

Thesis 1161

AN ORGANIZATIONAL MODEL PLAN FOR THE APPLICATION OF
EXPANDED EDUCATIONAL BROADCASTING SERVICES IN THE
FORMAL SECONDARY SCHOOL EDUCATION SYSTEM OF ZAMBIA

by

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DEDICATION

I dedicate this thesis to my late father,
Kakanda Kamuti Mukelabai. Tate, you
are ever so present in my life and I
know you would have been proud of this.
This is for you. Mupumule hande.

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	(i)
ACKNOWLEDGEMENTS	(iii)
LIST OF TABLES	(v)
ILLUSTRATIONS	(vii)
CHAPTER I : INTRODUCTION	1
Statement of the Problem	1
Purpose of the Study	2
Rationale for the Study	3
Definition of Terms	4
Delimitations of the Study	6
Organization of the Study	6
Summary	7
CHAPTER II : REVIEW OF RELATED LITERATURE	8
Research in Education and Media	8
Some Assumptions	13
Planning for Media	18
Costs	22
Costs and Media Analysis	26
Educational Broadcasting in Selected Countries	30
Central America: (a) Mexico	30
Central America: (b) Nicaragua	38
Africa: (a) The Ivory Coast	47
Africa: (b) Kenya	59
Asia: Educational Radio in Nepal	66
The Caribbean: Radio Santa Maria in the Dominican Republic	72
Critical Issues for Planning the Use of Communication Media in Education	79
Summary	94

	<u>Page</u>
CHAPTER III : METHODOLOGY	96
Approach	97
Designing a Plan for Expanded Educational Broadcasting Services	98
Data Collection	100
The Schools in the Sample	100
Questionnaire Design: Primary Data	102
Questionnaire Design: Guidelines	103
Administration of the Questionnaire	105
Feedback of the Proposed Plan	107
Outcomes of the Study	108
Summary	109
CHAPTER IV : EDUCATION IN ZAMBIA: AN ANALYSIS	110
Education in Colonial Times	110
The Problem	113
Factors Affecting the Problem	114
The Education System	127
Educational Organization	131
Primary School Education	133
Expenditure in Primary Education	148
Secondary School Education	152
Higher Education	160
The University of Zambia	161
Teacher Education	164
Technical Education and Vocational Training	169
Curriculum Development	170
Educational Broadcasting	174
Educational Radio Service	175
Educational Television Service	180
Audio-Visual Aids Services	185
Correspondence Study	187
Zambia: Needs	188
Strategies for Improving Education in Primary and Secondary Schools	194
Summary	199

	<u>Page</u>
CHAPTER V : MANAGEMENT OF EDUCATIONAL BROADCASTING	201
Objectives	201
Functions	202
Some Concepts in Educational Broadcasting Organization	206
Summary	219
CHAPTER VI : THE PLAN	221
1. Purpose	221
2. Educational Broadcasting and Educational Goals	222
3. Zambia: Goals and Problems	224
4. Organization	226
5. Personnel	232
6. Educational Broadcasting Programmes	236
7. Priorities and Recommendations	237
Summary	242
CHAPTER VII : PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS	244
Section I: Data From Questionnaire A	244
Utilization of Educational Broadcasting	245
Attitudes to Educational Broadcasting	245
Feasibility of the Expansion	247
Chances of Implementation	247
Section II: Analysis of Feedback on Questionnaire B	249
Recommendations	262
Summary	264
CHAPTER VIII : MODIFICATION OF THE PLAN	266
Modifications	266
Summary	272

	<u>Page</u>
CHAPTER IX : SUMMARY, IMPLICATIONS, STRATEGY FOR IMPLEMENTATION AND SUGGESTIONS FOR FURTHER RESEARCH	273
Summary	273
Implications of the Study	275
Strategy for Implementation	276
Costs	280
Lack of Trained Personnel	282
Educational Materials	283
Suggestions for Further Research	291
Summary	292
BIBLIOGRAPHY	294
APPENDICES	311

ABSTRACT

Given the constraints of the present education system in Zambia; that is, lack of financial resources, shortage of skilled manpower and technical facilities, this study proposes that a system of expanded educational broadcasting services applied to these problems might bring about some alleviation of them.

