconstructed, rather than simply accepted (172).

The idea that true knowledge (as distinct from information) is constructed anew for each individual learner has attracted much support (and inevitably criticism) in educational circles. Constructivists would claim that in order for students to reach understanding of an issue (by constructing their new conceptual edifice) they must experience "hypothesizing and predicting, manipulating objects, posing questions, researching answers, imagining, investigating and inventing"(Fosnot 1991 in Chang and Romiszowski 1995: 331). As early as 1977, Rowntree, prominent in distance education circles, was arguing for a vision of education where the media used enabled the student to shape and use the ideas being developed in the learning situation – contributing to them, applying them, testing and critiquing them, modifying and combining them - "in general, constructing his learning rather than taking it 'off-the-peg'"(117).

Constructivist models of education are part of the move away from transmissive models of teaching in which authority and knowledge are vested in the teacher with the student assuming a relatively (and sometimes extremely) passive role (Mason 1994:32). Social Constructivism also places importance on the meanings which individuals bring to, and create within, the social contexts they occupy (Evans and Nation 1993:208). Greater status is afforded the social milieu of the learner and its central role in the learning process (Caraguti and Gilly 1993 in Thorpe 1995). According to Luckett (1995), within this paradigm knowledge is understood as a particular interpretation of reality, it is socially constructed, value laden and provisional. It encourages critique, the reconstruction of knowledge and reflective thinking (10).

There seems to be a consensus of opinion – from Dewey's rejection of the classical tradition of the passing on of knowledge in the form of unchangeable ideas (Laurillard 1993:15) through to more recent researchers such as Vygotsky, Bruner and Piaget - on the need to shift the focus from teaching onto learning, to structure and deliver education in a way that optimizes the experience for the learner, making genuine learning possible. There



seems to be a general dissatisfaction with the notion of an inert learner as the passive recipient of given knowledge (Laurillard 1993:15), sitting in a lecture-hall listening to a teacher expounding knowledge. Many 'new' methods such as co-operative learning, resource based study, problem based learning and others seek to facilitate this shift to an independent learner more actively engaged in the formation of his or her own ideas as central to the learning process. This of course necessitates changes not only in approaches to teaching but also in a reconsideration of the purpose of the teacher role. "[They] are expected to be facilitators and resource people as well as course planners and knowledge brokers"(Kaye 1993 in Mason 1994:32).

The influence of these shifts is particularly noticeable in primary schools but has not made such great inroads at tertiary level "with its continued reliance on lectures and textbooks where the classical tradition of 'imparting' knowledge still remains"(Laurillard 1993:15). This is in spite of the goal of developing the independent learner being most appropriate for higher education (Thorpe 1993).

- **Surface and deep learning**

Many writers (Marton and Saljo (1976), Ramsden (1986) among others) have attempted to describe what many teachers have observed – that students differ in the way they approach learning and that students come away from the same course with quite different levels of learning. These differences have been labeled deep and surface learning. Surface learning is characterized by memorization of information and doing merely what is required without question while deep learning is characterized by a search for meaning and understanding, what has been called "conceptual change learning"(in Sparkes 1992: 134) or "a qualitative change in the person's view of reality"(Ramsden 1992:4 in Lockett 1995:12). Northedge (1994) defines higher/deep learning as "the reconstruction of elements of one's meaning production system"(in Lockett 1995:12). Perkins (1992) makes the seemingly obvious but oft neglected point that learning is a consequence of thinking (in Lockett 1995 : 12) and Winn (1990) maintains that in order for new knowledge to be integrated into a deep understanding, it must be mentally 'elaborated'. "That is, the more the students work at trying to make sense of it, the better it will be understood and remembered"(60).

Ramsden also suggests that teaching in a traditionalist paradigm tends to give rise to surface approaches to learning characterized by

- atomistic and superficial learning
- the students' intention is primarily to complete the task for extrinsic purposes
- students often counterfeit understanding
- students tend to fail to internalize that they learn
- they often show an inability to apply theory to practice
- students also lack criticality

(in Luckett 1995: 9)

Rowntree (1977) describes this as the student allowing the message to 'wash over him' while passively accepting the message, rather than being an active producer and user (117). Van Wyk et al (1995) in describing a survey of the approaches of students learning through UNISA, found many students focused on surface learning. He described them as

- sharply focused on assignments and exam preparation
- not likely to challenge the authority of either the lecturer or the written word
- seeming to equate acquiring 'knowledge' with the memorization of the text
- reluctant to critically approach given texts

He speculates that some of these attitudes may have arisen as part of a survival strategy generated by the pressures of part-time study but may also be part of the socialization process of the institution (which implicitly requires students to be passive). The SAIDE Audit (1996) for example, criticized texts at these institutions as being "closer to catechisms than university texts ought to be" as they did not require "enquiry, engagement, creativity or active learning"(67).

This type of surface learning would seem unable to produce graduates with the kinds of skills and competencies listed by Walker and Candy earlier in this section. In other words, surface learning is not consistent with the articulated work place and national requirements of graduates, and any programme of study which is satisfied with this level of learner engagement is not offering appropriate education. Ramsden stresses the importance of teaching in such a way as to deny the students the opportunity of adopting a surface instead of a deep approach – that is, critical and active engagement must be an integral part of the curriculum structures and approaches (in Luckett 1995: 13). Unfortunately many of the distance education strategies adopted from within a traditionalist paradigm would

seem to do the opposite – actively encourage surface approaches by not building in opportunities for active learner engagement with anything beyond straight content. Bates (1991) points out that given that most theories of learning suggest that active engagement is necessary for effective learning, it follows that it is not enough for the students merely to observe or read. "The learner must respond in some way, the learner must 'do something' with the learning materials"(in Mason 1994:187). Rowntree (1977) says the media used must "provoke [the learner] to appropriate activity" (117).

Marton et al (1993) conducted a study of UK university students- both distance and on-campus- and developed a six stage taxonomy describing conceptions of types of learning held by these students. These types of learning ranged from the simplest ("increasing one's knowledge" and "memorizing and reproducing") to the most complex and personally meaningful ("seeing something in a new way" and "changing as a person") (in Joughin et al 1995:258). It is interesting to see the insignificant place accorded to the type of learning (content retention) most emphasized in traditional higher education, as contrasted with higher order placing of the type of deep learning described by Ramsden and others.

In spite of this, Laurillard (1993) highlights that most academics have high aspirations for their students and when asked provide outcomes like the following for their courses : "critically assessing arguments', 'compiling algorithms to integrate their knowledge', 'becoming aware of the limitations of theoretical knowledge in the transfer from theory to practice'"(15). Thus academics seem to believe they are indeed engaged in the business of helping students engage in high-level **learning**, not merely dispensing high-level **knowledge**. This disjunction between intentions and reality is a fertile area for development and improvement.

Constructivist approaches to education seem more likely to achieve the 'deep' learning described by Ramsden given that they would argue for the inclusion of the following in any educational provision

- collaborative environments for the shared negotiation of ideas, allowing the integrating of new concepts with prior conceptions.
- strategies which allow and encourage the participative learner to actively engage in the learning process

This implies significant shifts both in attitude and methodology on the part of educators, whether as face-to-face teachers, materials developers or users of technologies. Instructional designers cannot expend all their energy on content alone – they also need to focus on the ways learners tend to come to understand that content, the problems, the confusions and misunderstandings, what counts as understanding (Laurillard 1993), as well as a range of understandings about how individual learners experience the learning (which is often quite separate from the particular content being examined). This heralds a move away from the traditional audio-visual 'input' model of learning to a response-orientated learning-by-doing model (Cheek: 1977:223).

- **Some cautions about constructivist approaches**

Some writers (Thorpe 1995, Laurillard 1993), while fundamentally in favour of the independent and active learner engaged in the creation of personally meaningful knowledge constructs, have sounded some alarm over the willy-nilly adoption of constructivist theories.

Partly, for Thorpe (1995), this anxiety arises out of our knowing very little about the proper role of teaching in creating confidently independent learners, and partly it arises out of our tendency to replace one orthodoxy with another so that in the place of prescriptive theories about transmissive models of teaching, we now have the prescriptive model of facilitative teaching which may, she warns, take on a variety of less than satisfactory forms (175). Thorpe feels that in some courses where constructivist theories are espoused, the learners are "effectively abandoned at the stage where they lack a satisfactory grasp of the large scale structures of knowledge and sufficiently advanced study skills, both of which are necessary pre-requisites for complete independence at higher education levels"(175). Laurillard (1993) points out that wonderful independent learning resources such as a CD-Rom or interactive video-disk (or for that matter a library full of books) are only as good as the 'enquiry frameworks' the learners brings to them. What we need, says Thorpe (1995), are strategies which develop independent and self-aware learners but which neither leave them to sink or swim (an approach favored by many technology enthusiasts who believe that since all the resources are there, surely the learner can manage to learn), nor hand over to the student all responsibility for what and how it is learned while retaining the power to judge whether that learning has been successful or not (very common in traditional institutions seeking to innovate without real change)(175). While some more enthusiastic proponents of constructivist theories seem to be arguing for declaring the teacher an extinct species, Laurillard proposes a model of learning which is premised both on interaction by the learner and a framing-and-reframing feedback from the teacher(54).

While this dissertation is not primarily about the relative merits of constructivist theories, it is important to keep an awareness of possible benefits and pitfalls in any new approaches being promoted.

### **Key implications of these new ideas for distance education**

These ideas, if taken seriously, would obviously change the face of traditional campus-based education as well as distance provision. Laurillard (1993) acknowledges that university teachers are "neither required nor enabled to know these things. Moreover our system of mass lectures and examinations ensures they will never find them out"(4). In some ways, materials developers for distance programmes have had to confront these issues in their efforts to best structure a particular topic or unit. Thereafter, however, these understandings have become fossilized as the industrialized machine of much distance provision prevents new understandings and perspectives being fed into the course, as discussed already.

This section will focus particularly on those implications which impact most on technology-enhanced provision.

Several features of distance education as traditionally delivered would seem to run contrary to the shifts in educational thinking as outlined above, while others would seem to have been more deeply embedded in provision to remote learners anyway. Some would argue that self-study by its very nature requires an active learner and that inherent deficiencies in a remote form of instruction force distance learners to become engaged in the learning process. This would however seem to be a simplistic reading of what it means to be an 'active' learner. Meeting individual needs has always been a focus in distance provision but these surely have largely been needs of convenience and access, rather than cognitive adaptivity. Some key aspects of constructivist approaches to teaching and learning (such as collaborative activities, genuine interaction, and space for the learners to create their own understandings) have been singularly lacking in many manifestations of distance education. The highly structured nature of many distance courses has meant that a student is forced into a predetermined pattern of fulfilling highly explicit requirements. The point has already been made in this dissertation that the synonymous use of the terms 'open' and 'distance' as if describing inevitable congruence between these two concepts is misleading as many distance institutions are only open in terms of access and are very closed to the notion of the active learner.

Distance provision has fallen into many of the same traps as has traditional higher education – reliance on content, a didactic style, a removing of real life contexts and so on (Details of this are provided in Chapter 1, in the descriptions provided by the SAIDE audit and the International commission). This is not surprising as many distance institutions have modeled themselves as far as possible on 'regular' institutions, trying to replicate what a student would be getting on campus but at a distance. Thus the text replaces the lecture but vast chunks of raw information are communicated at both. Many campus-based sceptics refuse to believe that learning could happen without the crucial face-to-face presence of the lecturer but what these people fail to realize is that, in our massified overstretched institutes of higher learning, the average student has very little interaction with the lecturer and the face-to-faced-ness of a lecture is minimized when the time is spent staring at notes and scribbling down dictation.

Romiszowski (1995) suggests an interesting analysis of distance provision which correlates in some ways to the traditionalist/constructivist divergence discussed in 6.1.1. He sets up two alternate paradigms of distance provision, one of which he calls 'instructional' and the other 'conversational'. The former, which has dominated distance provision thus far and which has driven and, in turn been informed by, much of the research in media, would focus on strategies and technologies for the transferal of instruction, whereas the conversational paradigm would be more concerned with the dynamics and possibilities of groupwork, experiential learning and other meaning-making activities. (165)

Perhaps because of its greater vulnerability to criticism and its perceived lack of credibility, distance education has already engaged in extended debate on some issues which relate to the current shifts. Thorpe (1995) points out that the use of, for example, advance organizers and in-text activities shows the influence of cognitive approaches that have appeared in distance materials for at least two decades now. Distance provision has long been concerned about interaction and two-way interchanges between teacher and learner, even if the interest came more because of the difficulty of doing so than any clear sense of the cognitive purpose of that interaction. In 1991 Bates, in discussing the challenge of the 'new' technologies, predicted that the main advances in distance education would come not from those technologies based on relaying lectures but "from those that provide for increased interaction for the learner"(14).

Distance provision may have already engaged at some level with some of the implications of these new ideas simply by the very nature (i.e. mediated) of its methods. However, a closer examination of interaction and two-way communication, viewed as so central to genuine deep learning, seems necessary, as greater clarity on the issue is needed before sensible media choices which facilitate or hamper interaction can be made.

- **Interactivity**

Bates (1991) cautions that interactivity, like quality "is one of those buzzwords which are bandied about without a great deal of care being given to what it actually means"(25). Mason (1994) points out that interactivity is very widely and loosely used to mean a number of quite different things. The desire to show that provision is somehow different from the much derided passivity of broadcast media or the isolation of correspondence approaches, leads to indiscriminate 'bandwagon jumping' – "every programme, every technology, every approach is labelled 'interactive' by some obscure definition of the word"(26). The most obvious meaning – that of communication between two or more people- is not the only use of the term. Some computer-aided training is frequently described as 'interactive video' because students can chart their own pathway through the material, making choices and selections which lead to different options. Printed text which is written in a friendly personal style with in-text questions and activities is also often considered 'interactive'(35). Mason goes on to warn that the term is also used somewhat indiscriminately in relation to purpose and quality. He points out that the 'polling' system used in some distributed learning contexts where participants can vote for the option of their choice (often used in popular television game shows) has a quite different value educationally from small group discussion via video conferencing – yet both will be described as 'interactive'. "Much of what passes for interactivity should really be called 'feedback' to the organisation or teacher"(Mason 1994:25). True interactivity, Mason suggests, should be reserved for those instances where human response –whether vocal or written, electronically mediated or face-to-face -refers to previous human responses. This, he says, would allow us to evaluate the relative interactivity of various technologies or strategies in terms of the extent to which each 'utterance' or interaction built on the previous ones (26). This idea is much closer to the idea of conversation and dialogue which will be elaborated on in the next sections.

Not only are people vague about the use of the term, there is also some level of impreciseness about its specific role and functioning. This is irresponsible given that many

writers seem to ascribe great importance to it and there is extensive theoretical support for its significance (Armstrong 1990, Rafaeli 1988, Tucker 1989 in Mason 1994). Interaction is usually cited as 'where' the knowledge construction takes place (Inglis 1995). Wegener (1994) says interactivity is required for reinforcement, active participation, enhancement of meaning, information encoding and continuing motivation, and Weston and Cranton (1986) promote a link between interactive strategies and higher order learning (in Dillon and Gunawardena 1995:349). Mason (1994) maintains that interaction has been shown to benefit learners at an affective level by increasing motivation and interest. At a cognitive level it has been shown to increase the speed of assimilation and the length and degree of retention, as well as relating positively to the development of critical thinking and deep-level learning (26).

Mason (1994) warns however that because the concept so characterizes educational thinking in the 90's, and because "it is so embedded in the spirit of the age there is relatively little questioning of its value, much less evaluation of its effects" (24). It is becoming a 'taken-for-granted' idea.

The next section will try to clarify something of the role and value that interactivity might have in distance provision.

- **Different types of interaction**

Moore (1989), editor of the influential American Journal of Distance Education has proposed that a number of different types of interaction occur in distance learning.

- **Learner-content interaction**

The first is a defining feature of all types of education, that of interaction between the learner and the content or subject of study, which should result in changes in the learner's understanding or cognitive structures. Bates (1991) describes this type of interaction as an individual private activity between the learner and the learning material – which he says can range from a sandtray in kindergarten to a sophisticated computer programme (14). Moore characterizes this intellectual interaction as the learners 'talking to themselves' about the ideas they encounter. This would seem however to making assumptions that all students have sophisticated learning skills. Many students simply focus on the content of the materials and attempt to absorb it in a routine manner as characterized by the 'surface' category of learning approaches where what is learned is soon forgotten. Perhaps this type of internal 'conversation' should be afforded its own category as a distinct type of interaction



materials and attempt to absorb it in a routine manner as characterized by the 'surface' category of learning approaches where what is learned is soon forgotten. Perhaps this type of internal 'conversation' should be afforded its own category as a distinct type of interaction because, crucial as it is in the learning process, it does not seem a universal or guaranteed phenomenon in all learners.

In many ways the interaction between content and learner should be more satisfactory when mediated by technology than in face-to-face learning because the materials developer (the 'teacher') has spent more time considering structure, approaches, order and other instructional aspects than the conventional lecturer, and the student has more opportunity to interact with the material in an accessible form, in contrast to the hurried campus student trying to aurally absorb the contents of a lecture. Furthermore materials-based learner-content interaction can be far more individualized in terms of pace and order than a mass lecture, thus making the desired 'internal conversation' more likely. However, the danger mentioned already is that distance materials can often pre-digest much of the knowledge for the learners, this reducing the content-learner interaction to a superficial skimming.

