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The potential use of television for education in the south african context

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skills, knowledge and attitudes which will enable learners to take charge of their own lives and set them free to learn further" (Howes, 1979, p 164). Applicable both within and without the formal system, basic education has been further defined by Phillips (1975) as "literary, numeracy, adequate verbal expression and some knowledge of the physical and social environment, and of health and nutrition, learned by methods which arouse curiosity, develop self-reliance and encourage physical and mental adaptability."

- From the need to study afresh the relationship between education and the world of work has come the concept of relevant education. However, it is important to note that relevance has important connotations for the learner other than the economics. Man is more than a worker and has needs for his life which go beyond earning a living.
- Another influential principle in current educational thinking is that of *integration*, which has three main applications - "the firt, the integration which has three main applications - "the first, the integration of all the educational influences brought to bear upon one is emphasising the necessity of planning education as a series of interlocking units, with each part of the programme fitting exactly and consistently with the others to form a single coherent whole" (Turner, 1983, p54).

- Because of the relationship of demographic trends to economic stringency, it is necessary that education should become both cheaper and more efficient, by an emphasis on the utilisation of more effective teaching methodologies and "matching the media to the message."
- Finally, in this brief survey, quality in education will be achieved only by an improvement in the quality of the teacher - in his competence, confidence and commitment: "if a new spirit and approach is to be achieved in education, urgent and immediate attention should be given to the position of the teacher: his academic background, his professional training, his further development during his teaching career, the conditions under which he works, the salary he is paid, the status he has in the society which he serves." (Hartshorne, 1981, p 49).[23]

Harrison (1981) also advocates the concepts of lifelong and de-institutionalised education and states the case for informal education as follows:

"...The blinkers of formal, Western-style schooling are beginning to fall away. As the International Commission on the Development of Education reported in its 1972 report *Learning To Be*, education does not have to be limited to the young, with rigid entry and exit ages that condemn people who miss them to lifelong ignorance. It does not have the set pattern of primary, secondary and

higher education, with highly competitive selective barriers at each stage and exams acting like Saint Peter at the Gates of Heaven. It does not even have to take place in schools. Formal schooling is expensive. It cannot in the poorest countries, with low enrolment ratios and small budgets, promise education for all within any acceptable time-scale. It cannot reach those who are not in school or adults who have never attended school, yet these groups need education too, if they and their communities are to develop."[24]

Having accepted the interrelationship between ETV and overall education and development - its implications for society as a whole, educators using this medium should ask the following simple questions:

(1) who are the individuals most in need of education?

(2) what kind of education do they require? (that is, literacy/numeracy, agricultural information etc)

(3) is ETV suitable channel to provide the required information?

In answering these questions Harrison (1981) states that everyone (particularly in Third World situations) needs education - not only those who are unschooled but the many who have spent a few years at school but who lacked the time or money to continue and who therefore picked up little of value, and who perhaps never came to terms with the simplest principles of reading, writing and arithmetic.

In addition to this (as Harthorne (1985) suggests), those planning alternatives like ETV should take a hard look at the content of education by "relating it to its practical function in the real lives of recipients."[25] Returning to Freire and relating this concept to his proposals, in relating to the disadvantaged individual's needs, the task of education (and ETV) would be to conscientize the individual, to teach him to analyse his situation making it possible for him to realize his poential for changing it. Freire bases this on the firm belief that literacy should be taught by way of awakening the "critical consciousness" of the disadvantaged individual. In practical terms, the process of learning to read and write possibly using ETV would revolve around the needs, objects, images and words familiar to the receivers that could be used immediately to improve living standards.

Some of the guiding principles of Freire's approach, particularly those concerned with practical relevance, have been applied in literacy programmes including the sixteen-nation *Experimental World Literacy Programme* masterminded by UNESCO. According to Harrison, each project was linked with some more specific development task. In India, for example, farmers were taught literacy alongside methods of cultivation to be used with high-yielding seed varieties.

The de-institutionalization of education obviously has implications for educational broadcasting and ETV since an overemphasis on institutions and "academic" education is linked not only with status and employment opportunity but with the negative features of Western norms and culture. ETV has a significant potential role in making

education more utilitarian de-institutionizing it and in helping to meet basic educational needs by making education more accessible.

11.1.7 The Preservation of Tradition

Any alternative to Western-style education which uses ETV should include to preservation of and a respect for tradition. What Katz and Wedell (1978) suggest is an "institute for the translation of tradition."[26] The members of such an organization would:

> "...give serious thought to traditional forms and content on the one hand, and to the language of the media on the other. Experts in the tradition, scholars and researchers, could sit together with producers and directors in an effort to find the solutions to the problem of domesticating the broadcast media. "What is needed is not programmes ABOUT tradition, but a series of creative acts that will take the mood or the style of a culture and translate it into broadcasting terms...Obviously the answer is not to be found ready-made in the traditional sources, but in a creative welding of the old and the new."[27]

The educational value and credibility of the broadcasting media will be enhanced if planners actively encourage receiver participation in the planning of broadcasting.

11.2 Specific Alternatives

In discussing ETV in the South African context this author has suggested that its potential is entirely dependent upon

- contextual constraints and past experience
- its use for those most in need of basic education (pre-schoolers and deprived adults) and teacher training.

These features have been analysed and general alternatives suggested. This part of the chapter will deal with practical alternatives specifically related to the use of ETV in the South African situation. Since this is obviously an exceptionally broad and complex area of research, alternatives will be suggested which this author believes are the most basic and crucial areas which must be changed before the potential of ETV for the purposes already suggested, can be realised and which are within the scope of this dissertation. These areas are:

- Evaluation and Research
- Forms of Governance and the Degree of Autonomy[28] of the Educational Broadcasting Organisation
- The Potential of Satellites for ETV in South Africa

11.2.1 Evaluation and Research

A new orientation of ETV will be largely negated if alternatives are not based upon research into the real needs of the receivers and their reactions to ETV programmes. To achieve the potential of ETV educationists, developers and broadcasters will be required to keep close to the requirements and habits of their audiences, and have a comprehensive knowledge of their culture and values. Also, the broadcasting organization in particular has to assess its own performance. The achievement of the task can be divided,

loosely into three stages:

- the planning stage which includes analysis of the learning task and a statement of objectives.
- the methods and means stage - reviewing objectives.
- evaluation and feedback.

11.2.1.1 The Planning Stage

Using a systems approach the task of analysing at this stage can be described as the process of "...breaking down of a whole into its parts, showing the relationship of the parts to each other and to the whole itself, retaining a meaningful relations of the parts to each other and to the greater whole."[29] In general terms this implies that when educational television is planned for use, one has to be absolutely certain of the problems it is meant to assist in the broadest possible context. If one uses the (admittedly idealistic) systems approach the sequence of events involved in the planning stage has been suggested as follows:

"(a) An examination of educational needs, in the context of overall social development.

(b) Translating these into educational objectives, in such a way that they can be reflected in systems design, and ranking those in priority order.

(c) Assessing the contribution which media can make towards their realisation, and establishing the relationship of media to other innovating forces.

(d) Measuring the assessment realistically against prevailing conditions to determine at what point the system is likely to fail or develop inertia.

(e) Elaborating the above into a detailed project design."[30]

Obviously each of these categories implies several levels of activity and varying degrees of organizational complexity.

As a practical illustration of the feasibility of this approach a lengthy extract from the Pre-Investment Study of Educational Mass Media for Thailand (by Unesco) is quoted in Appendix 3. According to Hancock (1977) the purpose of this study was to plan the coherent development of educational mass media at the national level. It took seven months to complete and was carried out by approximately 25 consultants.

The extract will be reproduced at length in the appendix because the procedures used clearly illustrate a viable method of identifying educational objectives. The extract includes an analysis of the following:

> "In the first review stages, the character of the educational system has to be assessed, to see what shifts of emphasis have occurred over the years, where priorities lie and in particular where there are gaps between theory and performance. It was significant, for example, in this study to find that while formally expressed objectives changed, curricula materials did not, this is the kind of discovery which is important to media planning. The weight of hidden or implicit objectives (such as parental assumptions and aspirations) is also significant.....The success of the instructional programme depends largely

upon its realism in estimating such factors as teacher or student interest, motivation and capacity to change.

The report went on to distinguish, separately and in detail, between the objectives of education in formal and non-formal settings, and to try to identify the priority interests of all of the groups involved (political, educational, parental, etc). At each stage, it also tried to distinguish between those objectives which were clearly expressed and could be measured in some way, and those which were too loosely framed to be more than a subjective guide to the planner...."[31]

The extract in Appendix 3 should be examined critically as a point of departure for a systems approach to the "Planning Stage" of ETV. It should be read together with the case studies and in the light of the criticism of this author of the "modernization" approach to education and ETV.

See Appendix 3[32]

11.2.1.2 The Methods and Means Stage - Reviewing Objectives[33]

This stage involves the decision of how best to achieve desired objectives including methods of reviewing those objectives. There are obviously many different ways of making decisions about objectives as certain case studies illustrate. For example ETV organizations in the Ivory Coast and Maranhão, Brazil "appear to proceed on Ministry directives from time to time, without any clear indication of how

these directives are decided and with no apparent involvement of outside agencies."[34] Clearly directives of this sort are political in nature reflecting either a political decision about national education policy or that of a senior political figure. Methods of reviewing objectives are, therefore often based on politically determined education policy rather than "needs determined" educational policy.

Reviewing objectives is, clearly, an extremely complex operation involving several levels. Hawkridge and Robinson (1982) distinguish between to main levels which they label (i) the review of general and strategic objectives and (ii) the review of particular and operational objectives.

(i) General ategic Objectives

Accordin authors, these will certainly include

"(1) The total volume of ongoing commitment, for example, whether the system as a whole is to be expanded or contracted or continued at approximately the same volume of operation;

(2) the comparative volume of commitment to different areas of need, for example to primary, secondary and continuing education, to in-school and out-of-school uses, to formal and to non-formal educational purposes, to already provided for and to disadvantaged section of

the community;

(3) the choice of major areas of curricular need, for example, language and literacy development, numeracy and mathematics, arts and sciences, professional and technical qualifications, family and social development, personal enrichment and cultural enlightenment;

(4) the extent of provision of associated learning materials, for example teachers' guides, students' textbooks, integrated multi-media materials;

(5) the degree of involvement of the system with its users and with various channels of feedback; and

(6) the extent of planned collaboration with other agencies working in the educational field."[35]

(ii) Particular and Operational Objectives

These will include:

"(1) the definition of specific social and educational groups to be served in the community, within the terms of the systems' general objectives;

(2) the main purposes to be served in the attempt to reach these social groups;

(3) the choice of subject specialisms and levels of priority provision, within their defined areas of need and interest;

(4) the choice of appropriate production styles, in order to reach the social groups selected;

(5) the choice of formative and/or summative evaluation methods in the development of the selected provision;

(6) the extent of direct communication with the users and the uses made of that communication;

(7) the extent and choice of associated learning materials for particular projects and the responsibility for their production."[36]

As with the general and strategic objectives, the methods of reviewing particular and operational objectives differ vastly from one project to the next. After examining various case histories on educational broadcasting Hawkridge and Robinson suggest that four basic questions used to be asked and applied to both levels in different ways. Each of these will be stated and explained briefly since they are directly relevant to the process of reviewing the objectives of ETV in South Africa:

(1) "How well equipped are the system's full-time staff, in terms of the breadth of their professional experience and expertise, to

contribute in a major way to the review of the systems' objectives and what scope are they given to make that contribution?"[37]

It is obviously more common to find full-time staff more involved with and concerned about operational objectives than general policy objectives. At one extreme one finds broadcasting organizations accepting general policy objectives almost entirely from external academic consultants giving operational staff exclusive right of operational implementation.