The study deals with the design of a framework for the development of expanded educational broadcasting services in the formal secondary education system of Zambia and is a selective exercise in the planning and utilization of educational broadcasting. It is designed in response to the need to plan and develop a system of education that is more responsive to increasing numbers of students and to provide them with more opportunities for learning than the present system.

A draft of the plan was developed from a review of literature relevant to the Zambian situation from local as well as other sources concerned with education in developing countries. Data were also gathered from secondary school teachers and educational administrators through the use of questionnaires. The plan was reviewed by a panel of six persons expert in the field of education in Zambia; the criteria for their selection were that they are in leadership positions. After they had read the plan, they were required to answer the questionnaire which accompanied the plan. The feedback obtained from the two questionnaires was used to revise the plan.

Recommendations to the Government of Zambia based on the plan were considered from the point of view of appropriateness to the local situation, feasibility, implementation, desirability and efficiency.

The final plan represented a comprehensive design which collected, analyzed, and prepared information, data and recommendations which could assist the Government of Zambia in putting into effect the development of expanded educational broadcasting services for the formal education system in the country.

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LIST OF TABLES

<u>Table</u>	<u>Page</u>
2.1 Mass Media in Low-Income Countries	14
2.2 Communication Media and Efficiency in Education	19
2.3 Student Enrolment in Telesecundaria	36
2.4 The radio Mathematics Production Cycle	40
2.5 Staff Categories at the Bouake Centre	52
4.1 School Aged Population Distribution by Sex and Age 1980	125
4.2 Actual and Projected School Aged Population 1980-2000	126
4.3 Primary School Enrolment 1980-84	136
4.4 Primary School Enrolment as Percentage Nominal Primary School Age-group 7-14 by Province and Sex	137
4.5 Urban Rural Progression Ratio	144
4.6 Estimated Costs of Recurrent Expenses 1981-84	149
4.7 Progression Rates from Grade 7 to Grade 8 1978-84	154
4.8 Secondary School Data 1980-84	155
4.9 Secondary School Boarders Numbers and Costs 1979-84	158
4.10 Staff in Post at University of Zambia 1986	163
4.11 Secondary School Teacher Training Programme	165
4.12 Output of Qualified Secondary School Teachers 1979-84	167
4.13 AV Aids Circulated in 1983	186
7.1 A Comparison of Responses of Panel to Logistics Function of Expanded Educational Broadcasting Services by Government Level	252
7.2 A Comparison of Responses of Panel to Production Function of Expanded Educational Broadcasting by Government Level	253
7.3 Responses of Panel to Design Function of Expanded Educational Broadcasting by Governmental Level	254

<u>Table</u>		<u>Page</u>
7.4	A Comparison of Panel to Utilization Function of Expanded Educational Broadcasting by Government Level	255
7.5	A Comparison of Responses of Panel to Evaluation Function of Expanded Educational Broadcasting by Government Level	256
7.6	A Comparison of Responses of Panel to Research Function of Expanded Educational Broadcasting by Governmental Level	257
7.7	A Comparison of Responses of Panel to Organization of Plan of Expanded Educational Broadcasting by Government Level	258
7.8	Responses of Panel to Personnel and Services of Expanded Educational Broadcasting Plan	259
7.9	Responses of Panel to Distribution and Utilization Services by Provincial Media Centre Staff	260
7.10	Responses of Panel to Evaluation Service by Provincial Media Centre Staff	261

ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
2.1	The Organizational Structure of General-de-Educacion Audiovisual (DGEAV)	34
2.2	The Organizational Structure of the Nicaraguan Radio Mathematics Project	45
2.3	The Organizational Structure of the Ministry of Primary and TV Education in Ivory Coast in 1978	50
3.1	The Schools in the Sample	101
4.1	Districts Showing Very High and Very Low Grade 1 Participation Rates (both sexes), 1984	139
4.2	Districts Showing Very High and Very Low Grade 5 Participation Rates (both sexes), 1984	141
6.1	The Proposed EBS Organizational Structure	243