- **Learner-teacher interaction**

Moore (1989) asserts that while some distance programmes only provide content-learner interaction in a one-way communicative structure without any other professional educational expertise or experiences being provided, there should ideally be further types of interaction for quality distance learning. The second type of interaction he identifies is interaction between the learner and the 'expert' who prepared the materials – or, as is more often the case, a person with some expertise acting as instructor or tutor. There are two aspects to the activities of a conventional teacher, says Moore. The first is a multifaceted role around 'teaching and learning activities' -stimulating interest and motivation in the learner, organizing activities (demonstrations, explanations, tasks) that will deepen the students' understanding or increase the learners' ability to apply, manipulate, or demonstrate the new ideas, and organizing appropriate evaluation and ascertaining progress and remediation. Rowntree further describes these activities as including providing a meaningful message, giving illuminating examples, controlling interference from competing or confusing ideas, drawing students' attention to important discriminations, "show the student to look for without telling him what he sees"(1992: 25). The other aspect of 'teacher' functioning often involves varying degrees of counseling and support for the learner.

Traditionally learner-teacher interaction has proved highly problematic for traditional distance education (the separation of teacher and learner lies at the heart of many of the definitions of distance education discussed earlier), although it is regarded as essential by many educators and highly desirable by many learners (Moore 1989:3). Perhaps the difficulty here has been the tendency to view this type of interaction as requiring the actual physical connection or presence of both parties. It may be more productive to focus on the type of interactions facilitated by the roles being played and then seek ways in which these can be fulfilled in a virtual, alternate or simulated way. Holmberg conceived of this role as being embedded in the text, creating what he termed a "guided didactic conversation" i.e. the facilitative teaching 'voice' created by a user-friendly writing style, probing and prompting where needed, explaining further, inviting comment and so on. Holmberg saw this conversational approach as fulfilling both of the teacher roles outlined above, improving learning effectiveness by building up feelings of belonging and co-operation as well as facilitating a simulated exchange of questions, answers and arguments. Rowntree, in describing what he calls the 'tutorial-in-print', concurs, saying that a satisfying teacher-learner relationship can still be established even when restricted to the medium of text. "Personality and an atmosphere of open minded friendly guidance can be mediated and thus create the conditions for open minded involvement by the learner" (in Thorpe 1995:180). The idea of an 'in-text conversation' has certainly been a seminal idea in materials development and most quality texts adopt this approach now. The question remains however whether this is adequate and whether the reader really does see this as genuine interaction with the 'expert'. This point will be further explored in the section on 'Dialogue'.

There has also been a confusion in regarding this type of teacher-learner interaction as essentially social – the need for a human face- and thus lumping it together with the need for a social learning group, usually of peers. This confusion has sometimes meant a large proportion of a distance programme's budget going on contact sessions that are pleasant get-togethers but which do not advance the students' learning (and so many students just skip them anyway as being non-essential), or weekend tutorials that are so packed with cognitive activities that the motivational cementing which more social interaction can bring is ignored- so students go home more stressed and anxious about their studies than ever. It seems likely that students need both – a facilitative teacher voice assisting with the intellectual activity that the study requires as well as a friendly face representing the institution to help deal with the inevitable alienation and stress that study brings. Only

recently have even traditional face-to-face institutions recognized the latter need as quite distinct from the need to discuss a particular puzzling equation with your lecture.

- **Student-student interaction**

Student-to-student interaction assumes a greater significance in constructivist learning than that of a supportive 'family' group. It also provides the opportunity for learners to engage in intellectual collaboration, to practice discourse, learn ways of communicating thoughts and ideas, of gauging their understanding against those of their fellow travelers (Jacques 1992). Collaborative environments are known to foster many educationally desirable attributes (Mason 1994).

*"Peers can open up new areas of awareness for the group, and the process of discussion with those at a perceived similar level assists students to shape and reshape viewpoints. Listening to peers (as compared to tutors) is likely to give students a strong sense of where they are placed as they can compare standards. For many students peers offer affirmation and support in a way that is impossible for mentors"(Thompson 1995:473).*

Dillon and Gunawardena (1995) outline the role that group discussion can play as "prompting analysis, problem-solving and affective learning by engaging the learners in an exploration of differing viewpoints, an analysis of a phenomenon or a clarification of viewpoints"(349). Collaborative activities help learners take responsibility for their own learning, a primary goal of constructivist theories. "The teacher is no longer centre stage: the learners have to navigate their way through information and ideas, solve problems together and finally present their work in an ordered and persuasive way" (Mason 1994:33).

Thompson (1995) contrasts learning exclusively from written texts (which is possible but essentially an individual and isolated experience ) with the collegial process of "discussion, debate and exchange of ideas and the process of articulating thoughts"(473).

Collaborative approaches have also received an impetus from workplace demands for cooperative work skills (Mason 1994:122) and the ability to operate as a member of a team.

In spite of these advantages which peer group interaction can bring, distance education has traditionally made little provision for small group learning and teaching, arguing perhaps that learners have opted for the distance mode of delivery precisely because they are unable or unwilling to participate in traditional face-to-face sessions with peers and teachers. The heart of distance provision is often defined as the separation by time and space of teacher and learner. The individualized nature of distance learning, characterized by Keegan (1986 and elsewhere) as 'independence and autonomy' has always been stressed, with contact with the larger learning group being minimized or optional.

Again the assumption has often been that peer groups and tutorials must of necessity be face-to-face in real time and space in order to garner the benefits outlined above. New 'third-generation' technologies, however, seem to hold significant promise of alternative ways of organizing what Bernstein calls 'dialogic communities'(1985 in Shale and Garrison 1990:28). These will be discussed in section 6.2

- **Learner-technology interaction**

Although not classified by Moore, other types of interaction suggest themselves. There is learner-to-technology interaction where, particularly with newer technologies but present in all forms of mediated learning, the student has to learn to interface effectively and comfortably with the chosen medium of communication (This type of interaction is termed 'learner-interface' interaction by Hillman, Willis and Gunawardena (1994) in Dillon and Gunawardena 1995). This type of interaction may be a source of learning in itself quite beyond the actual goals of the course. This may be as obvious as learning how to use a mouse for computer-mediated conferences or audioconferencing etiquette such as identifying yourself before speaking, but even text or telephone help-lines present the learner with a set of conventions – social or technical- which need to be dealt with in order for successful learning to occur. For many learners, the medium becomes a barrier rather than a filter as this form of interaction is largely ignored in practice and in research. Furthermore the actual nature of the interaction between learner and medium is seldom focused on in any kind of sophisticated way. Dillon and Gunawardena (1995) suggest that the presence of the technology may both support and detract from the learning (349).

Given then the many types of interaction – including but not limited to the four major types discussed here- it seems even more futile to seek one super-technology which could possibly optimally serve all of these needs. Matching particular types of interaction with a

medium which will facilitate that best seems a more fruitful way of tackling the problem. This kind of detailed understanding of a particular medium's capacities will be dealt with more in section 6.2 but being aware of the range of interactions and the different functions they serve is half the equation. Of course, deciding which of the various interaction types should be given most priority in a programme structure is the kind of decision dependent on the values and philosophy of the providing institution. Many institutions have completely ignored learner-learner interaction not because they could not have found a way to organize it but simply because it wasn't seen as sufficiently important.

This section has analyzed some of the forms of interaction that need to be taken account of in distance provision. Many seem premised on some sort of conversation or communication. This next section will focus in more depth on dialogue and how it can be facilitated.

- **Dialogue as part of interactivity**

Inglis (1995) cautions that "teaching and learning do not rely simply on interaction. They are activities which occur in and through communication" (367). This communication, he feels, is of a different nature from the simplistic process of transmitting symbols and figures which is often termed 'communication' by information technology enthusiasts. It is also different from the crude sender-message-receiver pattern of early communications theory. Rather he says, communication is "an ongoing conversation taking place between two people attempting to attain a shared frame of meaning"(367). A dialogic theory of education, he maintains, is one where dialogue in the sense of a conversation leading to shared meaning is at the center of its curriculum structure. Shale and Garrison (1990) see dialogue and discussion as central to the sustained interaction needed for the negotiation of meaning which leads to meaningful learning (33). Evans and Nation (1989) concur that dialogue is not merely about the transmission of messages but refers to the kind of communication where human beings are actively engaged in the making and exchange of meanings (in Inglis 1995:366). This view of dialogue, they say, is substantially different from that of the 'guided didactic conversation' espoused by Holmberg and discussed in a previous section.

Dialogue appears as a central feature of education, not only that conducted at a distance. While communication is often taken for granted in face-to-face education (to its detriment, as much traditional higher education is very much one-way traffic communicatively

speaking), in distance provision it has always received a fair amount of focus. Once again, though, it is necessary to sound notes of caution as Sewart warns that our knowledge about dialogue is extremely limited (in Thompson 1995) and Laurillard (1993) maintains that the idea that students learn through discussion is one of the great untested assumptions of current educational practice. As far back as 1975, however, Lewis suggested that dialogue was an important factor in the "educative affairs of man"(in Thompson 1995). Rowntree (1977) says that while educators approve of communication in principle, they tend to be more comfortable with metaphors of persuasion and control than sharing and co-operation. This is exacerbated by the predominant media in traditional and distance higher education being lecturers, text (books) and (perhaps) broadcast media. Thus, he says, true dialogue is quite rare in formal education and often exists in a partial and impoverished form (281 in Garrison 1989:8).

Moore (1989) suggests that distance programmes are affected by the complex interplay of many variables, including learner variables, subject variables, teacher variables, and communications variables(11). Communication variables, which lie at the heart of all educational transactions in his opinion, are largely concerned with two aspects which can be described along two axes: dialogue and structure. A programme with high dialogue is one where a central role is allocated to two-way communication between teacher and learner while low dialogue describes nonexistent or tenuous communication, usually only one-way. The other axis, structure, refers to the degree of flexibility in the provision : high structure is a rigid programme which is unable to respond to individual learners needs or input while conversely low structure allows for a great deal of adaptivity and openness. Moore suggests that programmes which are high in structure will tend to be low in dialogue while those with high dialogue will probably have low structure. This is an interesting observation because many high structure programmes (such as the UKOU) appear to place considerable emphasis on, for example, face-to-face tutorials. Moore's argument, however, would seem to suggest that the mere provision for interaction does not necessarily encourage genuine two-way dialogue. Many tutorials such as those offered by the UKOU are primarily focused on helping students successfully comply with extrinsic regulations, such as prepare assignments, rather than providing space for the 'negotiation of meaning', and the tutor is commonly perceived as the individual student's troubleshooter and evaluator rather than as the facilitator of group learning processes (Mason and Kaye 1989:16). Earlier descriptions of institutions like the UKOU as being rigid and a production line would support the model of it being a high structure-low dialogue institution.

In the same way, the correspondence pattern of mass tutorial letters in response to student-submitted assignments might constitute two-way communication at one level but could hardly be considered dialogue. Feedback in response to a stimulus (the assignment) has been received but the message is static and does not constitute a conversation. Rather, it conveys the implicit message that the educator already possesses all the knowledge relevant to the student, and the student's understanding and knowledge is only of importance in how closely it approximates that of the instructor. Feedback "though hard to organize is the way of building dialogue between student and teacher into a distance teaching system"(Perraton 1982:7). True dialogue exists not only for purposes of correcting student error or the transmission of messages but also for providing a space for meaning-making which leads to learning (Evans and Nation:1992). Rowntree (1977) says messages that simply stimulate the receiver in isolation must be classified as one-way communication which is essentially manipulative and that true dialogue must allow for the prospect of mutual learning, while Shale and Garrison (1990) describe the distinguishing feature of two-way communication is that "each participant in the relationship is both a sender and a receiver of messages and true messages go in both directions"(32). They cite Schramm as describing communication as "a relationship built around the exchange of information"(32).

### **Implications for technology choice**

Shale and Garrison (1990) suggest the notion of the need to close the communication loop: that the negotiation of meaning is an activity separate from the presentation or transmission of information – what happens **after** the student has been presented with the content – and suggest that different technologies may be best suited to each aspect of the learning process, an idea which emerges at various points in this dissertation.

Dillon and Gunawardena (1995) in commenting on Moore's analysis of structure/dialogue suggest that technologies which support interaction (such as videoconferencing or computer-mediated communication) allow the instructor/teacher more control over the relative ratio of structure and dialogue than in individualized set-ups (like text-based courses or televised instruction) where the level of structure is inherent. They suggest that in setting up a programme (which includes decisions about media and technologies) questions around the desired balance of structure and dialogue in the light of student needs and the demands of the educational outcomes should be foregrounded (349).

In literature prior to this decade, the perception persists that this kind of genuinely interactive two-way communication can only be achieved through personal face-to-face contact. However recent innovations in the so-called 'new' media, such as computer-mediated communications (email, chat groups, computer conferencing) and small group video conferencing (as opposed to large scale distributed learning), offer significant possibilities for overcoming what has been an enduring problem for distance provision. A more detailed analysis of the capacities and characteristics of these kinds of technologies will be found in section 6.2.

It is important here to stress that in this section we have been looking at the educational functions which interactivity and dialogue serve in the learning process. If these functions are not considered important or necessary for learning, then the availability of a technology to facilitate it becomes irrelevant, or as is more common, the technology is subverted to the pre-existing model of teaching. "Teachers who do not feel comfortable interacting with students simply adapt their largely one-way teaching style to the characteristics of the new medium"(Inglis 1995:365). Email can as easily be used only as an electronic help-line for students to check their answers as to provide a meaningful forum for the exchange of ideas: video conferencing is more often used for the distribution of large scale lectures than for small group interchanges. In an interesting example cited by Rowntree (1977), some researchers (Dubin and Taveggia 1968) evaluated the results of some 90 studies comparing the effect on learning of the closeness of teacher-student contact (say, small group discussion versus large group lecture) and concluded that there were no measurable differences. On closer examination, Rowntree found that these two researchers "unequivocally asserted that students are in higher education to learn content" and that the criteria used to evaluate teaching effectiveness only related to information giving strategies and not to interactive strategies (e.g. group work). "Thus because only content learning was deemed relevant, very real differences between the outcomes of the strategies may not so much have been 'not measurable' as 'not measured'(102). This clearly shows how any judgements about the use of a method or a medium will be strongly skewed by the provider's beliefs about the relative priority of different educational goals and values.

## **Conclusion**

This section has underlined the need to identify the values and priorities that underlie a provider's educational intentions, and focused particularly on the issues of interaction and dialogue as central to students' being able to construct their own understandings of the



knowledge provided by a course and which will thus be of great interest for providers wishing to promote deep learning in their students. Once a provider is clear about the nature, scale and purpose of the interaction that is desired, then the search for technologies which can facilitate that can begin. This requires that the provider can make sense of the various technological options available : this will be focused on in the next section.

## **6.2. A MORE SOPHISTICATED UNDERSTANDING OF MEDIA AND TECHNOLOGY**

Balancing the equation on the other side from a deeper understanding of what constitutes quality education at a distance, is the need for a more complex understanding of the nature of technology and the functioning of the various media available to educational providers.

The point was made in earlier sections of this dissertation (3.1) that educators seldom have a comfortable relationship with technology and that extremely simplistic approaches are often used when attempting to analyze the characteristics and capabilities of various media (discussed in 3.3). Technology is often viewed as a neutral tool unconnected to issues of power, context and values.

This section will address these limitations by exploring ways in which to view technology in a more sophisticated way, both theoretically and practically. The first section (6.2.1) will focus on broader issues of ways of seeing technology and the following section (6.2.2) will then discuss, with some examples, more nuanced ways of analyzing media characteristics.

### **The need for a better understanding of technology**

At the risk of repeating points made earlier in this study, it seems necessary here to remind ourselves of why a better understanding of technology is needed. Kozma (1991) construed learning as occurring in harmony with, and because of, a particular combination of methods, technologies, and initiatives undertaken by the learning within an existing environment"(in Carter 1996:32) and thus provided a holistic model of the intersection between the various players in the educational process. It should be self-evident that 'if we are to design more effective and efficient educational relationships then we must have a broader appreciation of the technology needed to support the interaction between teachers and students appropriately"(Shale and Garrison 1990:33). Given that most communication in education at a distance will be mediated through some form of technology, it is important to understand the impact of these various forms of mediated communication on the

educational process (33). The insertion of a telecommunications or other technological link into the educational cycle has

*"a profound effect on the nature of teacher-student interaction...It also alters the forms in which information is encoded...and engenders a quite different form of learning experience. The use of media in off-campus delivery can therefore have a major influence on the quality of student learning"(Inglis 1995: 365).*

Hamilton (1990) suggests that recent developments in information technologies may have as significant a revolutionary effect on pedagogies as did the invention of Gutenberg's printing press (in Evans and Nation 1993:202).

Larsen (1985 in Shale and Garrison 1990) warns (cited earlier in this study but worth reiterating) that we need to match our understandings of communication and interaction with that of technology, "otherwise we will be unprepared to put that technology to use in a productive way"(19). If we want to be able to employ such technologies as exist for the benefit of learners, especially those at a distance, then we need to enhance our understanding of how such technologies function (Inglis 1995 :365). If educationalists want to avoid being manipulated by the market forces of the media industry, then they need to become far more au fait with technological innovation and more able to discern which of its capabilities are of genuine usefulness. Even partial ignorance or a 'hands-off' approach may lead to the kind of pitfalls outlined in the earlier parts of study.

This study has previously questioned the conclusions of Clark and other comparative researchers, in particular the damaging impression that all media are the same and that none make any real difference, as expressed here by Hodgson (1993).