As opposed to this approach (which Hawkridge and Robinson suggest, leads to either boring or "gimmicky" programming), then systems which have full-time curriculum desid researchers on their staff can afford to involve their full-time staff in general policy decisions. CTW functions very successfully using this system. Even larger more complmmicky" ex systems like SITE and the *Open University* in Britain involve their staff in general policy objectives.

> "SITE is an example of a very large project which has devised procedures to involve staff in general policy recommendations, and the same is certainly true of virtually all of the 'Open University' systems which have developed in recent years in so many countries. The Open University has a Senate on which all its academic staff serve together with representatives from research and broadcasting, and which shares the responsibility for general policy with the University Council. The Open Universities in the Islamic Republic of Iran, Pakistan and Venezuela have less extensive staff involvement, but all make provision

for staff consultation. And Telekolleg in the Federal Republic of Germany makes similar provision for staff participation.

Among long-established broadcasting orgainsations it is common to find regular contact between senior production staff and so-called "advisory bodies" on matters of general policy. Indeed, it is possible, if one looks hard enough, to find senior staff appointed to their positions for the very reason that their ideas coincide with those of the "advisory bodies", especially if the latter are government related.

It is interesting to note that in many countries (Belgium, France, West Germany, the Netherlands, and the United Kingdom) policy decisions to devote more broadcasting resources to various disadvantaged groups are often devised from the pressures of broadcasting staff within the organizations as well as outside agency representatives.

(2) "What scope does the system allow for the participation of directly interested external bodies, at both levels of reviewing objectives and particularly those bodies that represent the users?"[38]
In asking this question of any system one would expect its answer to be related to that of the first question since it is reasonable to assume that a system with full-time research, curriculum and production staff, will be less likely to involve or consult external bodies (unless it is directly responsible to that "external body". Conversely, a system consisting of production staff only will need

the advice of external bodies more urgently. What is important here is that these methods of educational advice should be complementary and not mutually exclusive. The system which expects to make real educational impact is one which should employ a wide range of specialists to develop "creative dialogues with other educational agencies."

As with the previous system, there will be a slight difference in the approach of small and large broadcasting organizations to this matter. Small organizations (like CTW) can approach collaboration with outside bodies in both a highly formal and an informal manner. However, larger organizations will have to use a formal approach or run the risk of external consultants being unrepresentative. Examples of this approach include the formally constituted bodies appointed by the BBC and the Independent Broadcasting Authority in the United Kingdom, by U R in Sweden, by Darmarks radio in Denmark, by Netherlands Anroep Stichting (NOS) in the Netherlands, by many public broadcasting stations in the United States, by the Australian Broadcasting Corporation and by NHK in Japan. Hawkridge and Robinson make the following interesting observation:

> "The range of interests represented on these bodies is remarkably similar in all these countries, including usually the government or state department of education, the professional bodies of teachers or adult tutors, the major and educational centres with a special interest in the new media...."[39]

Of particular importance in South Africa would be the participation

of non-government related educational associations (and perhaps individuals) and a realization that the approval of teachers of ETV programmes is, perhaps, not the most important mark of legitimacy for educational broadcasting. This submission is made in light of the current suspicion and rejection of government educational policy.

(3) "What reasons does the system allocate to the systematic collection of feedback evidence and what attention does it give to the evidence in the review of its objectives?"[40]

Here the distinction is made between systems that collect and use evidence and those that collect evidence but make little use of it to change or readjust objectives. There are also instances in which evidence is carefully locked away in desk drawers so that it cannot be used!

Once again, as CTW illustrates, it is much easier for a smaller organization (with project teams consisting of curriculum designers, researchers, producers, etc) to make use of feedback. On the other hand it is much more difficult to assess the effectiveness of feedback use in much larger and more complex operations. Each system would have to be examined individually, but it is worth noting that in West Germany, for example, there are four well staffed and experienced centres of distance learning research.

Overall, the most important point to make is that, even though the relationship between feedback and ongoing production is an extremely

complex one, it is one that needs very careful and thorough consideration by any ETV system.

(4) "How successful is the system in demonstrating that its objectives are regularly and systematically reviewed, at all levels, without allowing those reviews to become overformalised and bureaucratic?"[41] This question deals with the matter of making planning procedures public. As Hawkridge and Robinson state:

> "The review of objectives, like the administration of justice, not only needs to be done, but needs to be *seen* to be done. There are many systems that no doubt give careful consideration both to their general policy and to their operational objectives, but are still suspected of pursuing self-interested purposes because their planning procedures are not made public."[42]

What this implies is, essentialy, a public relations exercise. Hawkridge and Robinson stress this is a necessity that has been learnt from experience by long-established broadcasting organizations "which readily gain the reputation of operating from electronic ivory towers."[43] It is for this reason that many of these organizations have learnt to "describe their planning procedures in detail and to invite comment on these procedures, particularly from educational organizers and teachers, whom they wish to see as their natural allies. A failure in this relationship has probably caused more shortcomings in the use of educational broadcasting than any other single factor."[44]

Educational broadcasting systems which are run by Education Ministries or which are dependent upon their approval appear to be less aware of the need, tending towards the anonymous civil service tradition. Public explanations are minimal or entirely absent with decisions appearing to be arbitrary and/or unaccountable. It is this imposition of decisions and educational practices which appears to characterise both education and broadcasting in South Africa (particularly news and educational broadcasting). The methods used by CTW and SITE to explain their procedures are worthwhile noting.

In suggesting possible guidelines for future practice Hawkridge and Robinson conclude that methods of reviewing objectives will depend on the size of the educational broadcasting organization. Smaller organizations can afford to be less formal in their approach while large ones require more formality and certain representative structures. However, whatever the size of the organization, a regular review of objectives is advisable. These reviews, they suggest are likely to be most successful if they observe three principles:

(1) "Both at general policy level and at operational level, every encouragement should be given to the staff of the system to communicate freely with a wide range of external interests, and particularly those that can speak for the users of the service.

(2) Every effort should be made to keep this exchange of views informed with the results of

user-feedback, which should have been collected systematically but not delayed by over-elaborate research procedures.

(3) This regular review of objectives at all levels should be widely publicised, *particularly to the users of the service,* (my italics) so that the users can feel that they are taking part in a dynamic enterprise, which is also open to external influence and is concerned about being accountable to its users."[45]

In the South African context, the major lesson to be learned from this is the necessity for all ETV to be user-centred, not only with respect to programme content, but in every single aspect of its production and evaluation.

11.2.1.3 The Evalutation and Feedback Stage

In the general educational sense, Davies (1971) stresses the importance of evaluation and feedback as follows:

"- to determine the competence or capability of learners in terms of whether or not they have realised specified objectives;

- to determine which particular objectives have not been realised so that orthodidactical action can be taken;

- to decide the relative class order of the learners in terms of their success in realising agreed objectives;

- to inform the teacher or instructor of the appropriateness of his teaching strategy; and
- to devise procedures so as to improve course design."[46]

This is a general guideline which stresses that consideration should be given to the learning act itself, contemporary learning theories, the didactic principles arising therefrom and their applicability to ETV.[47]

However, this is a very general education centred approach, and the specific relationship between feedback/evaluation and ETV must be identified.

The terms "feedback" and "evaluation" are subject to extremely broad interpretation. For example, effects of ETV which can be evaluated include: effects upon students and student achievement and attitudes; effects upon teachers, effects upon rate and extent of educational or social reform. It should also be noted, that the role and function of ETV evaluation and feedback has changed.

> "At one time evaluation was defined, and interpreted in very narrow terms - a kind of *ad hoc* reporting on programmes carried out by visiting school broadcasting officers, inspectors or utilisation personnel. This concept was later enlarged to include more scientifically based reporting procedures, based on sampling techniques, questionnaire forms and sometimes especially mounted surveys.

> These procedures were, and still are, valuable but they have two major drawbacks. They often isolate difficulties or deficiencies, too late to incorporate changes into the system, and they do not show why things have gone wrong. Ideally evaluation should be considered as a form of continuous monitoring, with evaluators included in the original course team, which plans for a series, so that their comments can be built into the design from the outset [48]

It is also important to note that the distinction between formative evaluation (during the project) and summative evaluation (at the end of the project) is being insisted upon less and less, since ETV in general is beyond the stage of experimentation (but not in South Africa). The loss of this distinction has had the positive result of evaluation coming to be regarded as a cyclical process involving both daily and long-term evaluation.

The major functions of evaluation have been mentioned previously but it is useful to consider Hancock's (1977) summary as a basis for the future. Evaluation, must, he states:

"1 Ensure that there is as much knowledge as possible of what is happening

2. Suggest possible changes that are likely to lead to improvements in the system

3. Provide adequate information to assist and make possible rational policy making."[49]

With these admittedly very general guidelines in mind, objectives for an ETV evaluation system should include:

"(a) providing information, to assist with the selection of appropriate policy for an educational media system;

(b) providing information on the success or failure of educational media in meeting their educational objectives;

(c) providing information on the effectiveness of the various production and management elements involved;

(d) increasing knowledge of how to integrate media most effectively into an overall teaching context, in terms of both course design and production formats;

(e) increasing and spreading knowledge of the most appropriate production techniques in various education contexts.