CHAPTER I

INTRODUCTION

Poverty, illiteracy and increase in population are contributory factors to the world education crisis (Coombs, 1985). In developing countries, the crisis has assumed particularly critical dimensions because of a shortage of capital, trained manpower, and lack of planning and resources (Meier, 1984). The demand for education was promoted by the emergence of some countries from colonial status, thereby bringing about an increasing level of aspiration. Many countries sought to respond to their education needs by devising plans, based on well-defined goals and objectives. This is especially the case with those countries which were formerly occupied by colonial powers, for they had to begin anew to first ascertain what their problems were before embarking on the task of designing solutions. Zambia is one such country.

Statement of the Problem

Zambia suffers from a lack of capital for development. The government does not have an over-abundance of finances; indeed the objectives of its economic programmes consist not only of increasing domestic production so that per capita food consumption could be increased, but also in promoting a level of production which would generate surpluses for exports and thus earn foreign exchange resources for the development of other sectors of the economy. The education expenditure has more than doubled since independence and teachers' salaries account for 91 per cent of this expenditure (Kelly *et al.*, 1986). Costs of education are increasing at a rapid rate while the country's rate of economic growth of 0.8 per cent (Budget Address, 1988), is much less by comparison. For example, the expenditure on education averaged 13 per cent of total public

expenditure over the period 1975-1985. After a significant drop in 1980 to 8 per cent, education even managed to increase its share to 17 per cent in 1984 (Johnston and Kaluba, 1987).

Zambia is short of skilled manpower, a sine qua non for national development. Education has become a major enterprise in which management skills are increasingly required and the lack of these skills does not equip Zambian adults to make use of new productive techniques, nor does it lead them to initiate changes in methods of production and methods of organising for production.

Increased enrolments in schools have created great demand for trained teachers who are in short supply - especially in the areas of science and mathematics "where the supply and retention of teachers is a major problem" (Kelly et al., 1986: p409). The textbooks, basic to education, are always in short supply. Hand in hand with a general shortage of school buildings is the lack of well equipped science laboratories.

The problems are fourfold: how to keep down costs, how to develop the necessary management skills through the education system, how to train a sufficient number of qualified teachers and how to rebuild or replace out-of-date and time-worn curricula.

Purpose of the Study

The purpose of this study is to design a model plan for the development of expanded educational broadcasting services in the formal secondary school education system of Zambia.

The study is conducted in the belief that the systematic application of the principles of educational broadcasting to the educational needs of a country such as Zambia hold promise for the partial solution of its educational problems.

Rationale for the Study

Communication media in education are part of a wider world touching on the importance of technology for human kind (Biddle and Rossi, 1982: p382). The utilization of technology to improve learning and knowledge transfer involves the prospect of the creation of institutions substantially different from those of the past.

Modern technology, with its methods of organization and measurement, its evaluation and experimentation techniques can, it seems, provide education with the guiding principles upon which to base a definition of the relationship between the various techniques and methods, content and existing methods of evaluation. (Dieuzeide, 1981: p32)

Evidence continues to grow of the effective use of media when applied to education in many developing countries (Schramm, 1978; McAnany and Mayo, 1980; Ferraton, 1982; Bates, 1984). If this is so, what can educational media do in the case of Zambia if adopted systematically?

- Can the use of educational media principles be addressed to the specific education needs of Zambia: trained personnel, teachers, technical skills, vocational skills, and management skills?
- Can educational media bring about change within the school systems consonant with national objectives?

Technological innovation brings about change, and the application of educational broadcasting to a problem in education may promote change (Reddi, 1987). Harbison (1984) stated that

the application of technology - visual aids, programmed learning, instructional radio and television, revised and simplified curricula and texts - offers a real challenge both to the developing countries and assisting countries. (p25)

In many developing countries the resources used to tackle educational problems have been traditional: teachers, textbooks and other printed materials. However, there is a realization now on the part of some countries (Tickton, 1970; Dieuseide, 1971) that the tasks would be more efficiently and more quickly accomplished by appropriate uses of educational media. Where a radical change in education system is called for, are textbooks and printed materials alone the best means of achieving this? Jamison and McNany (1978) suggest that the old methods alone are inappropriate in today's world and they recommend a fusion with new technology. The rationale for this study also considers human factors in educational media. The challenge of educational media has been faced in some countries, it has been met in others, but it has yet to be faced or met in Zambia.