*"The choice is often relatively easy to make and is very rarely a critical one – you do not need to know very much about education to realize that the same things have been, are being and are likely to go being taught quite successfully in many different ways using many different media (37)."*

This level of pragmatism may be cold comfort to the provider striving for something more than "quite successful". At the very least, media will affect the efficiency with which instruction can be delivered (Winn 1990). Beyond this, Shale and Garrison (1995) aver that there are clearly qualitative and even substantive differences resulting from the different modes of communication (53). Contesting the 'myth of equi-potentiality', many writers would argue that there are in fact significant differences in the way various media work and

that to ignore these is to subvert the communicative power that each medium brings. Hodgson (1993) suggests that media selection should be designed to exploit the particular advantages of each medium, aware that "any choice imposes costs of various kinds on our learners, ourselves, our organizations "(37), thus we need we to ensure that the supposed benefits are commensurate with the costs. Any decision, from choosing a brand of toothpaste to making a life-changing move, involves a weighing up of win and lose factors and arriving at a satisfactory compromise. Media choice in the same way will be a package of plusses and minuses. The fact that a compromise will be necessary does not mean the decision becomes unimportant. As cited earlier, Winn (1990) in fact argues that the tension between educational intentions and the constraints imposed by the nature of the medium requires constant attention from distance educators.

Perraton (1988) goes along with Clark and others in conceding that there is a good deal of research evidence which suggests that content may be learned just about as well though any medium (provided it is well managed). "However, media differ in **the kinds of learning** they encourage"(341: my emphasis). The previous section has discussed some of the kinds of learning higher education should be aiming for and made the point that most higher education institutions see themselves as offering something far beyond mere content : Perraton would seem to be highlighting that certain media may more easily facilitate certain approaches to learning while discouraging others. A provider concerned with promoting quality education involving deep learning approaches on the part of students would need to pay close attention to how the technologies selected subvert or promote the desired **kind** of learning.

### **Rethinking our basic understandings of technology**

Section 6.1 has argued for the reassertion and clarification of educational goals as the driving force behind the curriculum, structuring and delivery of higher education at a distance. This should not however be taken to mean that technology can be accorded an insignificant role as a mere 'delivery truck' with no influence on the learning process. There is a crucial link between educational intentions and the means chosen to facilitate those, and sensible decisions require a rigorous understanding of the roles that technology and media can play in the educational experience of learners. Once again the balanced view of needing to hold all aspects of the educational transaction in a productive tension is highlighted.

- **What is a 'technology'?**

Many end-users of technology in everyday life and in education give very little thought to it, focusing rather on the end products of technological intervention – ice cubes in drinks, or attractively laid-out word-processed documents. Clearly this approach is inadequate for those who seek to put technology to very specific educational purposes. This section will now discuss more particular understandings of technology.

There are two basic ways of looking at a technology – the one is that favored by media researchers such as Clark, which is to fragment the phenomenon into 'this is the medium, that is the method, this is the symbol system which is different from the delivery medium' and so on. Each of the aspects is seen in a watertight compartment and is completely separate from the others. This allows statements like "Methods make the difference, not media" and "the media simply deliver instruction; they don't make it good or bad"(Winn 1990:62). Alternatively, other theorists, more rooted in current theories, see technology far more holistically. A broader conception of technology according to Evans and Nation (1993) allows for a more thorough understanding of the challenges, difficulties and opportunities offered by the newer technologies(210).

One of the more famous definitions of technology stems from the early days of the study of the field but has subsequently appeared in numerous incarnations and been put to various interpretations : "A technology is any systematic application of applied science or practical knowledge to achieve some objective"(SAIDE-Audit 1996:56). Such broad definitions remind us that information, communications and electronic technologies are only recent entries into a long list of technologies from the Stone Age flint through engineering technologies such as trusses and levers and including household technologies such as kettles and whisks. All these are tools developed through applying knowledge to a desired objective. Some may be exceedingly simple yet effective, while others require complex machinery to bring about their objective but all qualify as technologies. The glamour of newer technologies (as discussed in 3.1) has often obscured two essential aspects of a technology as revealed in this definition: firstly, its link to its **objective** and secondly, the non-predetermined nature of the **means** to achieving this. There is no mention of electricity in the definition, for instance! We need to remind ourselves that even oral classroom teaching is a technology and one of very long standing (SAIDE-Audit 1996:56). This understanding of technologies is so fundamental to almost every aspect of educational

provision that it is difficult to imagine any educational context which is not influenced by technology (as the physical product of human endeavor) in some form or another (Evans and Nation 1993). Thus any educational provider when considering technologies needs to have the full range of possible choices in mind, including those that may seem archaic or unfashionable as well as being open to those technologies still in their infancy.

This understanding of technology is not the one held by many 'Educational Technologists' who seem to limit their vision to "the technicalities of the use of electronic or audio-visual equipment, which eschews consideration of the broader social and political contexts of their work"(Evans and Nation 1993:199). The TELI report (1996) suggests an understanding of technology used in education which goes far beyond the actual tool which is used, "the part that plugs into the wall" (55), and incorporates the full gamut of interrelated processes which comprise education, including, it suggests, the learning outcomes, student support (via peers or teacher), assessment strategies, the attitudes and experiences the learners bring, resources, the capacities of the educators as well as the technologies used to facilitate learning. Technology must be understood through this "complex web of interrelated processes"(55). Seligman (1992) agrees that the hardware is only part of a wider technological system, which includes curriculum development and learning methodologies(2). Technological things are meaningless without the 'know-how' to use them, repair them, design them, and make them, thus Wacjman (1991) defines technology as a form of knowledge (in Evans and Nation 1993). He goes beyond this however by saying that 'technology' also refers to what people do as well as what they know. "An object such as a car or vacuum cleaner is a technology rather than an arbitrary lump of matter because it forms part of a set of human activities. A computer without programs and programmers is simply a useless collection of bits of metal, plastic and silicon"(14 in Evans and Nation 1993:199). Evans and Nation further this argument by describing a piece of chalk or a stick for writing in the sand as 'educational technologies' **in the hands of educators** (199 :my emphasis). This should reassure those educators who feel disempowered by technology. With this understanding of the centrality of the educational context and purpose in relation to technology, and seeing all technologies as a fundamental aspect of all teaching and learning, all educators become educational technologists!(Evans and Nation 1993:199)

- **The impact of context**

The impact of context on technology is emphasised by several writers. Some have even suggested that a technology used in a very different way in a different context with different purposes cannot be seen as the same technology at all. "The distinctive mark of a medium does not consist of an inherent objective quality but springs from the function which an object performs in instructional communication"(Heidt 1978). Heidt goes on to make the interesting point that not only the teacher/producer but also the user /learner individually influences what that function might be, citing the example of a video programme meant to provide all the basic information the learner needs but which might be skimmed through by a student who has covered the topic elsewhere. Thus the suitability of the technology depends as much on the intentions of the user as of the production team or curriculum designers. Hlynka and Hurly (1982) concur saying that "media act differently in different situations" (161). Mason (1994) points out that "statistics on the frequency of interaction vary with the nature of the technological application. Smaller learning groups using any of the three interactive media (audioconferencing, video conferencing and computer conferencing) show much higher levels and quality of interaction than do larger groups using the same technology"(27). He thus concludes that interaction is not a necessary characteristic of the **medium** (although the medium has the potential to facilitate it) but of its particular **application**. Koumi (1994) reminds us that one medium may be better in one respect and less advantageous in another and that these 'respects' will "have a different significance between differing institutions, cultures, periods and even individuals"(46). This extends to such pragmatics as technical advantages such as reliance on electricity (often a problem in developing nations with extremely erratic supply plagued by power cuts). What constitutes an disadvantage in one context is not even an issue in another.

These are important subtleties to remember when considering the individual capabilities of particular media.

- **The influence of semantics**

Various qualifiers have been tacked onto the term 'technology' : educational, information, communications and others. While these phrases quickly become a taken-for-granted part of everyday language, Winograd and Flores (1986) point out that, far from being mere semantics, such phrases can have a powerful influence on the actual way we see the world (in Inglis 1995). Classic communications theory describes communication as 'sender-message-receiver', emphasizing a very particular power relation between the teacher (who

almost inevitably fills the sender role) and an equally passive role to the learner, who receives the information. The phrase '**instructional** technology' can convey quite different understandings of the primary teaching function which is not the same as that conveyed by terms such as **educational** technologies. In the same way, the use of the term '**information**' technology in preference to '**communications**' technology both reveals and shapes our own thinking about technology and what it does or should do. '**IT**' emphasizes the medium's role as one of data transmission and the movement of information from one site to another, whereas 'communications' technologies show more concern with the medium's ability to put people in touch with each other. One can choose which term one prefers to use but where a particular term such as 'IT' comes into very common usage, then "its use in relation to teaching and learning could lead educators to misconstrue the type of role such technology ought to be playing"(365). It is interesting to note that in many UK schools the term IT has been dropped in favour of **ITC** – information **and** communication technology, conveying a different understanding of the types of activities the technology will facilitate.

### **Broadening the range of roles that media can play**

The tendency to select a single medium or technology shows that many educators have neither considered the complexity of education provision nor the multiplicity of roles that technology may play in that provision. Many practitioners are searching for a 'universal' medium which will do everything required of it, while many theorists limit their understandings of distance provision to the type of technology used (such as Romsizowski's categories of 'instructional' systems or as a contrasting type, 'conversational' systems mentioned already). A broader view (and a more realistic one) would hold that different media may well tackle different tasks in the educational system. "A new technology may well be used to perform only a limited and specific function as one component of a course of study – for example, occasional electronic mail communication between tutor and student"(Jenkins 1995:428). This next section will explore some of the different contributions specific media might make to a given programme.

- **The complexity of education provision**

Educational provision is structurally complex, comprising at least several major areas of activity (such as administration, teaching and learning, student support). While this study has focused primarily on the teaching-learning interchange, because it is the primary raison

d'être for education at all, the other support functions significantly impact on the effectiveness of that teaching and learning. In the same way that Moore suggests that there is not one single type of interaction present in learning, so Bates (1988) divides the roles that technology can play in the education system. He distinguishes between technologies used for teaching (say, for tutor-learner interaction or at the knowledge-learner interface) and those used for operational purposes (administrative or delivery functions). Clayton (1995) speculates that there may be increasing separation between the roles of, for instance, educational guidance, instruction, assessment and accreditation(341). Without wishing to promote an unhealthy water-tight partitioning of these aspects of provision, it may be helpful to include in media selection processes a consideration of the quite different requirements of each of the aspects of a system in turn. For instance for distance students, the administration aspects of their studies can become a nightmare, confusing, costly and alienating, often more suited to campus-based students. Very often the systems used are archaic and have not benefited from the technological revolution that the teaching functions of the system may have. New technologies such as fax-back, ansa-phone systems and on-line registration might reduce the number of times a student has to physically make contact with the institution. Close consideration of each of the different functions the administrative center fulfils and then matching that to a suitable medium may improve the situation.

One of the ways to expand our understandings of the various roles that media can play in that provision is to consider the various types of activities and examine the contributions that media might make to the fulfillment of that facet of the education system. For practical or philosophical reasons we may wish, says Romiszowski (1995), to choose between media capable of presenting a fixed message (if controlling the uniformity of the message is important) and media which make it easy for learners to modify the sequence of the message (thus promoting freedom of choice and some degree of individualization) (91). Thus each of the separate components of the system can be justified on pedagogic grounds.

What is important here is that we may wish, for example, to have both fixed and modifiable communication operating at different points in the overall programme. It is not a case of 'either/or' but of selecting media and methods which serve the particular purpose of a particular component. Gultig (1992) reminds us that good education provision— whether distance or face-to-face- "selects appropriate tools for the task at hand"(11).



- **Technology as delivery agent**

Inglis (1995) along with many other writers challenges the narrow focus on electronic media's capacity to move and store information and suggests also thinking about the more advanced role of facilitating the development of dialogue(367). However, it is too easy to polarize technologies into 'bad' media (those able to deliver information) and 'good' media (those able to facilitate interaction). This is foolish as an effective system cannot afford to neglect any aspect or role which is important in its educational goals. Mason (1994) reminds us that while interactivity is all very well, and while the exchange of ideas is sometimes a priority goal in some courses, in other courses the conveying of a body of knowledge is a prime objective, thus providers cannot neglect consideration of how the content of the course is to be delivered. Lockett (1995) concurs that often some receptive learning is necessary before higher levels of learning can be tackled, using that basic knowledge. Winn (1990) points out that only very rarely is the intended end-point of instruction simply to acquire facts but that more often declarative knowledge is considered the starting point for building a variety of higher level cognitive skills (60). It is still necessary though that this receptive learning is meaningful and builds understanding, rather than being limited to rote learning and memorization. The movement of information will probably always be a common feature of distance provision, but careful media selection and utilization can make even declarative learning an active experience for the learner.

Certain technologies make easy the accurate and reliable delivery of whatever form the content is packaged in and at a lower cost. Usually delivery decisions are primarily taken on the basis of efficiency rather than educational effectiveness in spite of some technologies having 'side-effects' which need to be considered. For instance, some delivery technologies (such as paper-based print) are highly accessible and portable while others (electronically transmitted text) are more easily updated and travel quicker. A visual programme will have quite different delivery 'side effects' when distributed by broadcast, cassette or CD-Rom, although for the most part the basic experience for the learner will be the same (although the latter two have stop-start-options which do affect the kind of learning possible).

- **Media linked to types of thinking**

Lockett (1995) provides an interesting model matching Perkins' analysis (1992) of four different types of knowledge to various types of media based on the type of interactivity each facilitates. Perkins distinguishes between 4 different types of knowledge : the first,

**content knowledge** is where the learner acquires facts, concepts and routine procedures of the discipline. This type of learning, Lockett suggests, could be largely consigned to good materials, after perhaps some initial face-to-face introductory contact (for motivational purposes). The second category is that of **problem solving** typical formulaic problems in the discipline. Again challenging materials could carry the bulk of the declarative knowledge here but would need to be supplemented with learner-learner interaction, either face-to-face or electronically mediated in order that the necessary quality of discussion be facilitated, given that collaborative and peer group learning improves learners' problem-solving skills. Perkins' third and fourth categories – **epistemological knowledge** (where the learner is able to display explanatory and justificatory knowledge in performance and shows an awareness of what the discipline requires) and **inquiry knowledge** (where the learner is able to challenge results and assumptions and knows how to construct new knowledge within the discipline) require all three types of interaction, suggest Lockett : learner-materials, learner-learner, and learner-teacher. These types of learning require negotiation of meaning, a high degree of intersubjectivity, and a rapidity of interchange which is more difficult (but not impossible) to simulate electronically. Lockett thus concludes that some form of face-to-face contact be arranged, preferably on a one-to-one basis with the 'expert'. Whether one agrees with the conclusions Lockett reaches (and this discussion here has not done justice to her argument), what is interesting about the approach is to start from the point of the different types of **learning** required, which will necessitate different teaching-and-learning functions, and the types of **interactivity** these require, and then only to look for a **medium** which facilitates that. Thus the media fulfil a different role in each instance.

Shale and Garrison (1990) suggest that "closing the communication loop" (i.e. providing feedback opportunities for the negotiation of meaning) is an activity quite separate from the distribution of content and will thus in all likelihood require a different technological medium.

Eastmond (1993) offers a similar model when he places the responsibility for learning the course's basic concepts squarely on the shoulders of the learner and expects that, when appropriate resources are provided, the learner will be able to process the basic ideas in the material, thus freeing up 'class time' i.e. interaction time, for enrichment and integration activities (97). While this makes a certain pragmatic sense, there is the danger of artificially creating a damaging gulf between the two aspects of the education provision, as if 'negotiation of meaning' was something that could be tacked on afterwards, once a student had absorbed all the content.

- **Learner-technology interaction**

In the previous section learner-interface interaction was suggested as one of the types of interaction that needs to be focused on but which is largely ignored. Clark's assertion that the technology is simply the delivery truck which delivers learning assumes that the learners have no need of learning to drive the truck themselves! If a medium is seen as facilitating two-way communication, this means that in many instances the learners need sufficient skill and confidence to initiate interaction themselves via the medium. The learners are not only the 'receivers' of classical communications theory but should also be comfortable with the 'sender' role too. In many instances the role of technology as a student-initiated communicative device is ignored and students do not receive the necessary skill-building training that would facilitate this. In addition, media selection seldom considers factors such as ease of use from a learner's, rather than a provider's, point of view. This becomes particularly crucial in a context like South Africa where many potential students of higher education will not have previously encountered technologies such as computers at any significant level. For such students even operating a keyboard proves highly problematic.

- **Further roles that media can play**

Rowntree (1977) offers an interesting perspective on the different roles that media can play by distinguishing between media that access stimulus modes that are **more relevant** than human interaction for a given component of the course (say a video interview of a leading expert on a topic), and media which are being used as a **substitute** for human interaction (a video conference link up with that same expert). He maintains that it is important not to confuse the two, in that a vicarious experience, although it can in some ways be more valuable (in the video'd interview example, the student can concentrate, rewind, read a transcript in a way that would not be possible if he was attending a 'live' interview), does not provide the same stimulus as being part of something with its unpredictability and inherent motivation. Thus in the example being used, the vicarious experience might fulfil more of a 'learning detail' function while the simulated interaction mode has a greater affective contribution. Winn (1990) in describing a fairly similar categorization says that each of these systems offers "qualitatively different type of interaction and experiences" (62).