(f) increasing and spreading knowledge of how to use media to their best advantage in actual teaching situations."[50]

This is obviously a highly theoretical explanation of the functions and objectives of an evaluation system, but it does reveal the potential complexity of such a system. The subject matter for evaluation is also complex and often unquantifiable in the statistical sense, but is nevertheless important to the success of the final product. It is beyond the scope of this dissertation to describe evaluation techniques and methods in detail but it is useful to briefly examine some of the main kinds of evaluation. Mayo, Hornik and McAnany (1976).[51] provide a useful summary in this regard:

Planning research *entails the collection of essential data on a technology system before it is implemented and often before a decision is made to undertake it. Among the most common methods of data collection are feasibility studies which survey the key aspects of an educational environment, specifying the technical requirements for the transmission of radio or TV broadcasts and estimating learning materials, and training personnel. Planners often have much information of this kind already at their disposal. However, the scope of information needed to design and implement technology projects may warrant new studies. Planners of technology systems may want information on student ability and achievement levels in the past, as well as some notion of what teachers and students are expecting of radio or television in the classroom. Teacher attitudes toward instructional technology must also be well understood by planners of new classroom procedures and training opportunities are to be designed to equip teachers adequately for work in the new system.*

The list of topics for planning research and the criteria for choosing among them could be extended considerably. In choosing areas for planning research, administrators and evaluators are able to focus their attention on the components of an educational system which are most fragile and therefore most likely to undermine project effectiveness.

Formative evaluation *is a process of data collection during the development of a project so that revisions can be made to improve its functioning. Such evaluation touches decisions at every level of a project. Sometimes project administrators must decide whether to depend more on printed materials, classroom teachers, or television programs for a given course. Program producers need to know whether a given concept was learned satisfactorily and if students are ready for the next unit of material. Script writers need to know whether particular lessons were able to attract and hold the students' attention. When difficulties occur in these or other areas of an instructional technology system, formative evaluation is used to diagnose the problem and to provide some indication of what corrective steps are called for.*

Summative evaluation *is a process of data collection designed to provide decision-makers with a more comprehensive understanding of how a project succeeds or fails in reaching its goals. It differs in time perspective from formative evaluation and is usually aimed at those decision-makers who control funds to continue or terminate the project. Nevertheless, the two approaches overlap in many ways. The variables or effects studied in both approaches may be quite similar. Formative evaluations of learning and attitudes often do contribute to summative evaluations of the same phenomena. The most important differences*

between formative and summative evaluation pertain to the kinds of decisions which each is meant to influence. The need for immediate information to guide short range decisions (was last week's concept learned so that another one can be taught this week?)justifies a formative evaluation strategy with its when gathered in a systematic way, the data from formative evaluations often provide the basis for the longer range analyses and conclusions characteristic of summative evaluations.[52]

Having discussed evaluation it is necessary to point out that, strictly speaking, it is possible to draw a distinction between evaluation and research. Evaluation implies continuous monitoring of the ETV system as it is at any one particular time whereas research is more specific concentrating upon specific problems, queries etc. Research is also concerned with enquiry into new developments and new applications of the media. Hancock (1977) lists some of these areas:

- Studies of utilization approaches to media.
- Depth studies of media used within local communities.
- Studies of new applications of technology.
- Studies of media integration.
- Studies of management and organization.
- Studies of programme format and technique
- Studies of learning behaviour.
- Studies of socio-cultural effects.
- Studies of user and learner difficulty.
- Studies of user attitudes.[53]

This is a guideline to possible topics of research rather than a comprehensive list (and it must be noted that research and evaluation use the same techniques).

Finally, the question of how evaluation is carried out will be discussed. In broad outline, the evaluation process usually consists of seven stages (not necessarily in this order):

"(1) select evaluation team
(2) agree objectives and general design of evaluation;
(3) agree instruments (questionnaires, etc) and data collection plan;
(4) agree data analysis plan
(5) carry out data collection, analysis and interpretation;
(6) prepare report of findings;
(7) disseminate findings."[54]

Examining the different methods of evaluation used in even the most visible case studies would constitute an entire study in itself therefore only two will be mentioned very briefly - SITE and CTW.[55]

The SITE ETV project was arguably the most extensively and thoroughly evaluated educational broadcasting project ever. In examining its applicability in the South African context it is noted that the major objective of the SITE evaluation was to assess (and hopefully demonstrate) the potential value of ETV broadcast by satellite. Overall evaluation was the responsibility of the Indian Space Research Organisation while teacher-training programmes were also evaluated by the National Council for Educational Research and Training (NCERT).

Throughout the project's life, pre-testing was regarded as extremely important to the extent that "evaluation of effects began with the testing of sample programme scripts through reading them in a village and gathering villager's comments. Similarly a few programmes were pre-tested by playing them (in recorded form) to a group of villagers and analysing their reactions. What is important here is that receiver's comments were analysed, that is, taken into account and used to change or adjust programmes before final transmission to the larger audience. (It is not apparent that this occurs at SABC). Therefore, in the early stages of the project, programme content was not irrevocable and was thus, in a sense, ever "improved" upon its audience.

Once the SITE project became fully operational, this type of evaluation/research continued to be the main source of information. As such:

> "The main SITE educational evaluation consisted of twenty-five researchers interviewing (in as many villages) ten to fifteen respondents each after transmission of a day's programming. The data collected were sent to Achmedabad to be computer-processed. Then the summarized data were given to producers and researchers in the studio concerned to discuss. Both the morning programmes for children and the evening ones for adults were evaluated in this way."[56]

The social impact of SITE was evaluated by separate teams of re-

searchers. There was an extensive "longitudinal" study of the impact of the ETV programmes on adults which lasted three years. A research team consistng of fifty members evaluated a sample of 7000 individuals spread between 170 villages. This study included evaluation of the impact of ETV on children. There were also anthropological studies of seven villages over a period of eighteen months.

Although the SITE evaluation was by no means a perfect model to be applied at random (it has problems, for example, in disseminating its findings), it does reveal an absolutely essential feature of ETV for disadvatnaged audiences - that is - the vital necessity of gaining credibility through gaining status as an experiment before launching into a costly and possibly ineffective full-time broadcasting service. In retrospect this is the pattern that SABC ETV could have followed.

Another outstanding example of thorough experimental research is the programme carried out by the *Children's Television Workshop* (CTW) in the United States. Before programme production begins (that is, prior to the scripting stage) CTW researchers identify the "specific skills and attitudes which its audience does not possess but has the ability to acquire"[57] the audience being (mainly) disadvantaged children or adults. For each new series):

> "CTW requires its staff to identify clearly the audience to be addressed and is equally insistent that its staff specify educational objectives that are pertinent to the needs and interests of the target audience, once identified.

> Moreover, their objectives must be fully understood and agreed by all members of the CTW production team. Educational objectives for CTW series are based upon curricular and pedagogical goals derived from empirical study, some of it by the Research Division. At the same time, production staff have to bear in mind the characteristics of the main medium, television, and, where appropriate, those of other media such as print."[58]

Evaluation of the effects begins during programme making to establish the validity and appeal of programmes and their impact upon such things as audience attention and comprehension. Results of these tests are used to revise programmes or as a guide to the design of new programmes.

Furthermore "students" achievement is tested before and after they have watched the programes in order to ascertain which combinations of content and production techniques enable them to learn most."[59]

Although CTW has a full-time team of researchers, it collaborates with external research groups. For example, two studies of *Seeame Street* and *The Electric Company* respectively were carried out by the Educational Testing Service in order to compare the achievement of viewers and nonviewers of these major series. The results influenced later programmes as well as CTW policy in general.

In summing up it is important to emphasise that, like educational broadcasting itself, the potentially political nature of evaluation

must be recognised. For example, the overprotection by producers of controversial findings or findings that reflect badly upon their programmes; or the selective release of findings to the public in order to protect a broadcasting corporation's image or ideology.

Having covered certain general aspects of evaluation and research, it is useful to state Hawkridge and Robinson's summary of guidelines for future practice (over and above what has already been suggested):

"(1) Projects with direct teaching purposes should be evaluated by direct testing of student achievement, but the activities of educational broadcasting organizations with indirect teaching purposes should be evaluated less directly through surveying teachers' opinions regarding student's achievments.

(2) Attitudes of students and teachers towards educational broadcasts should be assessed through a combination of interviews, questionnaires and tests.

(3) Changes in classroom behaviour of students and teachers (for in-school projects) and in local practices (for adult education projects that are outside schools and colleges) should be evaluated through observation over adequate periods of time.

(4) Evaluators of projects of limited duration and under foreign sponsorship should be prepared

to accept more rigorous evalutation design constraints than evaluators of ongoing studies sponsored in-house by educational and/or broadcasting institutions.

(5) Educational broadcasting organizations should consider the balance they wish to strike in funding evaluation, between formative studies that have a fairly immediate impact on programme-making and utilization, and summative studies that possibly form the basis for judgements about whole series.

(6) Since objectivity is always difficult to ensure, evaluators should consider how they may best reveal clearly any potential sources of bias among different parties to evaluation, and they should attempt to negotiate with those who are being evaluated, as well as with those commissioning the evaluation, regarding objectives, styles and methods to be used."[60]

11.2.2 Forms of Governance and Degrees of Autonomy of the Educational Broadcasting System

The second area where there is a need for swift remedial action (if the potential of ETV is to be realised in South Africa) is the broadcasting organization itself. As the chapter on SABC indicates, the ideological orientation of the organization itself exerts a powerful influence upon the programmes broadcast, often a negative one. It is clear from the case studies that there are a great variety

of organizational structures and varying degrees of autonomy and that ETV can survive in many different forms. In terms of the potential of ETV in South Africa it is important to examine the most relevant features of the broadcasting organization which have the greatest influence upon the educative potential of ETV.

Organizational structures vary according to size, coverage, decision-making structures, funding, background experience and their relationship to government and official educational institutions. It is often found that government involvement in ETV is particularly apparent in the decision-making structures of a broadcasting organization. For example, the Ivory Coast project constitutes a special government department and its policy-makers follow traditional government-department procedures. Others, like the Maranhaó project in Brazil and SABC are government controlled institutions (whether this control is tacit or direct seems unimportant as its ultimate effect is the same). Others again, like the BBC are public broadcasting organizations while SITE is an international consortium and the *Children's Television Workshop* is an independent organization.

The forms of governance of educational broadcasting systems are as numerous as their organizational structures. Like the BBC, SABC professes to be a public organization, independent of direct government control. However, as discussed earlier, government control of SABC is well established and is most easily recognisable in three areas - the board of governors with a government appointee as director general; the general areas of news and current affairs; and edu-

cational programmes which uphold the spirit and principles of CNE and apartheid.

In terms of the various organizations' degrees of autonomy Hawkridge and Robinson (1982) state:

> "Autonomy largely derives from the adopted form of governance, with political and social tradition playing an important part. This educational broadcasting within a broadcasting organization will generally be free from close control by the national educational system and able to experiment in many ways; but it will probably find itself constrained by broadcasting traditions and broadcasting priorities. A system based in the Ministry of Education may find itself free from these broadcasting constraints - though much will depend on whether that organization provides its transmission outlets and provides its transmission times. On the other hand, it will probably be heavily constrained by Ministry of Education requirements."[61]

Evidence indicates that the most favourable organizational arrangement is an independent one like CTW. However, it must be noted that this arrangement in turn is likely to concentrate upon or be dependent on the economic returns of its programmes. When market forces become the overriding feature of the project its educational credibility often suffers.