Definitions of Selected Terms

The following are definitions of some of the terms used in this study:

Ministry of Education is used, in this study, to refer to the Ministry of General Education and Culture (MGECC) which runs all primary and secondary schools in the country. The Ministry of Higher Education (MHE) is responsible for the running of technical institutions and all primary and secondary teachers' training colleges.

Formal Education is the hierarchical, structured and chronologically graded school system used in Zambia and many other African countries. Students in these institutions are normally engaged in full-time studies.

Educational Technology is understood as the "development of a set of systematic techniques and accompanying practical knowledge for designing, testing and operating schools as educational systems" (Gagne, 1980: p6). In this study educational technology and instructional technology will be used interchangeably.

Continuing Education is the provision for systematic and purposeful learning beyond formal education in a variety of settings and at all ages. It is based on the view and belief that learning takes place throughout life.

Distance Education is the type of education in which students are not continuously and immediately supervised by a teacher or tutor in the same premises such as a classroom (Holmberg, 1977). Distance learning, therefore, is that learning acquired by a student working independently at a place which is remote from the teacher or tutor, usually with the aid of radio, television or printed materials.

Big Media are "... the more complex and costly devices of instruction such as instructional television, films and computer-assisted instruction" (Schramm, 1977: p16).

Little Media are "the less costly, less complex ones like radio, tape-recorders, filmstrips, slides, transparencies, visuals of all kinds". (Schramm, 1977: p16).

Utilization is defined as the sum of all those activities that enhance the application of educational broadcasting in the teaching and learning process. Examples of these activities may include the integration of technology within the school curriculum and evaluation of the audience to determine the effectiveness of the distribution facilities.

Delimitations of the Study

1. The study is limited to Zambia and the conditions which are peculiar to that country.
2. The study encompasses a gross comparison of global costs in different educational media systems rather than a detailed cost analysis for Zambia.
3. The study is a selective exercise in the planning and utilization of educational broadcasting.
4. The study circumscribes only formal education, but it may have ramifications for non-formal education.
5. The study will consider only the traditional and one alternative approach for the improvement of the education system in Zambia. It does not deal with the content and format of educational radio or television programmes, but rather the effort to make the educational broadcasting system functional through personnel involvement.

Organization of the Study

The dissertation is divided into nine chapters. The first chapter has attempted to provide an introduction to the topic area. It has set forth the problem, purpose, rationale and the delimitations of the study. Some major terms used in the study have also been defined.

Chapter II reviews the related literature in educational broadcasting systems and practice in selected countries. The literature review is designed to provide the reader with an understanding of the current body of knowledge and role of educational broadcasting in education and suggests the potential usefulness of considering the literature in the formulation of the plan. Chapter III describes research methodology used in gathering the data. It discusses the research design procedures such as:

- (a) Development of the instrument, its objectives, design and items
- (b) Criteria for evaluating the model plan
- (c) Administration of the questionnaire and data collection
- (d) Data analysis

Chapter IV discusses the education of Zambia. Chapter V details the management of educational broadcasting systems. Chapter VI gives full details of the suggested draft model plan for expanded educational broadcasting services in Zambia.

Chapter VII is the presentation, analysis and interpretation of the findings obtained from the data gathering. Chapter VIII presents recommendations for the modification of the plan following feedback from members of the panel. Chapter IX (the last one) gives a summary of the dissertation and some recommendations for the implementation of the model plan.

Summary

The primary objective of this chapter was to highlight the problem, purpose of the study, rationale of the study and the delimitations of the study. Some major terms used in the study were also defined. The next chapter deals with a review of literature which is relevant to the development of the plan.

CHAPTER II

REVIEW OF RELATED LITERATURE

The overall objective of this chapter is to consider the role of planning for educational radio and television from the standpoint of the literature in the field of communication media in education. This chapter is composed of the following main sections: research in education and media; some assumptions; planning for communication media; costs; selected case studies of educational broadcasting; and critical issues for planning the use of communication media in education.