Winn (1990) cites the categorization offered by Edling and Paulson (1972) of technologies which can make information **permanent** (such as recording technologies), technologies which can make information easily **accessible** (such as information retrieval systems) and

technologies which can make information **different**. This latter is an interesting point and related closely to what will be discussed in a later section on 'presentational' features. "The idea simply is that we can take the information and by varying the method of presentation, change what it means"(Winn 1990 :55). Hlynka and Hurly (1982) differentiate between the **effect** of a mediated communication (influenced by factors such as the psychological attitude of the receiver/learner and the cultural context) and its **effectiveness** (which is determined by the desired outcome or educational task). Here a particular feature of a technology may be viewed favorably by the learner or provider (audio cassettes are very portable and cheap, a student could listen to them on the train or bus, or while driving a car) but this would not necessarily lead to effective learning (for this particular topic, the student needs to examine complex diagrams while listening to the commentary, thus negating the portability factor). This difference also needs to be borne in mind when considering the presentational aspects of technology where a beautifully designed work of art which fully exploits the medium may in fact confuse learners or not offer enough value-for-time-expended.

In developing an expanded view of the contribution of media, consideration should also be given to the ways in which technology can also influence or change the way existing or traditional roles in education are played out. For example, information technology's capacity for the easy delivery and storage of raw information can potentially free up a lecturer to focus on more facilitative activities. Recent innovations in computer-mediated communication may give collaborative activities (such as group assignments and assessment) a prominence in the curriculum it did not have previously. Because a lecturer can track and monitor both the quantity and the type of interactions that each group member makes in a email group, this makes it far easier to make judgments about individual contributions to a group project than was possible previously in face-to-face projects where the bulk of the work happened 'after-hours' and out-of-sight. A forward looking vision will enable not only the full range of current roles that media might play to be exploited but new and exciting educational opportunities to be tapped.

### **Attributes of media**

While accepting that it is largely the way in which a medium is used which determines the quality of student learning, that people are capable of some learning from any medium and that many significant factors in the success of distance provision (such as course design, quality teaching and good support facilities) are not medium dependent, Mason (1994)

maintains that the successful combining of these components is premised on "a thorough understanding of the strengths and limitations of the particular medium used"(123) and an avoidance of compromising those few media-specific factors which do exist (such as too many students at a computer terminal).

Koumi (1994) urges practitioners to fully utilize the distinctive attributes of each medium and to exploit each's strengths and weaknesses (42). Many providers, however, are not very sure at all about exactly what each medium is capable of and what a given technology does best. Chapter 4 showed that so-called experts in the field have also been crude in their description and analysis of the attributes of various media in spite of the many research hours given to the examination of the attributes of individual media, manifested in the various algorithmic models described in section 4.3. The singular unhelpfulness of these descriptions indicates that this aspect of understanding media needs to be approached with caution and with due consideration for the complexities of the interface between education and technology.

The next sections will examine some ways of understanding the capacity of various media, but will not provide detailed lists of which can do what. Apart from the fact that few writers can agree about the 'best' medium for a given job, to fully list all the possible attributes of all available media would not only be an excessively ambitious task beyond the scope of this dissertation but would also fall into the same traps that previous algorithmic models have, that of over-complexity, outdatedness and inflexibility. Rather some approaches to identifying features of various media will be discussed. The first approach attempts to classify into categories the types of attributes which present, and the second is to focus on issues of significance for providers (such as those which have been raised already including active learning, interaction and collaboration) and examine particular media in the light of these. It must be stressed that these are not either-or routes to better choices (a responsible provider would need to think along both these suggested routes and others) but are simply ways of making a start on understanding technology better. Each of these approaches will be discussed in turn.

- **Different categories of attributes**

Previous sections of this dissertation have focused on the simplistic way in which some educational technologists have categorized the different media, for example, using extremely broad technical divisions such as 'visual', 'aural' 'text' and so on. Increasing sophistication of technologies has meant however that many media currently available are 'multi-media' in the true sense, in that they utilize a number of media modes.

Some other equally unhelpful descriptions are so broad as to blur all educational distinctions in their attempts to group like technologies. Pelton (1989) for example applies the phrase 'tele-education' to all forms of electronic communication, ranging from broadcast satellite to small group conferencing using video and telephone links (in Bates 1991). Educationally speaking, these are very different and lumping them together under one heading does not help practitioners come to grips with what each offers. On the other hand, some writers have distinguished between the various **delivery** technologies, thus separating satellite distribution out from cable distribution. Except to communications engineers, whether the message arrives terrestrially or through the atmosphere makes not one jot of difference to its educational impact.

Romiszowski (1995) differentiates between **essential** media characteristics which control the clarity of the message (such as the use of audio in foreign language learning) and **optional** media characteristics, which improve the quality of the representation (by better suiting learner or teacher preferences), or by making the presentation more appealing e.g. colour or animation. While this division has some usefulness, the examples used seem to limit it to presentational (as opposed to communicative) media

In the same way that theorists such as Moore have subdivided interaction, writers have approached the area of media characteristics from a variety of angles.

Perraton (1988) and others have moved beyond the simplistic **technical** attributes focused on by educational technologists, and have identified different types of characteristics such as

- **pedagogical** attributes ( the features of the medium which directly influence the type of learning activities possible)

- **presentational** attributes (usually meaning the design features of a medium)
- **utilization** attributes (features which come into play at the receiving end of the message)

Mason and Kaye (1989) identify what they call

- **structural** attributes (that is those technological or technical characteristics of a medium useful for educational purposes)

Regardless of the names given to the various attributes, all writers agree that many if not all of these will operate in a given medium simultaneously with some being more prominent or important than others in specific circumstances, each will influence the other, and each deserves some consideration.

As with most aspects of distance education, and as articulated in the opening notes of the study, the terminology used in discussions of its interface with technology is most confusing. Everyday terms are used with particular meanings, and nobody seems to take a 'patent' on a term, so different writers use the same terms to refer to quite different phenomena. Few bother to fully define precisely what they mean by a term and when they do, you discover that the next writer calls that particular concept a quite different name. (Thus what Mason and Kaye call a structural attribute, Perraton calls a pedagogical factor, and so on.) In fact there seems to be an enormous amount of overlap between the categories in many instances, and nitpicking arguments about which points belong under which category seem counterproductive. In dealing with this section, I have taken the approach of not getting bogged down in differentiating the terminology but instead have focussed on what is usefully revealed in the writings around the concepts. While it may be a little messy around the edges, this approach would probably be more akin to that which a real provider would take. It is the thoughtful consideration of the whole range of factors which leads to better media choices, not being unduly pedantic about which belongs in which box.

- **Structural - Pedagogic characteristics**

**Structural** attributes of media usually refer to the inherent technical or physical capacities of a medium, the latent nature of the medium. This is the aspect to which most previous discussions of attributes were limited. When wedded to pedagogical attributes, however, these 'basic' features take on a new significance. The **pedagogic** characteristics of a technology refer to the kinds of teaching and learning it is able to facilitate, what Clark

seems to have been referring to as the 'method'. These attributes are often independent of whether the medium is used in a distance or campus-based environment. They might be characterized as the interface between what the technology is capable of (its technical or structural features) and what that implies for educational activity. Consideration of structural-pedagogical features seems a way of merging the focus on 'how' a technology works with the more important aspect of what learners will then be able to 'do'. This is a synergistic combination of medium and method.

Koumi (1994) provides a useful list of these types of characteristics (although he does not refer to them as either structural or pedagogic) which includes the symbol system (in what form or mode the information is presented), access, student control over the medium, student reactivity (opportunities provided by the medium for student response, including mental activity, interactivity (when action by the learner receives feedback from the medium), and adaptivity (the ability of the medium to adapt its provision to suit an individuals' learning needs (53).

As an example of the type of attributes considered under what I have called structural-pedagogical factors, Mason (1994) considers the ways in which computer-mediated communications (CMC) technologies (e-mail, computer conferencing) can assist in learning. While this next section uses CMC as the technology under scrutiny, this should not be taken as implying a preference for these media.

One of the most obvious **technical or structural** attributes of computer-mediated conversations is

- usually asynchronous (although has the capacity to be real time as well)

Considered in the light of the **pedagogic** usefulness of this technological feature, the following hold

- adult learners studying at a distance appreciate the freedom from time and place constraints
- provides human access to human resources at any time of day or night, as well as from any place in the world which is connected to the system.



If one takes the **structural or technical** feature that

- these media use a hybrid discourse : essentially written text-based but with some of the spontaneity and flexibility of spoken conversation

then this has the **learning** advantages of

- encouraging students to develop their skills of written expression
- promoting the discipline of being able to formulate one's thoughts, ideas, reactions and opinions in writing in such a way that their meaning is clear to people not physically present (an important academic skill – hence the endless essay writing in higher education)
- the text-based and delayed time element of computer-mediated communications (CMC) tends to generate contributions which are more thoughtful than the on-the-spot and often unprepared comments made in a face-to-face tutorial
- the text-based nature of much academic work means it is easy to incorporate other text-based resources (from the Internet, bits of the course material etc) into the discussion
- reading text is very much quicker than listening but the conventions of informality around email means that the reader feels like he has been 'listening' to someone speaking

Another **technical or structural** characteristic of CMC technologies is

- they allow multiple learners to make contributions to an on-going conversation

This can be translated into the following **learning applications**

- these media are particularly useful in disciplines and courses where discussion and debate are important as they are a powerful tool for group conversation and collaborative work
- they are highly valued by professionals and mature students where the sharing of work and life experience (as well as specialist expertise) can make a useful contribution to the course and to group learning
- they provide a relatively democratic and status-free forum. Research has shown that turn-taking is more evenly distributed in electronic discussions than in verbal discussions, and is also more encouraging for second language speakers (Anderson 1991)
- the relative facelessness and anonymity of computer-mediated conversation may encourage greater risk-taking in the airing of opinions, as well as encouraging shy

members of the group. Davie and Wells (1991) conducted research which showed that computer-mediated discussions were superior to classroom based discussions in empowering students to participate more often and more critically (in Evans and Nation 1993 : 210)

- there can be more than one 'teacher' voice as well. Not only can other students offer help, but other expert resource persons or faculty can make occasional 'part-time' contributions

Another **technical** attribute of these media is

- all contributions are stored on the system and can be retrieved

Considered **pedagogically**,

- tutors can monitor the quantity and quality of student contributions as well as tracking patterns of interaction, identify problem areas or non-participants
- students can download useful ideas as a supplement to course materials
- the pressure to note down every word at seminars or tutorials (just in case any of it proves useful) is relieved by the transcript which records all comments for later perusal

**Technologically** computer-mediated communication is transmitted instantly which has the following **pedagogic** effects :

- questions, assignments and feedback comments can be submitted quickly, easily and reliably which can reduce turnaround times drastically, improving motivation and preventing log-jams in student learning (where the learner can't continue without clarification from the tutor)
- this may also raise unrealistic expectations in students of their tutors being available at all times! Research has shown that where interactive communicative strategies were employed, the work load of academics increased "as new channels of communication between students and lecturers were opened up"(SAIDE-ET2000 1996:8)
- in countries with large distances and unreliable postal services, submitting work electronically can be easier than by physical means

**Structurally**, the medium of CMC does not predetermine the content or structure of a conversation. From a **learning** point of view

- this permits 'serendipity' (Mason and Kaye 1989:12) where unplanned and unexpected directions can be pursued as student needs and interests dictate
- on the other hand this also "provides opportunities for students who have misconceptions to propagate them at the push of a button, thus misleading others and creating difficult situations for the tutor and the group as a whole to disentangle" (Mason and Kaye 1989: 19).
- not all conversation sites or 'rooms' have to be content based – for many isolated students different sites become (or are even set up as) the equivalents of the various component of campus-based life (the bar, the sports union, the library and so on)

I have gone into some detail in illustrating how pedagogic applications can be derived from a familiarity with the technical features of a given medium matched against the educational possibilities these offer. This same exercise could be done with any technology which seems likely to be available for a provider. For example, the technical capacity of audio and video cassettes to stop and start facilitates learning activities which require the learner to intersperse action with comments or prompts or further instructions from the tape. Sometimes a structural feature has a negative impact on learning such as the lengthy and costly development process required for interactive multi-media computer programmes – this can make it impractical for learning which requires quickly updated information or for learning tasks which cannot be easily repeated year after year (such as case study assignments). The importance of structural-pedagogic attributes for effective education lies not in the specific detail of a particular medium (which is the approach usually taken) but how developed the provider/designer's understanding is of the link between these attributes and desired educational activities.

- **Structural Presentation Factors**

One of the clearer findings from experimental research is that learning gains vary more **within** than **between** media – in other words there may be more variation in the learning effect between two video programmes than between a video and a lecture dealing with the same topic (Bates 1981), particularly if the video is simply a recording of that lecture, as was the case with much comparative research. Bates' point is borne out by a consideration of the huge variety of educational videos which exist on the market, ranging from slick BBC-

type high budget reconstructions designed for a mass market, to small scale rough-cut documentaries made by the local communities, as well as including boring talking-head training videos, relieved only by amateurish graphics. Common sense tells us that we would learn very differently from each.

Earlier reference was made of the capability of some media to change information, to make it different from when the same information is communicated through another medium. Winn (1990) cites research into the cognitive differences brought about by changes in illustrative style, computer screen display and text itself (55). These are usually called design or presentational features.

Most media, Perraton (1988) asserts, are not homogenous at all and can be used in many different ways determined by the learning context and the learning aims (342). He seems to be suggesting that to focus on broad categories of media such as 'video' or 'computers' is not sufficiently specific enough and that providers should distinguish between video or computers **used** in various ways. This aspect, which he also terms presentational characteristics, emphasizes the particular ways information may be packaged and presented. In the case of video, this might be a broad sweeping video presentation designed to initiate the learner into the subject (which might focus on presentational characteristics of video such as the ability to show exciting moving visuals with 'voice of God' narration and background music) while another is designed to help the learner analyze a case study (which would exploit other presentational characteristics of video such as real-life interviews using close-ups and actual sound, stop-start technology, graphics and visuals to provide background data and so on). Perraton (1988) cautions against viewing technological (what other writers have called 'structural') capacity as a 'given' for all instances of use of that medium, citing as a significant factor the way the medium is used.

I have added 'structural' as a prefix to these type of characteristics as the technical capability of a medium will broadly determine the type of presentational attributes which apply. Thus a visually based medium (such as video/television) will deal with a particular type of presentational characteristics (movement, lighting, action, image size) which will not be the same as a text-based medium (where presentational factors such as layout, font size, white space and so on are significant). "The extent to which any particular medium encourages interaction or active learning is determined to some extent by the nature of the medium but depends to some extent on the way it is designed. An understanding of both is

required" (Perraton 1998 :341). In fact Perraton would argue that the quality of the design of the materials is often the determining factor in what the students learn and how effectively. (Here 'effectively' seems to imply the quality of the learning, the permanence as well as the ease and efficiency of the learning).

This coincides in part with Clark's 'weak' media theory where the greatest influence is given to instructional methods, rather than the latent effects of the medium alone. In fact design factors can often completely subvert or obscure the inherent capacity of the medium to excel in a particular aspect of presentation. For example, television/video is particularly valuable for its ability to show activity and motion, for bringing the exotic and unobtainable to our virtual experience - yet how much television is given over to boring head-and-shoulders talking head footage, or as is common in South Africa, close-ups of a hand working out equations on a whiteboard? Here the structural-presentational features of the medium are being ignored. Conversely, a skillful practitioner can minimize the limitations of a given medium – in the hands of one writer, text can be didactic, one-way and authoritarian but through the professional skill of another writer, text dealing with the same content can be intimate, engaging and full of interaction. Large video conferencing lectures virtually do away with collaborative work but Mason (1994) points out that an inventive lecturer might ask students to work on an issue or problem with the person sitting next to them for a short period (33). This should be seen however as making the best of a bad situation rather than working in harmony with the inherent capabilities of the medium. Perraton (1988) warns that to successfully exploit the presentational capabilities of media requires a high level of professionalism – and a proportionately higher budget (339). It is precisely this point that has scared off many an average academic understandably reluctant to compete with the BBC! Hodgson (1993) reminds us however that it is not only professional skill in manipulating the medium which is required, but skill in teaching – "poor teaching is likely to be produced by poor teachers whatever media they use"(67). Mason (1994) concurs, saying that while certain media may have a greater capacity to convey the 'presence' of the teacher, a good teacher has presence in any medium, including text or telephone (34).

Thus a synergistic working relationship between professional designers and producers, and educators is needed, to produce artifacts which successfully exploit the structural-presentational opportunities in a medium for expressed educational purposes. This is after all a common scenario between corporate clients and advertising agencies. However, speaking from personal experience on both sides of the table as it were, having been both a

producer trying to make programmes for academics, and an educator trying to explain my intentions to a producer, the difficulties of this relationship should not be minimized. Both parties need to be fully conversant with the possibilities of the medium and with the educational process.

Romiszowski (1995) asserts that "learning is affected by the quality of presentation only to the extent that the quality influences the clarity of the message(60)", warning against slick professionalism which may look really good but which doesn't advance the learning intentions of the programme. Nonetheless, one needs to interpret the learning goals of the programme in their broadest scope, including affective, attitudinal and motivational goals. A better designed, more eye-catching presentation may in fact encourage the learner to become involved and participate in a way that a more amateurish production may not.