As indicated earlier in this dissertation, the potential success of ETV in South Africa is greatly constrained by SABC's conservative stance and political preferences. Its programmes (differentiated for blacks and whites) and the divisions within the organizational structure itself duplicate the fundamental premises of the apartheid system and reflect the fluctuating government policy on the subject. Amongst the solutions to overcoming the Corporation's diminished credibility is the modification of management structures and working practices according to the alternatives listed below:

(1) Create a decentralised structure which is not closely related to or constrained by either the educational system or the political system but which regularly consults with professional broadcasters and educators. Oliveiria (1982) advocates interinstitutional co-operation as a key to success:

> "A key factor in project success is a careful look into interinstitutionalised arrangements, which is often needed in more complex operations. The design of interacting organizations, the issues of power, control, evaluation, funding and budgeting become key factors in predicting and obtaining the desired outputs."[62]

An idealized and relatively successful variation of the present structure of the SABC is UR in Sweden. Although the project is closely associated with the Swedish government it appears to be independent-thinking, progressive and successful. Hawkridge and Robinson (1982) state that

> "....UR in Sweden.... - in its reorganized form the newest system included, having being incorporated as a subsidiary company of the Swedish Broadcasting Corporation only in January 1978, though drawing on traditions of more than fifty years - was clearly designed in the hope of achieving (an) important bilateral relationship. Its total budget comes from the Swedish government, so the company is encouraged to have close consultations with the country's educational policy. At the same time its staff are in daily contact with other professional broadcasting staff, working in news, current affairs, cultural and entertainment programmes and sharing their training facilities and programme archives. Broad policy decisions, such as long-term objectives, are taken by a board which includes representatives of the government, of the broadcasting corporation and of UR staff."[63]

It is difficult to suggest the "right" kind of organizational arrangement since so many partially successful ones exist but one thing is certain: extremely rigid, formal and centralised arrangements that are "too" directly controlled by their parent organizations suffer from inflexibility and lack of innovativeness. The most easily recognizable characteristic of such arrangements is their strict adherance to government policy and the arbitrariness of their educational programmes which are imposed on their audiences with little or no consultation.

The more acceptable decentralized structure (of <u>both</u> education and broadcasting) suggested earlier is characteristic of broadcasting

in North America with CTW leading the field.

(2) Another indisputable feature of a potentially successful organizational structure is that it must have a mixed staff representing a broad range of skills in education, broadcasting, communications, politics, research, management and engineering and production. It is not acceptable, for example, to have a staff consisting largely of qualified school-teachers nor is it acceptable for broadcasters to have the upper hand. An ideal situation is one in which qualified educational broadcasters constitute a significant proportion of the staff and it is up to government and broadcasting organizations to encourage the requisite departments to cater for this need in colleges and universities. Whatever method is chosen to achieve this representativeness (whether or by means of a mixed board of governors by regular consultation with standing committees) it must be remembered that the history of educational broadcasting is littered with systems that chose what Hawkridge and Robinson term "the 'go it alone' philosophy". Once again CTW is a good example of a success which can be directly related to a well developed, systematic collaboration policy.

(3) The way in which an educational broadcasting system responds to feedback and the degree to which it revises its operation accordingly separates the rigid, politically and educationally conservative ETV organizations from those which regard ETV as the final product of collaboration between broadcasters and users. It is not enough for a sophisiticated research facility to simply exist -

there must be evidence that feedback is processed and used to ensure receiver satisfaction. Once again, the research effort of the *Children's Television Workshop* is commendable and exists as a successful model.

(4) Another important feature of a potentially successful ETV organization is its ability to show "its own learning capacity to revise its operation in the light of experience and to transmit the learning throughout its employed staff by regular training and retraining."[64] Many of the previously-mentioned rigid, conservative systems remain organizationally dormant in this area for the simple reason that change is frowned upon by their "masters". This approach retards creativity and innovativeness and the essential dyanmic quality necessary for achieving this potential is lost. It is a paradox as Hawkridge and Robinson (1982) point out, that most training for educational broadcasting is both insufficiently broad and insufficiently specialised and it is interesting to note that most of the case studies (see Chapter 9) while referring to training, give very little detail of it.

In summing up it is suggested that evidence seems to indicate that the most viable form of organizational structure for an efficient ETV system is one which is:

(a) independent of overriding government influence;

(b) autonomous in the sense that it is <u>not</u> an appendage to an entertainment broadcasting organization competing with entertainment programmes for air time;

(c) staffed by a wide variety of experts, particularly especially trained, professional educational broadcasters;

(d) open to the idea that its audience forms a vital part of the organization itself.

(e) decentralized

In addition to this, it is useful to take account of Hawkridge and Robinson's possible guidelines for future practice in terms of forms of governance and degrees of autonomy:

"Possible Guidelines for Future Practice

Because this study is written principally for readers already engaged in an operational system, such guidelines must be rather on how to proceed, not on how to start.

(1) Each system, in relation to its particular circumstances and terms of reference, should seek to develop a form of governance that allows it to give broad consideration to its longer-term and short-term objectives, and to review these objectives on a regular basis. It should consider how far various external agencies and interests should be involved in this consideration, because of their shared interest in the system's provision. It should consider, for example, what part national educational policy, as determined by central government, should play in its overall planning. It should consider how far its own staff should be directly

involved at this level. It should consider how well-equipped its present governing body is to undertake this broad forward planning. It will also need to consider carefully the precise relationship between its governing body and its most senior executive staff. Unless the relationship is a harmonious one, based on a clear understanding of relative functions, the system is doomed to frustration and disappointment.

(2) Each system should seek to develop in its governing body a thorough understanding of the many areas of skill and experience that are required by educational broadcasting. Attempts should be made to represent these several areas of experience - education, communications, social organization, evaluation, and so on - within the membership of the governing body. Alternatively, or additionally, a range of advisory committees should be appointed to make this range of experience available. In any case, close collaboration with other agencies should be encouraged and any tradition of 'splendid isolation' should be broken down as quickly as possible.

(3) The governing body must be encouraged to understand that educational broadcasting must become a dialogue, between the producers and the users, so regular feedback is essential. They must recognise that in this respect its needs are different both from other forms of education and from other forms of broadcasting. These

differences need to be constantly stressed; and the governing body should be prepared to fight for the special needs of educational broadcasting, with official bodies and with funding agencies. And similarly, when resources are scarce - and that is likely to be much of the time - the governing body should have learnt from its experience that feedback should not suffer unduly, but that reductions have to be made across the board. The view that everything is expendable except the making of programmes is not acceptable in educational broadcasting.

(4) The governing body should have a dynamic view of its own functions and should wish to see the system working in a dynamic way - learning from its experience as it progresses. It should encourage the broad, yet specialised training of its staff and of its users that educational broadcasting requires. It should ensure that adequate resources are made available for this training.

(5) While seeking all the resources for the system that are really needed, the governing body should show that it understands the economic realities, thereby achieving financial credibility and acceptance of its financial requests. It will also help to ensure that the system as a whole is financially accountable. Such a governing body may well give its best service in ensuring that adequate resources continue to be available.[65]

In summary, there can be no question of selecting a 'best buy' out of the forms of governance described in the case studies. No system scores more points than the others on every question. It is, rather, a case of looking for the elements of good practice, as outlined in this chapter and in the case studies taking the context and its constraints into account.

11.2.3 The Potential of Satellites for ETV in the South African Context

> "ETV with all its unwieldiness, its apparent high costs, seems to be on the losing side. At first sight a massive use of ETV for the education of youths and adults scattered in rural, non-electrified areas, would seem to be too costly, technically too unreliable and too complicated to use and to maintain. However, the SITE project has shown its practicability, although on a limited scale. Low-cost receivers for community viewing, equipment and facilities shared with formal school, low-cost energy sources, and especially direct broadcasting satellites may bring that medium to a feasible reality. Technology might really provide the answer. And what was thought impossible about a decade ago has since become possible already."[66]

The major problems and potentials of television as an educational medium have been discussed in this dissertation. What remains to be established is a viable, practical alternative to the present utilization of ETV which should not only comply with the broad

framework of change suggested (i.e. alternative management systems, far-reaching contextual analysis and well developed and utilized research) but one which would also be ideally suited to the priority areas for ETV which have been identified (pre-school, adult and teacher education for the disadvantaged using, mainly, distance education techniques).

The potentials and proolems of televised education via satellite in South Africa must be seen in a broad context which includes exceptionally rapid technological innovation as well as social, political and economic instability and change. It has been shown that the use of advanced technology for education almost automatically brings about change and even serious disruption in some instances. Therefore, in this brief analysis, both the problems and the potentials for satellite ETV will be discussed.

11.2.3.1 What can satellites[67] do with respect to educational applications?

Satellite ETV is considered by the author to be a viable instrument for the distribution of education to disadvantaged and/or remote communities in South Africa. Taking all of the medium's problems and potentials into account it appears to be the single most feasible answer to the pressing need to extend and democratize education in this country. The relevant capabilities of satellite ETVare listed below:[68]

(1) In terms of educational application satellite communications

can provide a wide range of services suitable to varying contexts ranging in price, sophisitication and technical complexity. An analystical framework for assessing the precise educational uses to which the medium will be put is also necessary and should include contributions from both producers and users. In terms of cost it has been noted that, although satellite technology is extremely expensive

> "Satellites become increasingly more cost-effective as wider-band services are provided to larger and larger audiences."[69]

However it must be noted that, resulting from this apparent advantage of satellite ETV, are the major social and political problems commonly associated with mass communication including the problems of gaining and holding an audience's attention, thought control, using the medium as a channel for pro-government propaganda etc.