Presentational characteristics tend to be more based on choice than are structural features of a medium and are thus easier to distort or subvert. Thus one of the powerful presentation attributes of video is its obvious linearity which leads to clear logical sequencing, an explicit exposition of the points being made and a high degree of control over the viewer's experience. If, however, the intention is to get away from providing the viewer with a largely pre-digested intellectual experience, there are ways of undermining these presentational features of video – for example, a much more documentary feel, limited editing, no commentary, and so on. This would result in a very different cognitive experience for the learner. The approach of a provider to the various characteristic attributes or capacities of a given medium must be understood as reflecting that provider's understanding of the function the medium is to perform, which is determined by the overall understanding of the type and nature of learning desired (which has been discussed more fully in section 5.1). Not only will the priorities of the provider dictate which medium is selected for use, but may even influence which presentational attributes are emphasised.

### **A selection of significant attributes**

The previous sections have outlined ways of broadly categorizing the types of attributes which arise in media. Given that there are probably thousands of media characteristics specific to particular media applications, this next section will focus on only a few attributes which have been raised in previous section as having relevance for providers trying to structure active and meaningful learning for students.

Rather than selecting one individual technology on which to focus, there are several general characteristics of media which have become increasingly important as dialogue and interactivity have become more of a priority for educationalists. These are

- two-way communication
- social presence
- synchronicity
- individualized systems
- collaborative possibilities

These tend to be features of the more recently developed technologies, although not exclusively so, and thus the following discussion may focus more on these 'new media'. This does not imply an automatic dismissal of earlier media.

- **Two-way communication**

Much of the previous discussion on new trends in higher education has stressed the need for two-(or more)-way communication which creates a genuine space for the negotiation of meaning and the construction of individual understanding. Certainly if this is in any way important for a provider, it would pay to have a working knowledge of which technologies would support this and in what ways.

Traditionally many of the presentation technologies which have been the mainstay of distance provision (broadcast, print) have not permitted interchanges between learners and teachers. "Many media are one-way transmitters, quite incapable of receiving and storing (let alone interpreting) any messages that the learner may transmit"(Romiszowski 1995:100). Winn (1990) points out that programmed texts and computers are not two-way interactive either. Where these media have been widely used, providers have had to work hard to find other ways of facilitating communication (if this has been deemed important and necessary). This has taken the form of telephone communication (which while 'old-fashioned' has a high level of two-way interaction), tutorial letters (either personal or to the group), audiographics, teleconferences and so on. Of course, physical face-to-face contact has also been used. But for many institutions moving into distance provision, the obvious solution has been to avoid broadcast media and opt immediately for technologies capable of supporting interactive and individualized delivery (Garrison 1989:8).

Perraton (1988) suggests that in choosing media, the single most significant decision on which the others depend may be concerning the provision of two-way communication. Keegan (1986) concurs, citing high drop-out, failure and low quality learning where "the reintegration of the teaching and learning act is not organized"(126), in other words, where those who are responsible for each end of the educational transaction, as it were, are not brought into some sort of contact. Where this is limited to a few assignments and the exam answer as is the case with much South African provision, Van Wyk (1995) et al say that the 'guided didactic conversation' is reduced to one-way communication.

The TELI report (1996) reminds us that interactivity cannot be 'on behalf' on someone else – watching others interact is not the same as participating yourself. Thus the common trend in distributed learning of allowing one learner at a time to phone the television teacher as a representative of all the other learners does not add real interactivity – the discussion is very one-sided, neither the teacher nor the learner know each other, and the number of non-participating learners is too high to allow them even vicarious feelings of involvement.

- **Presence**

For most people in pre-modern communities, according to Giddens (1990), 'presence' was an automatic factor in most dimensions of social life, given that space and time coincided. In other words, mostly you had to actually be there to experience it – you had to be at the wedding to see the bride, you had to be in the presence of the teacher to learn from his profound words. Now, however, much human experience is "no longer immediate and face-to-face but mediated and secondary" and distance education symbolizes this space-time distantiation (in Jarvis 1991:117 in Evans and King 1991).

Much effort has been put into utilizing media to overcome this gap or distance but in the past few technologies have managed to recreate that sense of 'presence', of actually being there and being part of it all. Skillfully written text has the ability to make the reader feel engaged in a conversation but this is difficult to sustain for long, and is very dependent not only on the writing skill of the developer but also the reading skill of the learner. For many second language speakers, even well-written engaging text is simply too alien in a second language to ever convey much social 'presence'.

Short et al (1976) define social presence as the degree to which a person is perceived as a 'real person' in mediated communication and hypothesize that this may be a quality of the



medium itself, that communications media may vary in the degree of social presence they communicate and that these variations (as do all other media attributes) will influence the way the learners react to the 'message'(in Dillon and Gunawardena 1995:350). They list the attributes which contribute to social presence as things like the capacity of the medium to convey information about visual cues such as facial expression, direction of looking and non-verbal actions. However, the date of their writing (1976) alerts us to the unlikelihood of their list being influenced by new telecommunications media which put quite a different slant on social presence.

Dillon and Gunawardena (1995) link factors such as intimacy and immediacy with social presence – immediacy being used to describe the interaction amongst participants, such as verbal and non-verbal actions which indicate involvement in the activity (such as nods of agreement or verbal prompts). They cite evidence from Hackman and Walker (1990) that greater immediacy in teacher behaviour contributes to student satisfaction and learning in an interactive television class (350).

Mason (1994) provides an interesting analysis of social presence in relation to interactive technologies. For example, he points out that audio-conferencing depends on the voice to create a sense of presence and that while it is possible to convey immediacy through verbal cues, it can also be very confusing to distinguish who is speaking when voices come quickly after another. This is disconcerting and can limit learning (34).

The earlier descriptions of social presence which are largely dependent on the medium's ability to convey physical cues should mean that computer conferencing (either via email or live time chat groups) should have low social presence. It has the least 'bandwidth' i.e. capacity to convey information, being dependent on text only and is often asynchronous with participants neither present in time nor place. Mason reports that newcomers to computer conferencing and those who only try it once or twice tend to dislike the impersonality of it. However, there is much evidence to show that those who become accustomed to the technology of the medium find, surprisingly, that "computer interaction is more personal, more intimate and more community-creating than comparable face-to-face situations"(Mason 1994:34). While this may say something about an increasing interpersonal alienation in post-modern society, it does point to a new kind of intimacy, that of 'virtual social presence'.

- **Synchronicity**

This factor refers to whether the teaching-learning interaction takes place in real-time or is delayed. This was viewed as the chief difference between face-to-face teaching (synchronous) and materials-based distance learning (asynchronous). The latter was seen as preferable for practical reasons – allowing the part-time student freedom to study at times and places suitable without the teacher being present – but the former was deemed educationally preferable because there was no dislocation of the teaching and learning actions. This last point is somewhat inaccurate in that for many learners in higher education, the real learning does not take place simultaneously with the lecturer providing the information but later on when reviewing lecture notes, in tutorial discussion or even in end-of-the-year exam preparation.

Synchronous media include real time audio, video and computer conferencing, as well as encompassing distributed learning as experienced by the off-site groups of learners. Asynchronous media have traditionally been associated with passive media such as broadcast television and thus synchronicity has been sought after for its interactivity (a telephone help-line is valued more highly than, say, tutorial letters). However, each has its own benefits – asynchronous media allow for greater individual flexibility in terms of time and place arrangements. Again new technologies such as email and computer conferencing hold interesting possibilities in that they are time-delayed in reality and yet have a feeling of being 'instant'. The compulsion with which people check their email and the speed with which responses are often expected show that users feel very connected to other users.

Dillon and Gunawardena (1995) warn that our conceptual exploration of the asynchronous nature of these media has only just begun and may ultimately form a new and distinct category of distance education. While there is little in the literature, occasional interesting tidbits emerge from practitioners such as the complaint from one student about the flexibility of time-delayed computer e-mail groups which meant that by the time he sat down at a time convenient to him (usually late at night), somebody else had made the point he had been pondering on all day! Another lecturer tracked the times at which students in a given cohort made their contributions to the chat-group – these covered virtually all 24 hours of the day, showing that students do indeed value the flexibility offered by asynchronous systems (comments made at a colloquium on computer-mediated learning, University of Natal, September 1999).

- **Collaborative possibilities**

Individual and isolated learning has always characterised distance education. Keegan(1983) even lists as one of his defining features "the permanent or semi-permanent absence of a learning group"(44). Individualised systems focus primarily on the interaction between the learner and the instructional materials (Moore 1989). Dillon and Gunawardena (1995) describe individualised technologies as "rarely providing the opportunity to obtain differing viewpoints, knowledge of peers and motivation provided by a learning group"(350). This poses a problem bearing in mind the central role given to collaboration and group work in Constructivist theories of learning. Some of the newer interactive technologies do, however, create a shared environment that provides opportunities for learning **amongst** learners. These systems might be termed collaborative (although Dillon and Gunawardena most confusingly call them 'interactive').

Dillon and Gunawardena (1995) suggest that the two types of technologies support learning in quite different ways, citing as key differences individual versus group pacing, real time versus delayed interaction, and the presence or absence of the learning group and/or instructor. In individualised systems the primary course content is delivered one-way, and any interaction there is occurs separately from the instruction, while in collaborative systems the course content is delivered with two-way communication and interaction occurs in a group (348). A system that uses text-based materials with a telephone help line or email tutoring would be considered individualised while distributed learning (a multi-site large group video conference) would be categorised as collaborative or interactive by Dillon and Gunawardena (which shows how confusing their use of the terminology is)<sup>11</sup>. These two approaches "while having some features that are similar are fundamentally different" in the view of Dillon and Gunawardena (348). In reality, however, many distance providers, for pragmatic reasons end up with hybrid systems which incorporate aspects of both individualised and collaborative approaches. For example, the University of Natal's School of Education, Training and Development's Bachelor of Education programme uses text materials supported by video cassettes (individualised, one-way) with a telephone help-line (individualised, two-way) supplemented by frequent face-to-face small group tutorials (collaborative). This approach of combining various modalities is very common (even if

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<sup>11</sup> A further example where an "interactive" technology is not collaborative would be multimedia computing (sometimes called interactive video) which is definitely more applicable to single

providers have seldom based their selection on theorised understandings of the balance between individualised and collaborative approaches), and will be discussed further in section 7.1 Combined Effects.

There will of necessity be costs (not necessarily financial) attached to shifting the balance between the collaborative and individualised aspects of a programme. Many traditional distance providers remain firmly committed to individualised technologies because they preserve the freedom from time and place practicalities which was one of the first impetuses for distance education in the first place. Nevertheless, whether a given technology more easily facilitates individualised learning (text-based materials are probably the most common form of this) or collaborative learning (computer-mediated communications technologies are a clear example) might be a useful attribute to consider, depending on the relative priorities of the provider and the educational role played by a particular component of the system.

#### **A more sophisticated understanding of costs**

Although the relative expense of an individual technology is often the first factor that a provider might consider, the issue of costing the inclusion of media into educational provision is a complex one and one that is seldom fully understood by educators and indeed many providers as discussed in section 3.8 earlier. A full discussion of costing would be beyond the scale of this dissertation but a few aspects which particularly pertain to issues raised already need mention.

The traditional view of costing (when it is used at all) is to look for the economies of scale exploited by large-scale industrial institutions such as the large Open Universities of the world (some of which have student enrollments in excess of 700 000 students). "Such systems have relied on amortizing investments in high front-end course development costs by enrolling very large numbers of students and keeping student related costs to a much lower level than in conventional institutions"(Rumble 1986 in Mason and Kaye 1989:19). Simpson, Khan and Walker (1995) explain how the number of students determines the size of the programme which in turn dictates the media mix which the provider can access. Thus, they say, smaller countries and providers are excluded from many of the benefits which distance education, as traditionally practiced, brings to the larger provider.

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learner per work station applications (Shaffer 1985:27).

When considering the economic case for introducing a medium (particularly when adding it onto an existing course), cognizance needs to be taken of the starting point for comparison. Just about any media package is going to be more expensive than a correspondence model of distance provision with little student support. Large scale distributed learning may be able to undercut high quality text-based courses but the latter may prove more profitable in the longer term, say in the sixth year of the lifespan of a given set of materials, particularly if student support costs can be contained. Harder to justify may be the small scale, highly interactive programme which is expensive in person-power and which cannot claim the economies of scale which a larger institution can. However if one takes as a starting point a traditional campus offering, particularly at post-graduate or senior level, or a professional training course, the costing starts looking different. Many university courses like this are enormously expensive to run in terms of professor's salaries, the costs of buildings and facilities and so on, and including a distance component, even a relatively expensive one like computer or video conferencing, would still make the books balance better. Many working learners (or their sponsors) are willing to pay more for a higher quality product with better employer credibility and are not necessarily looking for the cheapest option. Where the potential market for a course is specialized, adding a distance component may also draw in students who would not otherwise be able to participate in the course, thus improving the viability of the course. This is particularly important for very specialized branches of knowledge.

Third generation technologies (such as electronic telecommunications, distributed learning, computer conferencing) in particular require a more sophisticated approach to understanding their costs. Bates (1995) provides an interesting analysis when he claims that for many providers these types of approaches are attractive because they offer the promise of substantial savings in production and development costs. Because teachers and experts can be electronically distributed without massive front-end production (which media like text materials or broadcast video require), Bates estimates savings of about 80% over industrial models of distance education. Many providers trying to make financial gains or at least to contain costs leap at these types of figures. However, Bates warns this is a naïve reading of the situation because delivery costs (including support costs) for these new interactive technologies can be far more expensive. In traditional industrial models, delivery costs are relatively fixed regardless of the number of students enrolled on a course, thus economies of scale are possible. In interactive distance provision, however, delivery costs

rise in proportion to the number of students **if the level of interactivity is to remain constant** (Bates 1991:13). Not only is more equipment required (there is a limit to how many students can be seen from one videoconferencing camera or who can work at one workstation) but more teacher/tutors are required in order to maintain the interpersonal interaction so prized in these media. Of course a transmission model allows a far higher student-to-teacher ratio and so these costs can be contained by using the medium essentially as a broadcast tool, but that makes rather a nonsense of selecting these types of technologies in the first place. Bates seems to warn that interactive media need to be selected for pedagogic benefits they bring, not merely the opportunity to cut costs because, he says, "if the full support costs are included, the cost advantages over the industrial model may not always be so apparent"(13). Mason (1994) concurs, saying that administrators often look to telecommunications strategies to increase numbers and reduce costs but this often fails because interactivity and large numbers are not easily compatible(35). While on-line tutors and facilitators for remote sites can help cope with large numbers, this also pushes up costs. Mason and Kaye (1989) point out that if a user-friendly and effective communication medium is placed at students' disposal (such as on-line registration, electronic submission of assignments or email help lines) there is an obligation to invest in staff capacity to deal with the tasks generated by such access(19). Less money will need to be spent on high quality (and high cost) materials and more on communications and tutoring(13). On the other hand, Perraton (1988) warns that where a system based on pre-produced materials is selected, it is important that money is spent on producing high quality materials, a very lengthy and expensive business. The tendency can be to spend money only on the distribution hardware (the satellite or the broadcast mechanism)(350). Hawkrige (1995) points out, too, that finding the necessary expertise to produce quality materials can be difficult, particularly if one looks to the existing teaching body to provide the skills. For example, one major cost disadvantage for multimedia intelligent tutoring packages is that the required skills are apparently rare, which in turn means that the going rate for such personnel will be very high.

Once again the message of appropriacy for context needs to be made, this time with regard to costing. Each situation has to be carefully analyzed for its own particular opportunities. Sometimes a government has in place a particular infrastructure (often for its own purposes) which can be utilized for educational purposes. In countries where individual wealth is low, strategies that would be located in a learner's home in a wealthier country, may need to be located in community or institution-run learning centers. Thus in India,

much broadcast based education is viewed on television sets in village halls, not in people's homes(Agrawal 1982 in Perraton 1988). In other contexts, such as continuous professional development, industries and businesses may be prepared to foot the bill for providing the hardware and equipment in the workplace. Where learners are employed and where studying brings a direct financial benefit, it may be more legitimate to pass on some of the costs of a particular medium to the learners than it would be in other contexts (say, in mass primary education).

The danger of over-focusing on costs has been discussed earlier where much distance education is viewed as second-best, albeit low-cost. Sometimes a cheaper option is more costly in the long-term because people lose faith in its efficacy. It's no good relying on post because it's cheap if the postal service is chronically dysfunctional. Local radio may be highly effective if your student population lives within a dense area, as would be a telephone helpline. Neither will be a good choice, however cheap, if your market is geographically scattered. Then the more expensive option of satellite, or the pedagogically different print materials may be more viable. "It is too simple to see certain media (such as television) as being expensive, and others (such as print or face-to-face tuition) as being cheap. It depends on the system configuration"(Perraton 1988:346).

Although this section has of necessity skimmed over some of the aspects of costing technology-enhanced education, the basic message is consistent with the rest of the dissertation : that a carefully considered, informed decision based on a clear sense of educational purpose modified by contextual constraints will lead to better decisions about which media to utilize.

## **Conclusion**

Section 6.2 has focused on developing a more sophisticated understanding of media, including a broader view of technology and the contributions that various media can make to the multi-faceted provision of education. While this type of 'macro' thinking is useful, it needs to be balanced by a more detailed familiarity with the capacities of particular media. The problem is that technologies keep developing and improving , and many new features are constantly appearing. For this reason, this dissertation has focused on ways of analysing detailed attributes of media, regardless of what the particular piece of equipment is. This section has also linked the educational and pedagogic concerns of the previous

section (6.1) with particular media attributes in order to show the possibilities which exist in an integrated approach to understanding both media and education.