(2) An educational satellite service is very flexible in terms of the size audience it is able to serve since it has proved equally effective in providing information to small or large audiences. In terms of this capacity satellites are particularly adept in providing broadcast services, in which a programme is uplinked from a single point and then received anywhere within the satellite beam coverage. In this type of broadcast network, a million receivers can obtain the broadcasts easily as one, since no additional satellite power or frequencies are required. A satellite is, accordingly a flexible tool that can be used for both simple applications and complex, expensive, and difficult ones."[70]

(3) Satellite systems have an advantage over terrestrial systems in that:

> "Satellite capacity in the form of earth stations can be installed in the order of priority of need, independent of the location of previous sites, unlike terrestrial systems. This ability may reduce total cost because incremental expenses may be deferred until fully justified."[71]

(4) Although, as noted earlier, satellite ETV is expensive, its cost is ultimately insensitive to distance. Therefore remote and/or rural audiences/locations cannot be listed under cost disadvantages.[72]

(7) Satellite educational systems have the potential to be integrated with other educational media and systems (such as radio, television and the traditional educational system if absolutely necessary). Parker and Lusigan (1977) note that the flexibility inherent in the use of a satellite system provides the opportunity for coordinated planning of several communications services thereby reducing unit costs for each service.[73] For example:

> "...microwave relays must be designed for maximum end-to-end capacity, and significant rural expansion of wire lines entails high system-wide costs. Satellite systems are notably more reliable than terrestrial links, reducing remote maintenance problems and overall operational cost."[74]

(6) The potential developer of a satellite ETV system has a great deal of experimental material upon which to base future projects. Amongst the better known are SITE and the Brazilian satellite projects both of which have brought together a significant set of documented experiences including information about hardware, software, research and how experimental results can be integrated into operational systems planning. In addition to this, both projects are proof of the potential success of alternatives to the models of ETV systems which have been imported from the entirely industrialised West. The need for alternative systems is confirmed by Edward Ploman, Vice Rector of the U.N. University who states.

> "We are in an educational crisis....It is increasingly recognized that conventional systems for learning can no longer absorb the range of knowledge generated, disseminated in the usual educational time span or respond adequately to the demands for equitable and widespread access to knowledge and information, nor to the learning needs caused by the outdating of knowledge. Thus, new modes of education, learning and sharing of knowledge are therefore needed at all levels of society, using available and new services and techniques."[75]

11.2.3.2 Why Satellite ETV in South Africa?

Having discussed the potential usefulness of satellites in general, its specific usefulness or potential in the South African context should be briefly established. It is submitted that the major justification for the use of satellite ETV here is its affinity for distance education aimed at disadvantaged (mostly rural) communities. Considering the First/Third World nature of South African society, the following applies when justifying satellite ETV:

> "Developing countries frequently do not have extensive, efficient service systems or well-developed communications infrastructures, particularly in their rural or remote areas. The same holds true, although to a lesser degree, in developing countries. Therefore, distance teaching systems are well suited to developed and developing countries, as long as their use is appropriate and cost-effective."[76]

In particular, satellite tele-education is suited to the development context in terms of its potential in the areas of supplementing existing educational services, democratizing education, helping to overcome teacher-shortages in the short term and helping to improve rural life by spreading basic knowledge. The SITE project, in particular "demonstrated that the community broadcast satellite can be a reliable technological system for reaching large numbers of widely dispersed and heterogeneous populations at a reduced cost."[77] The flexibility of a satellite ETV system is also demonstrated by its use as an instrument of higher edu-

cation by the University of the South Pacific. This institution was remarkably successful in delivering college courses via satellite as is evidenced by the high completion percentage and good test results of students who, additionally received their education at a vastly reduced cost compared to the campus-based Fijian students.[78]

Distance education via satellite also complies with the already-established need for alternatives to the traditional educational structure which are required not only to educate but ultimately to provide a means of attaining a measure of social justice denied to so many in the past.

While the role of ETV in providing a more equitable system of post-secondary education has not been stressed as a priority in this dissertation, one cannot dismiss the potential of satellite ETV in this area. Used in conjunction with an "Open University" concept, a non-racial "satellite university" could help to democratize higher education in South Africa. As a basis for an experiment or pilot project of this nature it is suggested that the British *Open University*.[79] be examined. This radical-thinking institution is "open" for the following reasons (which should be taken into account if such an experiment was to take place in South Africa) since its history of education and broadcasting virtually dictates a truly open system if it is to have credibility.:

"It is open to everyone. As the Planning Committee

stated 'We took it as aximatic that no academic qualifications would be required for registration as a student. Anyone could try his or her hand, only failure to progress adequately would be a bar to continuation of studies."

It is open to innovation. Contrary to other established institutions, the *Open University* has no rigid methods. It essentially rejected conventional patterns and started from scratch with a new curriculum, a new concept, and a new faculty. The *Open University* students are not confined to one or two subjects. Their programs of study are designed to cover a wide range of subjects, and there are few restrictions as possible on the choice of subjects. Maximum flexibility and an interdisciplinary approach characterize the Open University, and have precipitated the current re-examination of the goals of higher education with respect to the relevance of the course offerings.

It is open as to place. The university hardly has a campus. The headquarters of the *Open University* are Milton Keynes (a small "planned" experimental community) where a staff of 700, including 145 academicians as well as educational technologists and administrative personnel, are located to serve a student population of 45 000.

It is open all year round....."[80]

There is absolutely no doubt that certain satellite systems have the capacity to serve remote/rural areas. According to Pelton and Filip (1984):

> "...*Currently, there are, some 25 nationally - or internationally-* owned satellite systems capable of delivering educational programs to remote areas. These range from ANIK (owned by Canada and operated by TELECAST, serving Northern Canada), to the USSR's worldwide Statsionar system (operated by INTERSPU to WESTAR (operated by Western Union, serving Alaska). Already 24 countries are leasing capacity from the INTELSAT satellite system for domestic telecommunications systems which, in most cases, include a TV or radio distribution system."[81]

Many excellent case studies apart from SITE are available for review of satellite communications use. For example:

> "...satellite communications have been used to reinforce cultural identity in Canada's northern-most reaches, and a rural communications project in Peru will use satellite delivery to serve remote jungle areas. Compared with other interconnect systems, satellite communications offer moderate circuit capaci good voice *and picture quality (with appropriate earth* stations), usually speedy installation, and low disruption possi-

> bilities, if proper maintenance is provided. Land lines, HF radio, and terrestrial microwave offer other advantages and disadvantages. From the outset, there should always be an integrated network concept which draws on the strongest characteristics of each technology."[82]

It should also be noted that Third World applications of satellite systems for education exist or are nearly operational. These include: ARABSAT, BRAZILSAT, INSAT (India), PALAPA (Indonesia), SATMEX (Mexico), and CHINASAT (the People's Republic of China). Although the rapid proliferation and certain successes indicate a successful future of ETV via satellite, the problems inherent in its use cannot be ignored. These have been summed up by Pelton and Filip (1984) in Appendix 4.

See Appendix 4[83]

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79. NOTE: Established to destroy elitism in higher education, the aim of this university is "the advancement and dissemination of learning and knowledge by teaching and research by diversity of means such as broadcasting and technological devices appropriate to higher education, by correspondence tuition, residential courses and seminars, and in other relevant ways." (*from the Open University Charter*).

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CHAPTER 12

CONCLUSION

The primary aim of this dissertation was to examine the potential of television for education in the South African context in terms of:

(1) Its broad contextual framework, including the following areas: socio-politics, development, education, media, communications and broadcasting.

(2) Its potential as an educational aid according to what is already factually known about the limitations of ETV and its potential role in development education - particularly of the politically, economically and educationally disadvantaged members of the community.

(3) The past history of ETV particularly its use in the non-industrialized Third World.

(4) Alternatives to the present use of ETV and to the present structure and methods of its organization and utilization.

It is quite clear from this dissertation that it is one thing to extol the virtues of ETV and quite another to successfully use it to achieve positive results. It was discovered that successful implementations of ETV are rare mainly due to the fact that the medium was considered as a neutral positive force that could simply be "slotted" into an educational system. What this dissertation reveals is that the use of any new educational medium, particularly ETV, should be based upon a complex and comprehensive contexual and historical analysis. For this reason it was absolutely essential

to examine the broad context of ETV, particularly those factors which will and do seriously limit its successful utilization in South Africa. What this investigation rendered absolutely unequivocal was the fact that television is a potentially powerful educational medium, but one which fell foul of the overoptimistic and ahistorical approach of educationists and developmentalists in the 1960s and the resulting pessimistic rejection of Western ideas of the 1970's. In spite of this it was found that under carefully researched conditions and within an awareness of political realities, television is suited to education as an aid. What follows is an attempt to consolidate what has already been written into a brief summary of findings, conclusions and implications which will serve as a basis for recommendations.

12.1 Finding, Conclusions and Implications with Regard to:

12.1.1 Context

Having based this dissertation on the premise that education is a political issue and that the very structure and function of ETV cannot be examined without an historical/contextual analysis of educational practice and related issues it was found that the socio-political context into which ETV "fits" is a complex and multi-faceted issue. ETV takes its "cue" from its context and it was found that the ahistorical approach of the majority of 1960s educators, developmentalists and communications theorists established certain precendents for the use of ETV which have, in spite of the 1970s reaction against the modernization approach, been emulated to the detriment of the true potential of ETV.

Working from the premise that ETV in South Africa should be aimed primarily at the most disadvantaged (politically, economically and educationally) members of the community, it was found that this community existed under a combination of First/Third World conditions. Thus a contextual analysis of the development context from which education for this sector would be considered, was considered vital.

The conclusion reached from this contextual analysis was that the basis of ETV (i.e. its recent historical context) rendered its later successful implementation extremely difficult. The applicability of the "ground rules" established in the 1960's to the present South African socio-political and developmental context was noted. It was established that the specifically South African political, educational, developmental and broadcasting context, has since 1948, been entirely dominated by a single consistent feature - that is, apartheid - which in spite of cosmetic changes has remained the firm basis of this context. This basis has, it was shown, concentrated on the political, economic and educational control of seventy percent of the population and is, in addition, a system which does not tolerate or encourage criticism of its basic ideological premises. Based to a certain degree upon the paternalistic modernization theories of the 1960s the system has, by its extreme rigidity, retarded the progress of education by carefully screening and controlling innovations like ETV by various methods (for example, by maintaining its monopoly of broadcasting and education).

12.1.2 EDUCATION

It was found that ...rld education theory and practice in general followed developm... ...y and practice very closely, particularly in the Third Wo...d. So, just as development was seen as a process whereby the West "guided" the non-industrialized world to a higher state of existence, so too was education seen as necessary and vital for the "development" to occur. Like "development" in the 1960s, 1960s education was more often than not imposed on the Third World and since educational technology was seen as the means of "injecting" this education into "underdeveloped" regions, ETV became a major instrument of the Western-style imposition strategy.

In addition to the 1960s legacy, South African education has both colonialism and apartheid as its basis. The result of this is an extremely rigid, non-critical, centrally controlled, and segregated-on-the-basis-of-colour educational system which in turn forms the basis of SABC ETV policy. The link between central government, Nationalist ideology, apartheid, education, broadcasting, development and broad government economic strategy is unquestionable and the potential of ETV depends entirely on their inter-relationship. An examination of the educational context was, therefore, essential.

12.1.3 Communication Theory

Having established that a relationship exists between ETV, education, politics and development and that those most in need of ETV education are deprived individuals, it was deemed necessary to examine the concept of media in development and communication theory since the

importance of a theoretical basis for ETV as a medium of communication has been neglected. Like education and development it was shown that the origins of modern communications theory were simplistic and hierachical and by implication it was shown that there is a similarity between this approach and the present political, educational and broadcasting system in South Africa.