### **6.3. UTILISATION FACTORS**

These factors focus on the receiving end of the educational transaction – on how the media messages are used by the most important component of the system, the learners. Phillips (1995) reminds us that, after all, the learning experience must take place within the student, not the instructor (185). One of the dangers of focusing on which technology will be doing the mediating is "casting the problem as one of 'media selection' rather than 'media utilisation' (Kearsley 1984:34). Anderson (1991) is one of the few writers who has deliberately sought out learners' perceptions of the use of various technologies as well as those of the instructors (he also included the views of administrators) with interesting divergences of opinion as to what was useful, what was easy to use and so on. The specifics of his findings are not particularly generalisable but they do point to a need for all providers to consider (and investigate) the responses of the learners to any proposed or current media strategy. The comments made by the various audits and reviews of South African distance provision in the first chapter pointed to the almost complete lack of attention paid to learners in most instances.

This is a hugely complex area, and has been subject to much research, not all of it directly concerned with media choice for distance education but which still provide useful insights.

This discussion will look at the following points in turn

- attribution factors (the attitudes students have to various technologies)
- learning style factors
- student resistances
- student support issues
- cost factors

#### **Attribution Factors**

Several theorists (including Salomon 1984, Schunk 1984 and Saga 1995) have hypothesised that the effectiveness of learning from media is influenced by the way that learners perceive that medium. "In other words the beliefs we have about media affect our learning from those media"(Saga 1995:214). Schunk (1984) puts it : "people's expectations of how well they will learn something is an important determinant of how well they actually



do"(in Winn 1990:59). These beliefs include factors such as "the perceived demand characteristics of the task, the material and the context"(Salomon 1984 in Saga 1995 :215).

If students perceive a given medium to be 'difficult' then they will (depending on their attitude to their studies as a whole) either exert more effort than they would to the same content being delivered through another medium, or they may give up, or strategically avoid that task. The most commonly researched media in this regard are textbook/print based materials and televised learning. Saga (1995) reports that in many cultures and age groups, learners seemed to characterise the textbook as requiring careful and sustained effort to be understood while television requires less effort to understand and has more pleasure attached to it. This might be influenced by the fact than many institutions place more emphasis on text than on other media (which are often 'supplementary') (217). He does point out that these attitudes are not universally true : students who are unfamiliar with TV (say, do not have a TV at home) may perceive TV programmes as difficult to follow and thus requiring more effort (217). Sometimes these attitudes can be generational : currently, older students are often less familiar with computer-based technologies and view such learning as fraught with difficulty while younger learners who have grown up with the technology in their bedrooms as it were, view interactive video and CD-ROMs as hugely entertaining and easy to learn from.

Student confidence levels (or self-efficacy) also affect how well they learn. If an experimental or innovative technology is being used, students may not have sufficient faith in themselves or in the technology to believe that it can teach them well. Research suggests that if this belief persists, the student is indeed unlikely to learn successfully from that medium. This highlights the importance of introducing students properly to new media and to ensuring that they have the necessary skills to operate the technology easily, as well as providing on-going support.

Students (particularly older and part-time students, understandably) are often reluctant to exert effort on activities or technologies which are not perceived to be offering anything useful and if this belief persists even the most dedicated student can resort to 'strategic selection'. If this is the case, warns Seligman (1992) "then no matter how fancy the technology or how sophisticated the delivery system, it will fail to achieve what is expected of it"(9).

Conversely, students' beliefs about the benefits of a system can have a positive effect even if the students do not actually make use of those particular facilities. Mason (1994) cites UKOU students who, when asked why they liked computer conferencing so much when they hadn't used it extensively or interactively (mostly they logged on to see what others had said), reported that they felt much less isolated knowing they could use the system if they needed to. "The importance to students of the psychological support from knowing that interactivity is possible should not be underestimated"(28).

There have also been studies which have shown that where students of courses using interactive technologies have perceived the interactivity levels to be high, they show increased satisfaction with that course (that is, they feel they have learned more and enjoyed learning it more). Interestingly enough, student perceptions of the amount of interactivity on the same course varied considerably from student to student and also often bore no correlation with the actual recorded levels of interactivity! (Fulford and Zhang in Mason 1994:29). The point being made in this section is not that student attributions about media are accurate but that they exist and affect their learning, and so need to be explored and taken into account.

### **Learning styles**

One of the criticisms leveled at the comparative research in Chapter 4 was the downplaying of learner factors in the effectiveness or otherwise of mediated learning. There has been a great deal of research recently into learning styles and multiple intelligences (Hey and Mumford 1992, Kember and Gow 1989, Entwistle and Tait 1990, Kolb 1981, 1984, Schmeck 1983) - some of which has impacted on media use in distance education. For instance, Reiser et al (1983) say that traditionally audio-visual experts have striven to use media to convey information in a 'realistic' and objective' way, whereas current research indicates that it may be more profitable to present information in a way that corresponds with the way learners represent information internally.

Some of the factors found to influence learning styles and preferences include past experiences, learning skills, range of opportunities, methods of learning, nature of assessment, teaching style, motivation and workload, aspects of the academic environment such as support, structure of the course, intellectual abilities and personality characteristics. Some of the ways that individual learning styles can manifest themselves are in preferences for structured learning opportunities rather than self-organized processes, the

ability to learn better from visual, auditory or tactile stimuli, and a tendency to approach knowledge in a holistic or a serial/sequential way, to name but a few. In spite of this rather overwhelming list of possible factors, the research has clearly established that people learn in different ways – in fact so much so that Mason (1994) quips that it's a wonder that effective learning ever takes place for more than a few learners on any one course. This points to the need to keep this notion of differentiation of learners in perspective – while some learners may have serious difficulties in learning in a particular way, most of us are more accommodating and while we may have preferences, we can adjust these to the mode in which the learning is delivered.

In the search for generalizations, research has looked for correlations between media preferences and factors such as learners who are able and slower, young and old, anxious and not-anxious, extrovert and introvert, poorly and well educated, male and female, impulsive and reflective but "without establishing any practical guidelines to help suit a medium to an individual"(Rowntree 1977 :125). As Mason (1994) rather despairingly points out, what advantages one student may disadvantage another, even before you start looking at questions such as access or cost barriers (119).

Koumi (1994) warns that some individual differences with regard to media effects in research are likely to be temporary – in other words, generated by the interaction of the particular topic and style of presentation. Any learning group (whether the control and laboratory groups of classic experiments, or an authentic cohort of students) is likely to contain some students who can manage without the distinctive media treatment (for this particular topic) and some who find it difficult to learn from the particular medium being used (say, when they are not used to it, or when they are in this mood or because of the particular style of presentation)(44). The attributions students make about media (discussed in the previous section) may also result in particular preferences being manifest.

One of the reasons why providers often ignore learner differences in terms of learning preferences is because, given the numbers involved and the scale of distance provision operations, it is quite clearly impossible to identify each individual learner's media preferences and then provide a tailor-made learning programme. A more helpful middle-of-the-road solution though would be to try and meet individual learner's needs and preferences by broadening the range of possible modes of presentation, or as Mason (1994) puts it, "presenting knowledge in a variety of different ways through a variety of

media"(119). He gives as examples recasting a theoretical issue into an panel discussion between experts, visualizing complex processes through computer simulations, or even such simple strategies as putting the points raised in an audiocassette discussion into a printed table format. Using more than one stimulus mode would not only accommodate more learning styles, but would also relieve monotony and would have the spin-off of increasing the skill and familiarity level of even those students who don't prefer that stimulus mode. This approach will be considered more in the section 'Combined Effects'.

### **Student resistance**

Another aspect of utilization which providers need to understand is that students are often reluctant to use the medium in the way that it was intended, and for which it was selected. For all the hype surrounding interactive technologies and the possibilities they bring to distance learning, many tutors report that students take very little advantage of the technology and that non-participation is one of the biggest problems with interactive media. "Students can present the biggest hurdle of all. Many students are reluctant to initiate questions, engage in interaction or work independently of the teacher. Teachers sometimes need perseverance to convince students that collaborative interaction is a vital part of learning"(Mason 1994:35).

Students' levels of motivation about their studies generally, their comfort level with the medium and their enthusiasm for the particular medium can vary greatly. The previous section on learning style and preferences applies here too but as the flip side of the coin. If a student does not incline towards the use of a given medium, resistance and avoidance may become a standard response. This is very clearly illustrated in programmes where different aspects of the course are optional and learners can choose to utilize or ignore certain media. Take-up levels of the various components will often vary dramatically. Some studies show that some students find interactivity a waste of time while others rate it highly. The UKOU reports that in its pilot programmes which used computer conferencing with about 1500 students, about a third used the system actively, a third read the messages regularly but did not contribute themselves and a third took little or no part at all (Mason 1994:28). Mason and Kaye (1989) remind us that it is thus absurd to assume that any one medium is going to suit all adult learners – some will benefit greatly while others may prefer other modes (15). The implications of this once again point to the use of a range of media.

Exacerbating this reluctance to fully engage in the interactive potential of some media is the socialization process of common prior learning experiences. Anderson (1991) reports that in a study on narrowcast (small group) video conferencing, the response to the medium (which facilitates interactive live-time communication) was generally passive, perhaps because television has been a passive 'viewing' medium for so long that students found it difficult to use it interactively (89) - perhaps it felt like talking back to the box in your living room! In most face-to-face courses, the ratio of teacher input to student responses may easily be as high as 80:20 (Mason 1994:27) and a tertiary level student has endured many years of this type of educational modeling. Mason reminds us that there are not many precedents for interactive discussion in education – "discussion in which one is expected to formulate a point of view, express it and modify it or defend it in the face of criticism or comment"(27) and students may thus exhibit great reluctance and fear in participating in such events. Students are often delighted when a peer asks the question that has been bothering them, or makes a point they concur with but often lack the confidence to do so themselves. "There remains a legacy of passivity and teacher-led models of the learning experience which are difficult to overcome"(Mason 1994:27). In fact he maintains that while students may find it difficult to learn how to log on or how to utilize the equipment, by far the most challenging aspect is learning how to be an active learner. This will be intensified for South African students coming out of our disadvantaged schooling system which was premised on utterly passive learners. Students may also be unused to systems which validate the knowledge and perspectives of fellow students – programme evaluations reveal that some students in computer conferences always skip the messages posted by peers and only read the teacher's messages. In addition to all the other challenges facing them, providers also need to devote resources and time to helping people learn to learn (Perold 1996:55).

While interactive systems are highly valued for their contribution to the creation of independent and autonomous learners, tutors and teachers should not forget that "the responsibility for effective interaction falls squarely on the shoulders of the instructor ... who must deliberately encourage interaction and not wait for it to happen on its own"(Winn 1990:62). Once again providers need to avoid the view that providing the technology will suffice.

The learner–technology interface has already been mentioned several times as particularly meriting attention. Mason (1994) reminds us that the student interacting with a new

technology is operating in many new dimensions, "often learning about the medium, the basic rules of the language and discourse, and the subject matter of the course all at the same time"(14). Only when students have overcome the psycho-social and practical barriers associated with mastery of a new and unfamiliar mode of working (Mason and Kaye 1989: 14) and are as comfortable with these newer technologies as with face-to-face teaching will the full potential of the various media be realized. These barriers go beyond the merely technical : Laurillard (1993) earlier in this study referred to the quality of the 'enquiry frameworks' which the learner brings to bear on any resource as being as significant in the effectiveness of the learning as the resources itself. The TELI report repeats this concern when it points out that resources like the Internet with its masses of unfiltered information prove highly problematic and intimidating for learners with few information literacy skills and in fact such media are often rendered useless because of this (DoE-TELI 1996:103).

One type of learner preference which educators may not be quite so happy to indulge is the preferences by some learners – those characterized by Ramsden as strategic learners - who will resist any learning strategies which are perceived to require additional effort. One of the reasons students avoid collaborative interaction is that often it requires hard work. Many interactive technologies such as computer conferencing demand much more self-direction, motivation and initiative on the part of the student than do some other media, such as distributed learning or broadcast television (Mason 1994:39).

Thus the impact of any technology, but particularly apparent with the newer interactive technologies, will vary with how actively a learner chooses to engage with it. Students who want to take the initiative and who enjoy engaging with peers will revel in the opportunities provided by these media – others may take longer to see their benefits while there will always remain a minority resistant to any medium, including those for whom face-to-face classroom teaching is the only really satisfactory learning mode (Mason 1994: 40).

The various cautions in this section do not of course imply that providers should dismiss interactive or innovative media from their 'list' of possibilities on the grounds that reluctant students won't use them anyway – after all, student participation is a problem on face-to-face courses too. Rather, providers should realistically assess the likely take-up (particularly initially) of a given medium and then allocate that medium an appropriate role in the package. Alternatively, a 'conversion by sword' approach might be favored where the

use of the new technology is so integral to the successful completion of the course as to not be optional! Significant student support and skill building – both technical and cognitive– would need to be offered if this was the case.

### **Student support**

Many definitions of distance education have focused on its characteristic 'apartness'. The Russian word for the 'distance' part of distance education is '*zaochny*' which literally means 'without eye contact' or, as Wedemeyer (1971) once put it, "Distance education does not take place 'eyeball to eyeball'(in Peters 1993:13). Instead traditional distance education is characterized by a lack of interaction and dialogue which emphasizes, according to Peters that "the whole emotional dimension of the interaction between teacher and learner is lacking"(13).

While one may dispute that this emotional interpersonal alienation is a necessary part of distance education, student support (or a lack of it) is frequently cited in the various reports and audits quoted in Chapter 1 as being a significant factor in the effectiveness of a distance learning system. Many distance providers, especially at higher education level, provide little beyond the content, leaving students to manage their learning on their own. Student support features are those which aim to make it easier on either a personal or academic level for students to successfully complete their studies. As with face-to-face contexts, questions remain about the balance between spoonfeeding and dependency on the one hand, and creating autonomous, independent learners on the other. "While too little guidance can distort the educational process, too much direction can become indoctrination which violates the integrity of the educational experience" in the opinion of Garrison (1989:11). These concerns mirror those of Thorpe and Laurillard in section 6.1.

The relationship between independence and interaction impacts on media selection choices. Traditionally student support structures were viewed as needing face-to-face contact or as close to it as possible, thus telephone help-lines, face-to-face tutorials, vacation schools, or friendly tutorial letters were used to help minimize the student's feelings of isolation and to convey that help was available. The newer interactive telecommunications offer additional strategies such as email, peer support groups and small-group video conferencing. Clayton (1995) asks "will new technologies enable tutors to adapt tuition more sensitively to each student?" and interestingly, "what might the influence of extensive use of electronically mediated learning and tutoring be on the

development of a person's self-perception, spirituality and creativity?" (340). While this study has focused more intensively on the teaching-and- learning interventions, it is clear that as much thought and care needs to go into selecting appropriate media for student support, which presumes a rigorous understanding of exactly the type and nature of student support desired.

Student support, however, also extends beyond a pastoral concern for the student's personal and emotional well-being. Of primary importance is the need to support the student's learning and thus student support features should also be built into the very fabric of the course. Well designed and produced media messages are an important part of student support as are clearly described assessment criteria and flexible curricula arrangements.

Mention has already been made earlier that many technologies which are very flexible in terms of time and space (that is, they are able to accommodate individual learner's practical arrangements) also tend to have to treat learners in isolation, while technologies which favour interaction can emphasize group collaboration. Once again distance education's tendency to polarize issues is revealed - either complete independence or locked-in dependence on the group. Garrison (1989) suggests that a middle path might be a more constructive way of thinking. He maintains that the independence striven for by many distance providers is illusory and that learners will be unsuccessful if "they are not aware of the necessity of mediation by others and of recognition for learners"(11). Like many others, Garrison motivates for an 'interdependence' between teacher and learner – and other learners, I would add.

## **CONCLUSION**

Chapter 6 is headed "Developing Understanding" and has focused on developing a deeper understanding of three integrated areas ; the nature of the educational provision we want, the nature of technological means to achieving that, and factors which influence how that mediated message is acted on by its users, the learners. There are many other things which could be added to a discussion on any of these three aspects but the intention in this dissertation has been not so much to provide exhaustive coverage in any one area as to show how an integrated selection process requires a balance between all three.



## CHAPTER 7 : TWO SUGGESTIONS

The previous chapter has discussed two broad areas of understanding which are needed for better media choices – the first focussing on educational issues and the other on technology issues- with a third section discussing issues around implementation. This dissertation has quite deliberately directed attention onto analysis of the problems and onto ways of doing things better. It has avoided providing directives, advice or recommendations about which media should be used. It has emphasized processes rather than solutions. This chapter, however, will make two suggestions – both fairly broad- which seem to me, after the thinking, reading and discussion which has gone into this study, to be particularly useful insights for providers.

### 7.1. COMBINED EFFECTS OF MEDIA PACKAGES

At various points in this dissertation, brief mention has been made of the possibility of using a package of different media in order to maximize learning benefits. This point will be examined more closely in this section.

Previous sections have objected to the use of a single medium on the grounds that

- some learners find it easier to learn from one medium than another because of the nature of the way the knowledge is presented in that medium, as well as certain attitudes and attributions that students may have about a given medium
- certain media are better at achieving certain types of educational goals (such as information transfer or affective goals) than other types
- media have specific presentational attributes which allow them to present information in certain ways, rendering them particularly suitable for some tasks and unsuitable for others
- the evidence suggesting that any one medium must be present for learning to occur is unclear, thus to assign a random medium such a role is risky in the extreme.