The purpose of this chapter was also seen as providing a guideline for future practise by indicating the importance of the theory of communication to the practise of ETV. Having found that there is a dispute about the definition of communication (like the definition of development), and that communication theory like education and development theory is a necessary and integral part of planning for ETV, the implication was that there is a need in South Africa for a better, locally produced theoretical framework for the field of educational communication. It is recommended that existing theories of communication be taken into consideration in formulating a taxonomy or model of ETV as communication.

12.1.4 Media and Development

It was established that South African society exists as a unique combination of Third and First World characteristics and that the use of ETV is most justified for those who suffer the disadvantages of a Third World society within a First World context. With this audicence as a priority in the consideration of the potential of ETV it is recommended that the consideration of the potential of ETV occurs within a development context. Therefore, the potential

and past interrelationship between media and development is described.

12.1.5 Broadcasting

An historical contextual analysis of South African broadcasting revealed that, like education and development, broadcasting is inextricably linked to and based upon apartheid and that this basis ensures that the young ETV service is based upon conservative centralized control. In particular it was shown that ETV emulates the divisions in the official educational system by providing separate services for blacks and whites. It was also shown that the organizational structure of SABC and its media policies as a whole, are not conducive to real local audience participation or to truly successful, innovative and well received ETV programmes. It was concluded that with the present political/contextual constraints together with the history of broadcasting in South Africa, ETV as it exists at present has little hope of being well received - particularly by blacks. In short, it is recommended that the consideration of television as an educational aid in South Africa should take into consideration the influence of existing conditions and should respect tradition and involve its audience directly in its implementation.

12.1.6 Applications of ETV

An examination of what is factually known about the educational potential of ETV for specific applications revealed that its usefulness lies in particular areas including its capacity to distribute messages widely to a large (poosibly remote) audience. It was found that there are a number of ways in which ETV could be of use in South Africa specifically:

- Television can be used as a main source of education, but only in the most exceptionally needy situations (where there are few qualified teachers, for example) and even then only for a limited period.
- Television can be used for supplementary educational purposes to enrich existing lessons and teaching in schools. For this purpose it could be implemented immediately to provide a more critical perspective to the current rigid curriculum content.
- ETV can be used for audiences who are identified as being most in need of education. In South Africa this audience consists of (mainly black) pre-schoolers, teachers and student teachers, adults, and remote rural communities.

A summary of recommendations in this regard appears below:

(i) Pre-School ETV. It was established that school readiness and learning readiness are important prerequisites for progress in the formal school situation. However, it is recognized that a deprived home environment is not conducive to adequate child care let alone sufficient preparation of children for formal schooling. In addition to this both teachers and pre-school facilities are in extreme short supply in South Africa, particularly for blacks, and it is therefore suggested that ETV should be utilized as a component of a larger effort to upgrade child care and to prepare children for formal schooling and to improve the knowledge of adults in this respect too.

(ii) Adult ETV. Adult education is regarded as a priority area for ETV, especially for those who have been denied schooling or who have been excluded from the mainstream of education and development. The following priorities are recommended as starting points for adult education using ETV.

- Basic education including literacy and numeracy instruction for deprived adults - particularly in rural areas. This education should not be regarded as an end point nor is it to be regarded as rural education as opposed to urban education.
- ETV for parent education
- ETV for "political awareness" education

(iii) Teacher Education. Taking into consideration the shortage of (particularly black) teachers and their frequent lack of adequate training, it is recommended that ETV should be used to consistently upgrade teacher training.

In the educational development context, the conclusion reached was that, since ETV is theoretically an ideal medium for extending and improving education (in the development context) it is ideally suited to improving education in South Africa.

12.1.7 Case Studies

In order to examine the "real" results of ETV, case studies were examined. It was found that, although in certain instances, ETV was partially successful, its performance (especially in the Third

World) has been disappointing. The major reason for this is revealed by the case studies as being a lack of consideration of the possible ill-effects of imposed, Western-style technology and programmes. However, the objective of the examination of the so-called "classic" case studies, was not only to point out the possible ill-effects of ETV, but to provide the reader/potential implementer of ETV with a factual basis of what is known about ETV in order to avoid mistakes and perhaps benefit from the ideas behind the successes.

As in Part I, an examination of the case studies shows that the direct "transplantation" of any aspect of education, development and broadcasting is rarely successful - this applies equally to organizational structures, programme content, ideas and ideologies. In contrast to this the analysis of the *Children's Television Workshop* showed that ETV can achieve popularity and positive didactic results simultaneously within an unashamedly commercial/popular culture framework. It is recommended that ETV implementations should, like CTW and SITE, always be preceded by a lengthy pilot study.

12.1.8 Alternatives

In the light of the entire dissertation alternatives to the present uses of ETV in South Africa were suggested. They are necessarily brief since they were intended as guidelines rather than as a blueprint. In view of the dissertation as a whole the following recommendations and observations are made:

1. The potential of ETV can best be realized within a more flexible and tolerant political environment where attenion

is given to the equality of the provision of education for all within a single system of education.

2. It should, further, be recognized that education is a political issue and that the true potential of a medium used to extend education cannot be realized without a thorough contextual and historical analysis of the issues closely related to it
3. South Africa is seriously divided along political, racial, developmental, economic and educational lines and this fact seriously limits the potential of white owned and operated ETV which at present is inextricably linked to separate development.
4. The potential of ETV can best be realized within an aware, changed framework. This implies that the rigid organizational structures of ETV should be revised, that ETV should not be a state monopoly (either directly or indirectly), that it should be decentralized and that it should make direct use of the concepts of local participation and self help. More specifically, it is recommended that satellite ETV should be used to teach the disadvantaged "Third World people" of South Africa within a "development" context.

There is an urgent need in South Africa to study the theory and practice of educational innovation. ETV is envisaged as a component of a total change which should include a study of and break with the past. It is seen as an alternative to existing formal structures which have had a direct role in placing many South Africans at a political and educational disadvantage.

APPENDIX 1

from Tomaselli, K.G. and R.E. (1980), pp 22-23.

Taking as given that SABC "black" broadcasting is directly related to the formal and informal exercise of political control over subordinate black communities, the Tomaselli's state the following:

> "The working class are induced to live their exploitation and repression in such a way that they do not identify their position as, in fact, one in which they are exploited or oppressed. This coercion functions by ideology where the behaviour, beliefs and attitudes produced are of an imaginary or false perception of their actual conditions of existence. In this way, the media as ideological apparatuses function to reconcile individuals to their given social positions.
>
> This conclusion differs markedly to Orthodox Development Theory as expounded by some writers, for example, de Koning (1979). Based on the works of Lerner and Schramm (see, e.g., Lerner and Schramm (1967), this approach sees underdevelopment as a direct result of the 'backwardness' of indigenous people in Third World countries who have as yet been underexposed to Western, 'progressive' modes of life. This theory fails to identify the ideological orientation and exploitative functions of communication in developing countries. It naively describes the role of the mass media as being the transmission of new skills,

new values and attitudes which help to socialize citizens into a new and different society which is still in the process of becoming. To apply such a model to the Homelands of South Africa can only lead to further underdevelopment (see, e.g., Frank (1971) and Kay (1975)). Lerner and Schramm then go on to imply that the media have irresponsibly created a commodity based society by teaching the people what to want. When desires are met, new demands are generated. These are two theorists that proceed further and argue that the media, having raised expectations and wants, have not taught the people how to get. Lerner and Schramm's argument which is simplistically offered by de Koning as the solution to South Africa's development problems falls short of an adequate understanding of the implications it raises. In South Africa, the media teach the people what to materially want, while at the same time extolling them to be satisfied with their social and economic position. The broadcast media, therefore, in South Africa, function to bring the social want: get ratio into a dynamic equilibrium. Blacks are exhorted not to expect things they cannot get, such as, for example, urban land ownership or citizen rights in South Africa. Expectations are regulated through the mass media in general in conjunction with natural communications allies such as Development Corporations, Administrative Boads, Departments of Community Development and the Department of Bantu Education. This last body, a fundamental component in

> the dissemination of apartheid ideology, has a close association with Radio Bantu. It broadcasts special school programmes supported by supplementary booklets..."

It should be noted that the "development argument" does not apply to black oriented television in the same way. The fact that TV2 and TV3 are aimed at an exclusively urban audience and that its advertising is highly "western" in a commodity based capitalist framework, supports the contention that black television does exhort its audience to aspire toward greater material wealth and luxuries - which most of the urban black population are not wealthy enough to acquire.

APPENDIX 2

Reproduced from Hawkridge and Robinson (1982) pp. 27-28.

Table 1.1: Catalogue of Countries and Territories Known to be Using Educational Radio Programmes in the 1970s

Africa:	Algeria, Angola, Benin, Botswana, Burundi, Central African Republic, the Comoros, the Congo, Djibouti, Egypt, Ethiopia, Gambia, Ghana, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria, Reunion, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Cameroon, United Republic of Tanzania, Upper Volta, Western Sahara, Zambia, Zaire, Zimbabwe.
America, North:	Antigua, Bahamas, Barbados, Belize, Bermuda, Canada, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Greenland, Grenada, Guadeloupe, Guatemala, Jamaica, Martinique, Mexico, Nicaragua, Panama, St Kitts, St Lucia, St Pierre et Miquelon, St Vincent, Trinidad and Tobago, United States.
America, South:	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Falkland Islands, French Guyana, Guyana, Paraguay, Peru, Venezuela.
Asia:	Afghanistan, Bahrain, Brunei, Burma, China, Cyprus, Hong Kong, India, Indonesia, Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Republic of Korea, Kuwait, Lebanon, Malaysia, Maldives, Nepal, Pakistan, Philippines, Qatar, Singapore, Sri Lanka, Syrian Arab Republic, Taiwan, Thailand, Turkey, Socialist Republic of Viet Nam, Yemen.
Europe:	Austria, Belgium, Czechoslovakia, Denmark, Finland, France, German Democratic Republic, Federal Republic of Germany, Gibraltar, Greece, Hungary, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Poland, Romania, Soviet Union, Spain, Sweden, Switzerland, United Kingdom, Yugoslavia.
Oceania:	Australia, Cook Islands, Fiji, Gilbert Islands, New Caledonia, New Hebrides (United Kingdom), New Zealand, Niue, Norfolk Island, Pacific Islands, Papua New Guinea, Tonga, Western Samoa.

Table 1.2: Catalogue of Countries and Territories Known to be Using Educational Television Programmes in the 1970s

Africa:	Algeria, Central African Republic, Djibouti, Egypt, Ethiopia, Ghana, Madagascar, Mali, Mauritius, Niger, Nigeria, Reunion, Senegal, South Africa, Sudan, Tunisia, Zambia, Zaire, Zimbabwe.
America, North:	Antigua, Bahamas, Barbados, Bermuda, Canada, Cuba, El Salvador, Jamaica, Mexico, St Kitts, St Pierre et Miquelon, St Vincent, Trinidad and Tobago, United States.
America, South:	Argentina, Brazil, Chile, Ecuador, Venezuela.
Asia:	Bahrain, China, Cyprus, Hong Kong, India, Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Republic of Korea, Kuwait, Malaysia, Pakistan, Philippines, Saudi Arabia, Singapore, Syrian Arab Republic, Taiwan, Thailand, Turkey, Socialist Republic of Viet Nam.
Europe:	Austria, Belgium, Czechoslovakia, Denmark, Finland, France, German Democratic Republic, Federal Republic of Germany, Gibraltar, Greece, Hungary, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, United Kingdom, Yugoslavia.
Oceania:	American Samoa, Australia, New Caledonia, New Zealand, Pacific Islands.

Note: International statistics on educational broadcasting are difficult to obtain (see Unesco, 1979) and are not well standardized. Countries and territories shown in Tables 1.1 and 1.2 are either listed by Unesco as broadcasting educational programmes or mentioned in other reports as doing so.

APPENDIX 3

Educational Objectives and Media in Thailand

Before a media project can even be contemplated, the most crucial educational objectives have to be identified. This is quite a difficult task, for four main reasons. Firstly, objectives are not always explicitly stated, but are often implicit, 'hidden objectives'. Secondly, there are several different levels of objectives, ranging from precise behaviouric. objectives through enabling objectives to vague statements of intent, and often objectives at one level are inconsistent with those at another. Thirdly, different population groups (for example, parents and educational administrators) often have conflicting objectives. And fourthly, objectives are frequently formulated more as post-rationalisations than as guidelines for future policy and action.

We must therefore first discuss some of the different types of overall educational objectives identified for both the formal and out-of-school educational system of Thailand, and then proceed to isolate these objectives that seem to be most critical and amenable to achievement through the use of mass media. On this basis we can begin to outline a few broad general objectives for the media system as a whole. In the main, as the function of the proposed media system is to affect positively what is taught and learned, only those objectives that are likely to have a considerable impact over a relatively short period of time will be considered.

The various policy documents extant include three main types of objectives. First, there are those objectives that assume that all 'education' is a 'good thing'. Such objectives are usually quantitative (aiming for example at achieving universal seven-year elementary schooling by 1980), though sometimes they are also partly qualitative (for example, improving the qualification structure of the teaching force, or reducing repitition and dropouts). This type of objective does not concern itself either with what is learned, or with the relationship of education to broader social, cultural and economic objectives.

The second type of objective commonly quoted relates to academic theories of child development and often seems like a copy of models developed by liberal Western educators, bearing little relationship either to the realities of Thai society, or to their practicality given the very limited educational resources available. Very often the actual effects of the school system are in complete contradiction to these objectives; for example, the objective 'to develop the ability to work and live in harmony with others in a cooperative manner' is in conflict with the competitive nature of all current schooling.

The third type of objective attempts to relate education and schooling to other social, cultural, political and economic goals. For example, manpower needed for the country's development. This type of objective does not assume that education is an end in itself, but that it is a means towards achieving some other end. Apart

from a mainly verbal commitment to education's role in promoting democracy, it is only during the last decade or so, since Thailand has become interested in 'development' per se, that this type of objective has begun to occupy a significant position in the various policy statements.

Apart from these three categories of objective as seen by government and educational administrators, the objectives which parents have in sending their children to school, and those of the older students themselves who are motivated to continue their education, cannot be ignored. Parents are interested in their children being educated (as are the older students themselves) not because they are interested in education in its own right, or because they feel that what is learned will turn them into 'whole' men and women, or because that they feel that their schooling will help them play a more dynamic role in the development of their country. Their interest is because, in the eyes of parents, schooling helps to discipline children, and most importantly because, in the eyes of both parents and children, the school gives certificates to the successful, which provide them with social status and offer a chance of obtaining a relatively secure and well paid job. Even though school discipline may be declining, and the number of educated unemployed is increasing at an alarming rate, these old expectations are still of crucial importance in most people's minds. Though it is realised that the school system is one of the prime instruments of society for distributing social status and high earnings, and that inevitably, with the present structure of the system, the majority of participants must 'fail',

the desire for certification as a powerful motivating factor cannot be ignored.

Because of the nature of the media, and the need to justify the large expense involved in setting up an educational media system, it is felt that the emphasis of any media service should be on the third type of objective (education for social, cultural and economical development). At the same time, one cannot discard either accepted theories of child development and adult psychology, or the demands of potential users and their parents.

The Past Development of Objectives

Historically speaking, Western-style schooling and education was adopted in Thailand about 100 years ago as a response to, and a protection against imperialistic pressures from the colonial powers in surrounding countries.

At the same time it was felt that, if Thailand was successfully to resist colonialisation, modernisation was necessary, and one of the preconditions for such modernisation was the establishment of a Western-style school system.

Thus, despite the fact that Thailand was, and is, a Buddhist country and had, and still has, a mainly peasant economy, a Western protestant, urban materialistic-type school system was grafted on to traditional Thai culture, without any prior attempt being made clearly to define its objectives, both internal and external, or to study

carefully whether the stated and hidden objectives of the system were consistent.

The first comprehensive list of educational objectives in Thailand was not prepared until 1895, and from that time onwards there were more than a dozen major changes. In qualitative terms there have been quite wide shifts of emphasis, varying from attempts to use education as a means of maintaining hierarchical stability and agriculture harmony, to attempts to promote democracy, or to develop the 'whole' child according to Western liberal concepts.

Despite these wide variations, there has probably been little change in what has been taught and how it has been taught. However, over the last 40 or 50 years, as people have begun to play greater lip service to democracy, schooling has probably tended to become more academic, less relevant to the existing environment, and seem more as a continuum leading from the first grade of elementary schooling through to University.

The last major revision of educational objectives took place in 1960. In general terms this is still in force and is likely to remain so until at least 1977.

Though there are a very large number of specific curriculum objectives of each level of schooling, the overall objectives of the 1960 National Scheme for Education can be summarised as follows:

(i) The Thai people shall be educated according to their individual capacities, so that they can be moral and cultural citizens with discipline and responsibility, with good mental and physical health, and with a democratic outlook. They should be given the knowledge and skills necessary for carrying out an occupation useful both to themselves and to the nation.

(ii) Boys and girls should receive full-time education up to the age of 15.

(iii) Boys and girls should strive to gain knowledge and experience that will serve a useful purpose in their lives.

(iv) Education must serve the needs of individuals as well as those of society. It must also be in harmony with the economic and political system of the country.

(v) Four basic types of education should be given to all boys and girls:

(a) Moral education

(b) Physical education

(c) Intellectual education

(d) Practical education

(vi) The State should educate the population of the country to as great an extent as its economic system will allow.

In these basic objectives no real emphasis was given to using education as a tool either for national development or for rural transformation. Nor was there much emphasis on the role education should play in the equalisation of opportunity. Finally there was no emphasis placed on the need to increase quality per se.

By the time the second Five Year Plan for national development went into operation in 1966, there appeared already to be a distinct change in the character of objectives, despite the fact that there was no significant change in the curricula, text books or methods of teacher training.

The second Five Year Plan placed a distinct emphasis on relating education to development, on relating expansion to equality concepts and on improving the tools of education (text books, teachers, buildings, etc). In addition the idea of education and its standards being ends in themselves was again introduced.

The objectives of the third Five Year Plan (1971) followed the trend of the second plan, except that they were more specific. They can be summarised as follows:

(i) To develop the educational system so that it will play the maximum possible role in the social and economic development of the country.

(ii) To expand lower elementary education to cater for the growth in school age population and to expand upper elementary enrolments as rapidly as possible, so that universal compulsory 7-year education can be achieved by the late 1980s.

(iii) To expand secondary and higher education, particularly in the fields of medicine, technology and teacher education, so that the country's future manpower requirements are met.

(iv) To increase the efficiency of all levels of education by reducing repeater, dropout and failure rates.

(v) To improve and diversify the curriculum at all levels, particularly in rural areas, so that what is learnt is more directly applicable to the future lives which the children will live. It is desired that secondary education courses should provide students with a general academic background, whilst at the same time preparing them either for further education courses or for their future vocation.

(vi) To improve the qualification structure of the teaching force at all levels.

(vii) To expand and improve education for rural development in order to lessen the wide disparities of income between rural and urban areas, and the agricultural and industrial sectors.

(viii) To expand non-formal education rapidly in accordance with the concept of life-long education.

It can be seen that over a short period of a decade or so the overall objectives of the Thai Educational system have shifted significantly away from a 'theoretical' child-centred orientation, towards a greater emphasis on development, problem solving and other national and social goals. In addition there is a tendency for education to become less associated with schooling and the teaching of academic subjects and for it increasingly to be seen as a lifelong process, aimed at providing the mass of the population with the opportunity

to acquire relevant skills, knowledge, attitudes and ideas which will help improve their quality of life.

Admittedly these significant changes in emphasis and priority have not yet been accompanied by equally significant changes in teaching method, curriculum or the structure of the system, though there has been rapid development of innovative forms of adult and non-formal education, and also preliminary attempts to diversify the curriculum in general education.

However, the fact that the practice in and out of school has not changed as rapidly as the objectives does not mean that any new media service should be used to reinforce existing practices. The contrary should be the case, since it is the bureaucratic inertia of the existing system which is retarding those changes which Thai leaders would like to see occur. Thus any new media service must certainly have as one its prime functions the implementation of high priority objectives which are presently not being realised, or even attempted to any large extent, by the present system. For example, the new media service, as a minimum, should be used to:

(i) Help speed up the process of curriculum diversification so that what is taught bears a greater relationship to what the child needs to know.

(ii) Make education more an instrument for rural development than it is at the moment.

(iii) Help promote deep and lasting democracy and community self reliance.

(iv) Help widen the scope for educational opportunity, so that attempts to do so have some chance of counteracting the powerful social, cultural and economic forces which at present ensure that there will be no real equality.

(v) Help turn the theory of 'lifelong education' into reality.

It should be emphasised that the function of the new media service should neither be to improve further those facts of school system which already have a reasonable quality, nor to promote existing poor (but wide ranging) teaching practices which do not involve teacher/pupil dialogue, and which are not of very great relevance to the environment in which the child (or adult) finds himself.

The position is taken generally in this report that education is not an end in itself but a tool for development, which in turn is not an end in itself (or merely an increase of GNP or other statistical indicators), but a way of increasing the sum total of happiness and satisfaction within a given society.