Many writers have suggested that it is the pursuit of **the** one technology that is best suited to learning which has hampered sensible work in the field of media selection. Mason (1994) reminds us, as has Bates earlier in this dissertation, that there are no 'supermedia', not even amongst the newer communications technologies. "Quite the contrary, in fact it should be obvious that each medium has unique benefits but all have their drawbacks" (117). The main thrust of comparative research was to prove that one medium was **causal**

in learning : a 'combined effects' approach would assert that each medium is **contributory**, and no more. The conclusion reached by many, both practitioners and writers, when faced with media choices is to acknowledge that there is a role and place for all of them, even at the same institution (Mason 1994: 118).

Rowntree (1992) mentions the argument made by some that since we expect an individual face-to-face teacher to manage to cover all aspects of the complex tasks of teaching and learning, surely we can expect the same of a single technological medium? This argument has several flaws, however. Firstly, the classroom teacher or lecturer relies on a variety of stimuli, resources (both in and out of the classroom), the contribution of the rest of the class as well as the uniquely human quality of being able to instantly react to the learning situation. Those teachers who rely on a single mode – that of talking themselves most of the time, regardless of the demands of the learning task or the response of the learners – are not an appropriate bench-mark against which to measure media performance in distance provision. Secondly, in spite of the millions spent on artificial intelligence, no technology has as yet been developed which is as flexible as a perceptive and professional teacher, thus the range of a given medium's optimum functioning will be fairly restricted. Furthermore, it seems unnecessary to see a 'teacher versus media' competition: the face-to-face lecturer or tutor is one of a wide range of possible mediating tools for teaching and learning from which an optimum package can be created. There are some aspects of even classroom teaching, let alone distance provision, which particular technologies deal with more successfully than does a teacher.

**Combination** seems a much more profitable approach than does **competition**. Why get rid of one medium (the flesh-and-blood teacher, the telephone, print) which may be doing some aspects of its job very well just because another is developed which does some other aspects of the job better? This condemns providers to an endless cycle of technologies being put to uses for which they are not entirely suited. Telecommunications media do not make pre-prepared materials redundant any more than the information age will replace the need for manufactured goods (Bates 1991:14).

Romiszowski (1995) offers the useful notion of a '**principal**' medium which might do the bulk of the provision in a particular programme with a media mix dealing with specific additional **niche** functions. In this way traditional and new technologies might play a complementary rather than a substituting role, given that each has strengths which

compensate for the weaknesses of the other media. Mason and Kaye (1989) offer some interesting evidence to suggest that in some contexts introduction of one medium into a learning situation (in their example, computer-mediated communication) actually leads to an increase in other pre-existing forms of communication (here an increased demand for face-to-face interaction, and increased demands for telephone links). They also cite interesting points about the use of the telephone as a help-line for those battling to deal with their computers! "Initially new computer users often want to use a more traditional medium such as the telephone to check whether an electronic message has in fact been received, or to talk about the message, or to apologize for mistakes in the formatting of the message – often simply for reassurance"(17). This would suggest that it is inappropriate to imagine that one medium will necessarily be a substitute for all other forms.

The financial, social and pragmatic realities of a situation may also make the wholesale replacement of one medium with another an impossibility. The printed word as the dominant medium of communication in distance provision in South Africa is set to stay as an essential component, whatever else gets adapted, added or integrated into the system.

Providers need also to acknowledge that placing the entire burden for all aspects of a course on a particular medium may seriously jeopardize that medium's capacity to do any of it with maximum success. (Certainly many classroom teachers feel like this when too wide a range of demands are made, hence the introduction of specialist staff like counselors, librarians and sports coaches). Even quite robust and flexible technologies able to mimic quite a few other media (like computer-based multi-media<sup>12</sup> programmes) may start failing when required to deal with all aspects of effective distance provision. At the other end of the spectrum, however, it could be as damaging to just throw a collection of media into an ill-planned assortment, poorly integrating each component in the package. The key to multi-modal packages is good design and planning so that they all work together in an integrated and effective way (Robinson and Wall 1992:10).

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<sup>12</sup> 'Multi-media' is one of those terms which has been hijacked to refer to one specific technology (that of computer based interactive CD-Roms which usually have some interactive video components). For this reason, I choose to use "mixed-media" to refer to a package of a variety of technologies, one of which may be computer-based interactive or 'multi-media' video.

### **Combining media and learner preferences**

Mention has already been made about the difficulties of matching each learner's preferred learning style with the optimally suited medium but providing a media mix (both technologies and methods of using them) at least means accommodating more of the learners more of the time, and hopefully excluding none all of the time.

Rowntree (1974) suggests that since we have no exact science of who can best learn from what, a pragmatic approach might be "to go for 'media overkill' – hitting an objective with several media in the reasonable expectation that between them they will satisfy all students"(125). The type of deliberate redundancy<sup>13</sup> would need to be carefully managed so as not to waste funds or overburden the students. Redundancy is a widely accepted pedagogic concept, in spite of Romiszowski's complaint (1995) that it has not been extensively tested empirically. At a common sense level, however, most of us need to encounter ideas more than once in order to achieve deep understanding, and if the message is framed in several different ways, so much the better.

Many writers and practitioners suggest that providing a variety of media messages may result in greater effectiveness through the combined modalities <sup>14</sup>. Schaffer (1985) asserts that the combination of technologies produces results that are greater than the sum of the components(27). Research (Fleming 1979, Rowher and Harris 1975) suggests that combining modalities often increases learning (in Hannafin et al 1985:15). Robinson and Wall(1992) report that in their experience in teacher education, students seem to learn best from more than one medium (10). Mason (1994) suggests that a sensitive combination of media, when well integrated and holistically applied, can help to educate the whole person achieving affective, social and cognitive goals(120).

Any medium, however accessible or however appropriate to the particular task, becomes tedious when overused, without recourse to any other media modes. Relieving the monotony is as good a reason as any for shifting to another mode, or technology, or for changing the way in which the medium is used.

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<sup>13</sup> Redundancy refers to the practice of presenting the same information several times through different modalities and usually has a positive connotation in an educational context

<sup>14</sup> Although 'modalities' is sometimes used synonymously (and confusingly) with media, I have taken it to refer to the mode through which a message is communicated such as verbally, visually, aurally, by text and so on.

Mason (1994) suggests that there are three reasons why media are not in competition with each other : students differ in their learning styles, the context of any technological innovation is paramount, and combinations of media are increasingly significant (118). These and the other factors which have been discussed in this section point to the fruitfulness of considering providing a media mix rather than continuing the search for a single best medium.

## **7.2. BEYOND DISTANCE : TO CONVERGENCE**

The divide between distance and face-to-face education has traditionally been accepted as a given by the majority of providers, theorists, students and indeed the general public. The two modes of delivery are seen to inhabit different domains of education, even to the extent of not having very much in common, and requiring completely different understandings, skills and approaches. Some conceptualisations have seen distance education as a "cheaper, more efficient competitor to mainstream education" (Shale and Garrison 1990:27). Yet, earlier sections of this study (section 1.2 in particular) have made mention of the increasing entry of campus-based institutions into types of provision traditionally the domain of distance providers. This activity would seem to be, in the main, a response to increased pressure on campus-based universities and colleges to process more students without increasing costs, staff or 'plant'. Given that these new initiatives have often been entrepreneurial moves driven by economic imperatives, questions have been asked about the quality of the provision and about the educational integrity of those institutions rushing into liaisons with commercial agencies. On the other hand, more cautious or more conservative campus institutions have skirted around of the possibility of broadening their provision to a wider group of non-traditional students, citing a lack of expertise and experience in the new field as good reason for leaving off-campus education to the 'professionals'.

In this section I wish to promote the convergence between traditionally distance and traditionally face-to-face teaching not as a money-making ploy nor as something to be embarked on without careful thought, but as a conceptually creative and theoretically sound solution to some of the issues which have been emerging throughout this dissertation. Chapter 5 began by suggesting a move away from polarisation and 'either/or' approaches and greater attempts to create synergy by combining sometimes contradictory elements. Eastmond (1993) calls on educators to avoid being locked in current practice and "sub-optimal conventional wisdom"(87) and to raise their sights to

optimal solutions and the very best of possible practice. Many writers would currently see this 'best practice' as residing in a dual-mode provision.

At the very least, it seems sensible to encourage dedicated distance providers to borrow some of the aspects of campus-bound teaching and for traditional institutions to access previously 'distance' methods, all in the interests of the best possible educational provision. Instead of face-to-face teachers looking down their noses at the supposedly inferior education offered by distance study, and distance providers spending their time justifying their approaches, a coming together in the face of what are, at their core, common problems and similar challenges, will divert energy into improving higher education. In 1996, Moore predicted that over the next decade education would undergo "a fundamental transformation as teaching and learning at a distance becomes at least as important as the traditional classroom approach that has lasted for more than a century"(in DoE-Quality Standards 1996:33). The time is ripe – conceptually, socially and technologically – for the emergence of a new hybrid – the dual mode institution. Even economics seems to be in favour of this approach : Rumble's 1992 detailed financial analysis of dedicated distance teaching universities and dual mode universities showed that the former cannot compete effectively against the new hybrids who can achieve greater cost-efficiencies (33 in Evans and Nation 1993:212).

The statistics provided by Jenkins in section 1.2 show that world-wide many institutions appear to be enthusiastically embracing convergence. However statistics of activity do not give any indication of approach nor guarantees of quality, and the entry of a campus-based university into 'tele-education' does not necessarily herald the arrival of the conceptually 'dual-mode' institution. In many instances where distributed learning is favoured, (becoming increasingly popular in South Africa, particularly in training) it's a case of what Eastmond (1993) calls a 'more of the same' mentality where the same curriculum, methods and indeed the same talking head is used. On the other hand, some institutions simply run two parallel but different programmes. This is very common in South Africa and elsewhere. Their 'normal' students get everything verbally directly from the professor while the off-campus students get a completely different package, often following qualifications not even offered at the home base. This 'separate development' policy can lead to some bizarre situations : for many years Australian dual-mode institutions were prohibited from providing their on-campus students with the materials distributed to their off-campus students on the grounds of 'fairness' as the on-campus students would then be 'getting it

all'. This resulted in a thriving black market in course materials! One would have thought that giving the students the best possible package of teaching and learning was the prime purpose of a tertiary institution.

Institutions, particularly in South Africa, need to be adopting a genuinely dual mode stance in the interests of quality education (not just because the distance students are demanding face-to-face tutorials or because the campus lecture rooms are getting too crowded). Jenkins (1995) says that the key to 'new' distance education is flexibility, no longer pure physical distance. Perhaps this new hybrid with its mix of distance and campus strategies should be termed 'flexible' learning rather than open, distance or even dual mode.

### **Arguments in favour of convergence**

There is a world-wide trend towards a blurring of the distinctions between the two modes of delivery.

#### **• Theoretical arguments**

Johnston (1993) points out that if distance education's only legitimacy comes from its ability to solve some logistical problems for certain types of students, then it is on very shaky ground. He maintains that there have always been very sound educational reasons for distance education, particularly its fit with theories of adult learning or andragogy as well as facilitating the learner-centred/tutor-facilitated approaches advocated by Carl Rogers (1969) (in Evans and King 1991). Many of these concerns have become priorities for campus-based higher and adult education institutions, and thus provide theoretically sound arguments for the adoption of previously 'distance' approaches by all institutions.

Curriculum reform in South Africa has adopted outcomes-based education (OBE) as the guiding framework across all sectors of education provision, from primary to tertiary and including vocational, professional and industrial training. Here the emphasis is placed on measuring education in terms of what a student has learned, rather than how or where or via what delivery system the learning has been acquired (Perraton 1982). Taken to its logical conclusion, this means no educational distinction should be drawn between dedicated distance, face-to-face or dual-mode (both contact and materials-based) institutions simply on the basis of their preferred mode of delivery.

There is also a growing recognition that both forms of delivery have more in common than has previously been acknowledged, as the two modes have been set up in competition

with meaningless debates about the relative virtues of particular methods of educational provision, with particular delivery methods being equated with good quality and superior status over other delivery methods (DoE–Quality standards 1996). The TELI report hopes that a 'blurring' of the divide will turn educators away from a focus on "the relative merits of particular methods of educational provision to the consideration of the nature of learning and the educational value of a course's structure and content"(DoE-TELI 1996: 277). Peters (1993) suggests that semantically at least, traditional provision and distance provision have always tried to project a similar vision, particularly in higher education. He finds it interesting that many distance programmes have termed their approach 'guided self-study': he says this is clearly an attempt to minimise the distance methods and teaching and learning at a conventional university. "As it is the tacit goal of higher education to produce scholars who work independently, self study has a [similar] tradition. Seen this way, it is not so alien, so frighteningly different from academic tradition"(13). While Peters' other writings make it clear that he personally does not see a natural convergence between distance and campus methods, his point is an interesting one. Higher education is probably the sector where the difference between the modes of provision is least dramatic – one would, however, battle to see a traditional primary school classroom and a distance version of the same as being very similar. A dual-mode hybrid provision at higher education level then should not present insurmountable difficulties.

- **Media and methodology arguments**

Awareness is growing that elements of distance education have almost always existed in face-to-face programmes (very few courses have not made use of textbooks and readings or given students work to complete on their own), while distance educators are increasingly realising the importance of different aspects of face-to-face contact as structural elements of their programmes. (Most quality distance programmes make use of study groups, vacation schools or telephone tutorials). There is general recognition that the most successful programmes adopt a 'multi-pronged attack' approach, rather than relying on a single educational strategy, whether that be print-only distance provision or endless teacher-talk at a face-to-face institute.

A conceptual shift has also emerged where instead of seeing the two modes of delivery as uniquely different, education is seen as existing on a continuum with two imaginary (and largely impractical) poles, exclusively face-to-face and exclusively distance provision. All educational programmes exist along the continuum with contact strategies and distance



self-study methods being used in varying degrees (DoE–Quality standards: 1996). Perraton (1982) suggests that 'true' distance education (which in his view means well structured, using a variety of media, and providing for feedback) differs from both the orthodox teacher-talk school and the simple distribution of educational materials, and would thus be found in the middle of the continuum anyway, rather than at one extreme. From this perspective the differences between a distance provider making extensive use of contact sessions and a residential provider providing substantial materials support, would be one of emphasis, rather than substance.

Evans and Nations (1993) provide an interesting argument for seeing distance and face-to-face education as being much closer than has traditionally been the case, by pointing out that the traditional divide is fuelled by a very limited understanding of 'technology' (seeing it as the machines or telecommunications equipment). "Too often it seems especially with the advent of the 'new' communications technologies, people understand technology as if it were a recent addition to education and/or separate from it"(196). If **all** learning is mediated, and if technologies include the teacher, writing, the classroom environment, the social context and so on, as Evans and Nations have suggested, then educational technologies sit at the heart of **all** educational transactions, regardless of whether they occur on campus or off.

Traditionally, because distance education has been seen as second best, much energy has gone into replicating the assumed 'optimum' method, that of classroom or lecturehall teaching. This has manifested itself in beamed-out lectures or, more commonly in South Africa, in text materials resembling a verbatim transcript of the lecturer's notes. In other words, the teacher is taken to the learner, given that the learner can't come to the teacher. Eastmond (1993) suggests that in a new vision of independent learning, the learner is transported to a "new site where learning can occur"(88). This makes the learning experience not a compromised version of the 'real' thing, but an entirely new animal, which makes possible learning experiences and structures not previously accessible to either campus-based students or distance learners.

This move towards convergence has received great impetus as a result of technological advances, particularly in communications and information technologies, which have begun to make the notion of 'distance' difficult to interpret while opening a number of new approaches towards educational provision which are both pedagogically sound and

financially viable (DoE–Quality standards 1996). Theoretically, distance education has been traditionally defined as education where a significant proportion of the teaching is conducted by somebody removed in time and space from the learner (Perraton 1982). However, communications technologies such as electronic conferencing, new to both distance and contact provision, create a 'virtual' space, which is not quite 'distance' as understood in asynchronous correspondence education and yet, while being 'face-to-face', is not 'real' contact either as exemplified by a conventional lecture. Such technologies have application in both modes of delivery, thus rendering sharp divisions difficult to sustain.

On the other hand, growing numbers of students on campuses, as well as the increasing complexity of course combination, cross-accreditations and credit-point systems have led to a breakdown of the traditional notion of a homogenous cohort of students all pursuing the same subjects and who can be reached by such interpersonal devices as notices on boards, notes popped into pigeonholes or open door policies for seeing lecturers. Many campuses make extensive use of postal systems, emails and computer generated mailings to reach their students while lecturers faced with classes of several thousand cope by making themselves completely inaccessible 'in the flesh' to individual students.