When planning for widespread media use within the social and educational system, great care has to be taken, as must be taken with education itself, to avoid creating expectations and aspirations which cannot be achieved. If such expectations are created the media will, in a Buddhist sense, be leading to 'miseducation' and 'misdevelopment'. A media system is required whose objectives ensure that the values of one population group (which may be out of harmony with the environment of other groups) are not 'universalised'.[32]

APPENDIX 4

Defining the Problem

Although the opportunities presented by satellites for providing effective cross-cultural tele-education are considerable, the barriers to achieving this objective are formidable. These barriers can be broken down into several categories: (1) software or educational programming; (2) hardware or delivery systems; (3) the cost of providing this service (particularly the cost of obtaining effective programming materials and the often high tariffs associated with delivery of this programming material); and (4) the institutional, political, and cultural barriers that resist the use of new technologies to achieve educational goals. Let us briefly examine each of these major problem areas.

Educational Programming and Software

Many planners, in looking at satellite delivery systems, tend to start with the hardware of satellites and earth stations and then perhaps consider terminal equipment, such as television and radio receivers, audio-cassette recorders, and computer terminals. This approach has two major problems. First, it can make the program overly hardware-oriented rather than oriented toward educational objectives. Second, it tends frequently to translate into systems that, in financial terms, err in allocating far too many resources to hardware and far too little resources to software or educational program development.

In this presentation, software is to be interpreted quite broadly. The development of an effective educational program must consider not only the development of effective radio, video or film, or programmed instructional materials, but also must involve the training of teachers and aides in the effective use of these materials and a mechanism for teachers in the field to be directly involved in the initial production and revision of these materials. There are also important linguistic and cultural problems to be addressed. In a national environment, where several languages are spoken or where there is wide cultural diversity among students, whether they be children or adults, culture must be an extremely important aspect of planning the educational materials. Further a "good" educational program that intends to use satellite technology will probably use diverse communications strategies. (See Figue 7). In some areas, radio may be appropriate, while in other areas, television or audio plus electronic backboard, may be appropriate. In still other areas, teletext, audiocassette, or books, may be the most effective medium.

In addition to the approaches that involve point-to-multipoint distribution of educational materials, the system must also allow for interactive exchange. A truly effective program will have provision for interactive audio conferencing among participating teachers, and, in a number of cases, will also allow for interactive audio conferencing in which students are allowed to ask questions and receive answers. The final problem that should be considered is the adaptation of programming developed in other

countries through script revisons, insertion of local materials, and translations. Though adaptation can be a cost-effective approach to satellite-delivered educational programs, there are many potential pitfalls in this approach, such as unintended messages or miscommunications that occur because translations are linguisitically correct but culturally wrong.

In summary, there are considerable problems in the development of effective software or educational programming materials. As a general guideline, the success of tele-education projects will be in jeopardy if they do not devote a large portion of their budgetary resources to software development, do not create and test educational programming materials in interactive networks, do not involve teachers in the creation and the revision of educational Program materials, and do not devote considerable time and energy in obtaining the support of the educational system where these materials are to be utilized. These types of problems have been identified in a number of experimental programs in the United States and in developing countries such as El Salvador, Liberia, and the Ivory Coast. They are truly important areas of concern and if not correctly handled could easily endanger the overall success of the program.

Hardware-Related Problems

In designing satellite communications networks, several problems 12

are frequently encountered. First, particularly in developing

countries, there is a tendency to jump to the conclusion that a full satellite system, with a satellite and spare in orbit and a large network of earth stations, is needed to initiate a meaningful program. In fact, many countries - almost all developing countries - have found that, to initiate their programs, a period of tests and experimentation on a small scale is essential to designing long-term, cost effective satellite networks. India and Brazil, for instance, initiated their domestic satellite programs on the basis of experimentation with the NASA ATS-6 satellite. This experiment was followed in Brazil's case with experimentation using the Communications Technology Satellite. Finally, both Brazil and India, in both cases, started their operational programs by lease of capacity from the INTELSAT system to establish limited national domestic systems. Now, after this ten-year evolutionary experience, both countries are proceeding to implement their own full-scale domestic satellite systems.

This approach is important for various reasons. First, the problems of earth station implementation, operation, and maintenance are well-understood as they relate to the local environmental conditions and the constraints on available resources for repair and servicing. Second, it minimises the extent of capital investment made by the country concerned, including both the hardware development program and the educational programming that must be carried out at the same time.

Another problem is that hardware planners may focus on the sa-

tellites and earth stations and may neglect the educational or communications link from the earth station to the pupils and residents of the surrounding villages, schools or reception sites. VHF terrestrial communications systems, openwire communications systems and, of course, television and radio receivers must be provided for in the plan. In addition, electrical power is needed, either a locally based generator, solar or battery power, or even bicycle-operated, manually driven generators. One thing is clear: a satellite network that does not connect to terminal equipment and receivers that people can use has no value. Accordingly, greater attention should frequently be directed toward the fundamental issue of the last-mile problem: how does one transmit educational programming and other materials to and from the end-user? A general guideline suggests that no more than 30 percent of all annual expenditures should be devoted to the capitalization of a satellite and terrestrial communications system, leaving 70 percent for the maintenance, development, and operation of programming and other human resource aspects of the project, such as field workers and teachers.

Economic Costs and Tariffs

As noted earlier, satellite communication is merely another tool that can be used to deliver educational materials to students. As such, it must prove that it is an effective mechanism for delivering the right message to the right location at the right cost. Fortunately, the cost of satellite communications has decreased and will continue to decrease for the foreseeable future.

This decrease will continue because larger and more cost-effective satellites with longer lifetimes are being developed and launched. The cost of launch services is also expected to decrease in future years. Important developments are also being made in the cost and performance of earth terminals. Furthermore, sophisticated digital compression techniques are allowing more and more information to be sent through the same communications channel. In particular, video conferencing channels have been developed that can operate effectively in the range of one of three megabits per video channel. Experimental systems are under development that can transmit 256 kilobits per second. Audio conferencing facilities, which now require the equivalent of 64 kilobits per second or more, may ultimately utilize digital transmission techniques that require only 16 kilobits per second. These compressed digital voice services may prove highly effective for rural communications systems.

All of these technological trends suggest that in the future it should be possible to deliver programming materials to the end-user at less cost. Today a typical network design for delivery of educational materials varies significantly, depending on the country concerned and the extent of its communications development. In developed countries with well-integrated satellite and terrestrial communications systems, a combination of approaches can be utilized. This combination can include feeding via satellite into cable television networks for the distribution of materials. It can also include feeding satellite materials to a

special satellite network, such as the HI-NET Satellite System operated by Holiday Inns, where a large number of people could attend Holiday Inn facilities all over the United States for a special educational purpose.

In the next four years, direct broadcast satellite technology will become available in the United States and perhaps ter other countries, and thus allow educational materials to be delivered directly to the home, school, office, hotel or other facility. If desired, educational programming materials for a special audience could be scrambled or encrypted so that only designated sites would be able to see and hear them.

One significant option that may be possible in the future in a number of countries is the off-peak hour distribution of educational programming at special rates. In developing countries, however, the options are more limited. In these countries today, the most typical network would be the distribution of educational programming through relatively low-powered satellites, with redistribution to the end user by terrestrial means or conventional television or radio transmitters. Typically, in geographically large countries, direct broadcast satellite technology is under study and in various stages of implementation. These projects include the INSAT project in India, the direct broadcast project in Mexico, and the Arab Satellite System in the Middle East, which uses 2.5 GHz band for community antenna television distribution to provide community-access television.

Despite the options that now exist and the favourable technological and economic trends, the cost of satellite-distributed television programs is still high. Accordingly, a major problem area that still remains is to develop system architectures, network concepts, and new tariffing approaches that will allow a significant further reduction in the cost of educational programming materials. As mentioned earlier, software and educational programming costs should be the predominant element of the overall cost of most programs. Again, however, ways must be found to develop educational programming materials that work effectively but that can be provided at lower unit costs.

One of the more obvious approaches to lowering costs is the joint development of educational programming materials on an international basis and the adaptation or translation of material developed in one country for use in another. This approach, however, poses linguistic and cultural difficulties, and important cost tradeoffs would be necessary in order to proceed on a co-operative or transnational basis.

Institutional, Political and Cultural Barriers

A fourth barrier to the provision of satellite tele-education courses involves social, political, and cultural considerations. Traditional cultures are reluctant to use new technology to introduce social innovation. In many cultures there is a problem if teachers are very young. There may also be a problem of sex; in the Arabic culture, for instance, men and women, boys and

girls, are taught separately. Although most of the problems encountered by satellite communications are common to other modern educational programs, there are several aspects that are unique to satellites. First of all, a satellite program is typically national or even international and thus very broad in scope, as opposed to other programs that can be presented to a smaller jurisdiction. Satellites, because of their broad coverage, tend to be expensive, high-profile projects. Finally, these programs are using very advanced technology, which can be intimidating to people unfamiliar with it.

Although these problems are serious, their importance should not be overemphasized since countries such as Brazil, the Philippines, and Indonesia have effectively demonstrated that satellite communications programs can indeed be used effectively and that social, cultural, and political problems can be overcome. In fact, the most difficult problems appear to emerge in areas that have no direct relationship to satellites themselves, such as lack of effective cooperation and coordination among government ministries that are concerned with implementing a comprehensive national educational program.

The problems to be overcome in developing effective satellite-delivered educational services are considerable. We have noted the following:

- the difficulty of designing effective, two-way, point-to-multipoint and interactive networks well-suited to the community;
- the issue of ownership and control of these transmission facilities;
- the tendency to design systems that place too much emphasis on satellites and earth station terminals and not enough on terrestrial redistribution, user receivers and terminals, and especially, software and human resources;
- the difficulty in importing and translating educational materials and programs developed for another country or culture;
- the tendency to exclude teachers and users of educational materials from program development;
- the tendency to use a communicative service or technology in a particular environment that is more expensive or sophisticated than is necessary or cost-effective;
- a tendency to underestimate the "soft" costs of an effective satellite-delivered educational service, such as maintenance costs and training of teachers, field workers and technicians;
- the tendency of satellite manufacturers and terminal equipment suppliers to "oversell" their product;
- the barriers to accepting a new way of educating students or adults;
- the tendency of advocates of satellite education to promise more than is possible and, at times, to present a program so that it is seen as threatening to cultural values or even job security; and

- *the still relatively high cost of many satellite-delivered programs, particularly when less than a million students are involved.*

These problems are difficult, but not impossible to solve. They are, unfortunately, made more complex because many different types of people with different types of training are needed to solve them; economists, engineers, educators, broadcasters, and government and political officials. Furthermore, global and regional satellite delivery systems also require extensive international cross-cultural cooperation."[83]

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