#### •Convergence and post-modernism

Perhaps one reason why distance education no longer seems so alien to many people is because the approach reflects other aspects of end-of-20<sup>th</sup> century living. Evans and Nations (1993) suggest that distance learning has emerged as a powerful example of what Giddens (1991) terms 'high modernity'(4). In high modernity, they explain, "the influence of distance happenings on proximate events and on the self becomes more and more commonplace" (Evans and Nation 1993:212) with the role of the printed and electronic media in mediating this experience being significant. Distance education characterises this process in that those involved operate at a spatial and temporal distance, and in that it is mediated through a variety of technologies. Keegan (1988) sees as central to distance education the separation of the teaching and learning acts, where the intersubjectivity of teacher and learning is fragmented (in Schlosser and Anderson 1994). "The essential reciprocity of the teaching act ..is shattered by the nature of distance education and has to be artificially created"(in Woodbridge and Le Roux 1996). Keegan views this negatively, but for many of us, given that mass communications systems have blurred the boundaries between individual self-development and global social systems, we no longer feel

particularly alienated by the "dispersed array"(4) of teaching and learning events found in distance education. Many aspects of our lives – banking, shopping, news, even romance – now unfold through some kind of mediation, usually electronic. In some ways, learning at a distance feels more comfortable than the very particular type of interpersonal relations required by a lecturer-student interchange.

### **Resistance to Convergence**

Nevertheless, the notion of convergence has not met with universal support.

Peters (1993) in developing his industrial model of distance education was adamant about the complete and profound differences between distance and conventional provision. These differences were not, he said, merely structural but could be seen in the conceptualisation, planning, designing delivery and evaluation of instruction, and particularly in the teaching and learning process.

*"It builds up entirely new administrative systems of teaching and learning, it attracts a new clientele and develops a new type of adult student. It changes the rason d'être of tertiary education by including and stressing continuing and lifelong learning. It experiments with an entirely new organisational set-up for teaching and learning by the use of a great number of technical media" (Peters 1993:23).*

Many providers from both sides of the 'divide' would disagree with the terms of Peters' argument : this dissertation has shown how many providers do not in fact use a 'great number of technical media', often deploying only one. Campus institutions, too, would resist the notion that only distance providers are interested in adult and lifelong learners – these concepts have system-wide appropriateness and should not be restricted to one particular sector. Keegan (1986) asserts that distance education has a different theoretical basis from campus-based instruction because, he says, the latter is premised on "interpersonal communication, and oral, group-based education"(in Schlosser and Anderson 1994:116). At various points in this dissertation the point has been made that conventional universities are being forced through economics and size to abandon (in practice, even if not openly acknowledged) the interpersonal aspects of their role, while the oral transmission of knowledge has been criticised as ineffective for many purposes. As both 'sides' broaden their understandings to accommodate changing social and economic realities, the differences between them seem to be increasingly out-dated and no longer relevant. Jacobs (1996) warns that those who persist in seeing distance education as a

philosophy rather than as a pragmatic response to a particular educational reality will be resistant to any form of integration.

Sewart (1982) argues vehemently that it has always been wrong to see distance education as a discrete genre (82) and that while this may be an administratively useful designation, there is nothing uniquely associated with distance education which changes the essence of the educational transaction (in Garrison 1989). Distance education is a species of education characterised by one structural characteristic – the non-contiguity of teacher and student – and Garrison goes on to warn that differences in emphasis or degree should not be elevated to difference in kind(8).

This of course applies equally to those traditional academics who place an inherent value on the methods used in campus-based instruction. Perraton (1982) points out that oral instruction achieved popularity in the days before the invention of the printing press when a teacher was cheaper than a laboriously hand written book(3), rather than being selected as a particularly efficacious means of educating, a reputation which has been entrenched since then. Conventional educationists are also prone to

*'academic suspicion of (distance education's) 'industrial' nature, and academic mystification in the face of an education they see trimmed with a baffling array of technology. And the idea of an open admissions policy and flexible learning smacks too much of the rabble shaking the hallowed doors of the academy'(Gultig 1992: 1).*

By the same token, dedicated distance providers, having fought so long for the legitimacy of their field may be reluctant to share their 'turf' with traditional academics, particularly given the suspicions with which the motives of many new providers are viewed. Even where there is a move on the part of a previously largely correspondence provider, such as UNISA or Technikon SA, the shifts are not always easy. Any changes may merely be window dressing, a very simplistic borrowing of 'the other side's' methods as is exemplified by an article purporting to describe UNISA's attempts to become more learner centred and to engage in interaction with its previously 'faceless' learners : the article is headed "UNISA gives students a place to study"(Ngengubule 1995:6). While providing a few study centres may be a positive step, it can scarcely be called 'convergence'. A much more profound intermarriage is needed. "A learner-centred focus demands not only revision of course material and support to learners but an entirely new understanding of the role and function of present staff members"(Davids 1996:6). This will require "great conceptual and

organisational transformations for them to undertake [education] on a different model and based on different principles"(SAIDE-Audit 1996: xxiii). I believe however that it is not necessarily the distance/campus divide which requires the greatest adjustments but the traditionalist/active learner shift which will be most challenging for all academics, whether they spend their time writing materials or giving lectures.

Any genuine convergence will also require a narrowing of the gap between those who see their role as educationalists and those who define themselves by the technologies they use.

Inglis (1995) points out that "dialogue in the sense of shared meanings is as important for the type of learning that takes place between the different professionals sharing the same domain of action as it is for teachers and learners "(367). In other words, all types of education providers need to be able to converse with each other easily and without territorial agendas. The need for this along with the difficulties associated with the process have been spelled out in section 5.6. Only when this type of dialogue is achieved will shared meanings and common understandings lead to common purposes and a more consistent vision for quality education.

A synergistic combination of both distance and contact approaches has perhaps been made possible by shifts occurring in traditional higher education, as described already in section 6.1 but also by a changing vision of distance education. This will be discussed in the next sections.

### **Changes in distance provision : niche markets**

Jenkins (1995) provides a useful analysis of the entry of traditional institutions into distance provision which reveals something of the changing nature of education at a distance world-wide. She says that at first sight the emphasis of this new phenomenon seems to be about growth – more institutions offering more distance learning to attract more students- but that closer examination reveals a different picture.

*"Many of the new distance learning programmes are intended for small numbers of students. They are tailored to highly specific needs – those of ethnic or linguistic minorities, of people in sparsely populated areas or with specialist career requirements.*

*The focus in much new distance education is on access rather than simple growth"(428).*

The notion of 'distance' has shifted from that of separation by time and space to that of time alone. Many students live close to the institution with whom they are registered but prefer for reasons of flexibility and independence to study in a mediated way (Jenkins 1995:428).

The entry of traditional institutions into what might be called 'niche market' distance provision takes on further appropriateness when viewed in the light of newer communications media and the desire of many providers to facilitate genuine interaction, deep learning and active engagement by the learners, which are certainly easier to achieve with smaller numbers of specifically motivated learners. These aspirations are not as easily met by the megalithic industrial-model Open University-type institutions. Discussion has already been held in this study about the problems highly mechanised production-line models of distance education have adjusting to the challenges of new trends in higher education such as the negotiation of meaning and constructivist approaches. Telecommunications such as email conferencing and small group video conferencing do not lend themselves to mass provision but are particularly suited to targeted groups. Bates (1991) and others have raised the possibility of new entrants to the rapidly expanding distance market (whether new nations or new institutions) leapfrogging over the industrial model –phase (which Nipper termed "second generation' distance education) and moving straight into 'systems designed to exploit the new information technologies"(12). The problem is that many of these new providers have not leapfrogged over the traditionalist approach which often underpins industrial-type provision, with the result of media which facilitate active learning through two-way communication are put to more traditional information dissemination roles. There needs to be a congruency between the conceptual model held and the technologies chosen to implement that, a point made elsewhere in this dissertation.

### **Changes in distance provision : mainstreaming**

Distance education has long laboured under the stigma of being second chance – and often second choice - education, a parallel to the 'real' education system necessitated by various pragmatic factors such as cost or convenience. This status, however, is changing towards distance education "becoming part of the formal fabric of teaching and learning" (Jenkins 1995:428). Jenkins goes even further in asserting that while providing education for large numbers and for those excluded from the system will remain part of distance provision's ambit, "a further function emerges strongly – that of helping to maintain quality in a time of rapid change"(428). This is echoed by the Quality Standards document (1996) which asserts that distance provision is being viewed less and less as a separate and inferior form of education and "more as a catalyst for transforming the nature of education"(33).

Few would claim that current educational systems are producing satisfactory results for the required number of people, either in initial or continuing education and training. Educators from all sides of the provision table are looking at the ways in which [technology-enhanced learning] might improve existing educational provision so as to better meet society's needs (Mason and Kaye 1989: 20). Some distance providers have managed to offer quality education without recourse to the traditional advantages of face-to-face contact, thus they surely have something to offer campus-based providers, faced with the diminishing amount of personal interaction between lecturer and masses of students. Interaction has become the new buzzword in higher education, both in distance and campus provision and attention is being focused on any strategies that can facilitate this.

Robinson and Wall (1992) remind us that "distance education is no different from conventional education in at least one respect: it can be of high or low quality" (2). Neither distance provision nor contact residential provision has escaped the questioning of the quality and value of that provision. The first sections of this study focused on the criticisms which have been aired about distance education, particularly in South Africa but increasingly, educational debate has cast doubt on the value of traditional, face-to-face education (DoE-Quality standards 1996:33) particularly in the light of massification and a focus on income generating skills. The traditional view of residential higher education as a personal interchange between master and disciple is being rejected as a myth in the light of massive classes heavily dependent on passive lecturing. Institutions previously reliant on contact sessions with a talking teacher are looking beyond a traditional repertoire of methods in order to answer charges of irrelevance and ineffectiveness.

While excellent distance provision in some countries and by some institutions has added weight to these pressures and has acted as a catalyst for educational change, in many instances (as is the case in South Africa) distance provision justifies the charges of 'cheap and nasty' second rate education, being too heavily reliant on poorly designed print materials which encourage rote learning, with no provision of support for students who are essentially left to get on with it as best they can.

Both traditional campus-based provision and distance provision then are facing a similar situation of increasing demands for accountability and quality assurance. Section 1.3. focused on the worrying results of quality surveys in South African distance education : there has never been a similar exercise carried out on face to-face institutions in our local

context but there are indications that equally worrying trends would emerge about some sectors of the market. While a perusal of the newspapers will show that many of these concerns would centre around dysfunctional administrative systems, corrupt or inept management and destructively volatile political tensions, even the most efficient of our higher education institutions might struggle to satisfy criticisms of the quality of their educational processes. There is increasing pressure from government for face-to-face institutions to provide an accounting of their activities but quality assurance units and mechanisms are still struggling for a foothold and are usually significantly under-resourced.

In defending distance education Gultig (1992) points out that

*"most face-to-face tuition is driven by tradition and history rather than any deep thinking about the learning process, In our residential institutions the lecture, the essay, the tutorial and research are equally thoughtlessly applied to all teaching and learning situations. We implicitly believe that students learn by osmosis , thus the need for our presence"(1).*

Thompson (1995) points out that a number of myths about tertiary education have gained credibility because they represent what we would like it to be like, rather than the reality. For example, he points out that in most tutorials, tutor discourse is privileged and powerful and is often more monologue than dialogue, that tutors often themselves battle with grasping the concepts of the course or of defending a course of study which is seriously flawed or outdated. Students too are often reticent and inarticulate and opt for varieties of pretence and concealment. They are concerned not with the theoretical and conceptual underpinnings of the discipline but with survival in the course and the next assignment (472). Kemmis (1991) says we have idealised pictures of face-to-face teaching - our vision of a subtle, complex and sophisticated human interaction with the wise tutor nodding encouragingly while the student is allowed to struggle with issues until brilliant insights are gained, is a rare phenomenon indeed. "Most of the time it's a bit of a power trip in which the tutor is flogging the students along, most of them pretty alienated and discontented"(in Thompson 1995 :472).

Apart from facing criticism for its practice, traditional higher education institutions also face criticism on the grounds that their reliance on the speaking teacher automatically means that tertiary study will remain expensive (and thus elitist) as the number of speaking



teachers must rise lock-step as the numbers of students rise. (Unfortunately, the alternative scenario more often happens: the elitist ideology remains the same but the numbers of students in the lecture hall rises). "The gap between image and reality has widened"(Swift 1992:16). He regards distance education's ability to break this teacher-student ratio as "surely the most potent tool in radical change"(16). A deep understanding of convergence requires a move away from the implicit belief that higher education is critically dependent on face-to-face tuition(Perry in Neil 1979). If comparative media research showed that no individual medium was causal for all types of learning, then surely the same applies to the talking teacher? There is also the evidence of millions of students who have successfully learned certain things from non-teacher based methods. These should all point to traditional education relinquishing its grip on teacher-led instruction as a necessary pre-requisite for all learning. Conversely, this does not necessarily mean the abandonment of personal contact in education nor the neglect of the teaching function, as some have feared.

Mason (1994) shows how methods and media more closely associated with distance provision can contribute to quality in dual-mode and campus-based courses by citing the example of interactivity. One of the most enduring myths about interactivity, he argues, is that face-to-face education is "a hotbed of intellectual discussion both in and out of the classroom"(38). As most tertiary institutions experience increasing pressures of student numbers, research and consultancy contract pressures, and structural change pressures, the amount of time and energy left for student/teacher interaction is very small. Mason (1994) echoes Jenkins' points about distance methods' role in maintaining quality when he says, "ironically telecommunications courses may come to be the leader in interactivity in education and training "(31). He quotes a Task Force Report (1993) as saying

*"the most advanced distance education programmes can provide students with far greater involvement in the process of learning and allow them the exercise of far greater control over the process than is possible in many traditional learning environments. Substantial teacher/student interaction, for many years a perceived weakness of distance education programmes is rapidly becoming an asset of the method while it grows as a liability in many of our traditional classrooms "(in Mason 1994:30).*

Johnston (1993) points out how the easy transmission of the knowledge base through materials of other technological means can free up the contact tutor for a more appropriate role, that of "helping the students interpret, apply and evaluate theory in their individual settings"(71 in Evans and King 1991).

This section has focused on the question marks around much of what a traditional campus-based institution offers. This of course needs to be held up against equally significant question marks about certain manifestations of distance education. The point which then emerges is that in times of increasing accountability, and increasing demands, a pooling of resources – in this case, a pooling of best practice- could result in a new, improved version of higher education with as few as possible of the weaknesses of distance or lecture led education, and as many of the strengths each brings.

## CONCLUSION

*"Internationally, a number of movements for the improvement of teaching and learning in education are converging. The notion of guided self-study is as important to reformers of face-to-face teaching as well-functioning distance education is to providers of distance education. So too is the conviction that all institutions of [higher] education should give much more attention to the nature of their curricula, the design of courses of study, the quality of their teaching and the opportunities they provide for students to take control of their own learning"(SAIDE–Audit 1996: 97).*

Thus distance and contact provision can be seen as converging on a point of pedagogy: that of seeking to shift the focus from teaching to learning. The SAIDE Audit (1996) stresses that the impetus driving the reform of both distance and conventional education is that of educational principle, a point that has been made at several stages in this dissertation. "From both sides of the street as it were, [educators] have been reaching very similar conclusions and the educational principles being affirmed are the same"(50).

Whether the strategy used is resource based learning, co-operative learning, peer led tutorials, computer-aided instruction, problem based learning, Internet user-groups or guided self-study (all of which have applications in both modes of delivery and in all types of institutions), the objective is to "design learning sequences that will require students to participate actively in their own learning and increasingly to control it"(SAIDE –Audit 1996). In spite of educationists' predilections for traditionalist approaches, Evans and Nation (1993) believe it is possible to "rescue educational technology from instructional industrialism and renovate it as a central concept in the reforms of education which are aimed at sustaining dialogue and democracy" (198), an issue of primary concern for South African education in particular.

That the talking teacher is a necessary link between teaching and all types of learning is disputed (SAIDE-Audit 1996 :50) with a far wider range of mediating tools being used to make knowledge accessible for the learner, and for creating spaces where the learner can become an active agent in the development of personally constructed understandings. There is no pre-supposition of 'allowed' methods or media, but an openness to all forms of mediation, balanced on the one hand by a deep understanding of the educational principles and goals aspired to, and on the other hand, a broad knowledge of the capabilities of the various technologies. Thus educational providers when constructing courses should be encouraged to choose from a wide variety of strategies (regardless of whether their traditional 'home' has been face-to-face or distance) those methods which are most appropriate for the context in which they will be providing effective learning opportunities (DoE-TELI 1996:277). No one method of educational provision is intrinsically better than another: the appropriateness of the selection of a particular method or combination of methods is determined entirely by the educational needs they are intended to fulfil (DoE – Quality standards 1996 :88). A synergistic approach would allow all providers to "concentrate on what the best practice from each mode can contribute to effective teaching and learning for all students"(SAIDE-Audit 1996: 97).

At the core of the convergence movement, and at the heart of this dissertation, is a focus on learning and how it can be made to happen (SAIDE –Audit 1996). This understanding needs to arise out of an awareness of the interplay and interfaces between broad social and systemic change, curricula and pedagogic imperatives, learner needs and attitudes, and technological capability. Seligman (1992) sums up the approaches needed for more effective media choice:

*"we must be clear about what we need to do, and how we intend to do it. We need proactive rather than reactive thinking. The new technologies are tools that we need to use sensibly to suit our purposes. There is a vast pool of experience available and it is not necessary to repeat the errors of the past"(13).*

This study has focused on an exploration of the issues which underpin the process of media choice. What is needed is for decision makers – whether as individuals or in collective teams- to have a knowledge of the strengths and limitations of particular technologies and the technical and design requirements for their optimum implementation, coupled with an understanding of the ways in which these media can contribute to supporting the kind of

teaching and learning processes desired. Evans and Nation (1993) describe this as requiring "a breadth of vision both practically and theoretically"(212), and certainly this approach challenges many of our previous practices as providers. It is my belief, however, that it is down this road that quality education is to be found.

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