Research in Education and Media

Although educators since Plato have stressed education's function of preparing people for their role in society, attempts to quantify education's contribution to economic or social development are more recent. Harbison and Myers (1964: p3) refer to Adam Smith's and Alfred Marshall's emphasis on the importance of education as investment. They, in turn, argued that while there are many difficulties of measurement, "it is obvious that investments in education and human resources development contribute to economic growth and economic quality" (Ibid: p182).

More recent work has confirmed Harbison and Myer's findings, and related them to particular sectors of education. Psacharopoulos (1980) has argued that we can measure the contribution of education to economic growth in a wide range of countries by looking at differences in personal income which correlate with different levels of education. Jamison and Lau (1982) also in a cross-national study, have examined the contribution of education to agricultural productivity and established correlations between farmers'

years of schooling and the amount they produce. Similarly, O'Hara and Leslie (1980) have surveyed the research on the effects of education and health and demonstrated a correlation between years of schooling of parents and infant mortality rate. Thus for both agriculture and health it is possible to demonstrate a relationship between schooling and later behaviour.

Research within this tradition, then, has strengthened the economic case for investment in education, and developed some tools of analysis for its measurement.

The second research tradition concerns the diffusion and adoption of innovations. Much of the literature is American, and much of it is concerned with agricultural innovation. Rogers with Shoemaker (1971) surveyed the extensive literature in this tradition with its emphasis on the rate at which innovations are adopted and on the change agents or opinion leaders whom they saw as playing a key role in social change. They distinguished various stages in the adoption of innovations and analysed the role of communication in it.

Research in this tradition, however, does not by itself answer all the questions about the effectiveness, or the comparative effectiveness of communication media and it has two limitations. First, much of it is concerned with rich rather than poor countries, and there have been relatively few studies within the tradition on the role of mass media in countries of the third world. (Rogers appears to refer to only six such studies). Second, the research generally stops short at the adoption of an innovation. It seldom, for example, asks whether agricultural productivity has risen as a result of adoption of an agricultural innovation.

"Of nearly 1,500 studies, only thirty-eight investigated the consequences of innovations" (Rogers and Shoemaker, 1971: p324). Such research thus provides models of the way in which mass media can communicate with learners, and in which innovations are likely to be accepted or rejected, but stops short of answering key questions about effectiveness.

The third tradition is of research into communication media and their characteristics. With the increasing use of radio for education in the late 1920s and the 1930s, researchers began to ask how it compared as a means of communication with face-to-face teaching and with print. Cantril and Allport (1935) recognized the effective power of radio in the hands of a demagogue like Huey Long (p6) or of an advertiser selling to children (Ibid: p236). But, where close comparisons were made, they found the more significant variables for cognitive learning to lie in the difficulty of material and the cultural level of the subjects of their experiments (Ibid: p171-172). Similarly research in Wisconsin in 1936-1937 found no significant difference between the effects of radio and conventional teaching (Forsythe, 1970). By this time, too, it was being argued that "the physiological means of perception is of small importance in communication of ideas; what counts is the situation in which communication occurs, the reading and listening habits of the respondent and the character of the subject matter in question" (Lazarsfeld, 1940: p199). This finding was to be echoed, after the war, by Trenaman in Britain who compared radio, print and television as teaching methods and found no significant differences between them: differences between subjects and audiences far out-weighed any differences between the media (Trenaman, 1967). Television researchers of the 1950s and 1960s followed their radio forebears in comparing television with classroom teaching, and, time again, found no significant difference between the two (Chu and Schramm, 1968).

Two conclusions follow from this line of research. The first is the theory of the equivalence of media which states that no one medium can be expected to be more effective for teaching than any other. Chu and Schramm (Ibid: p11) argued that the finding was a liberating one, enabling educators to choose a medium according to its convenience for a particular audience and subject, without needing to worry about the question of effectiveness. There is, therefore, no reason intrinsic to communication media which suggests they would not be effective for formal or non-formal education. But, second, the research has concentrated on paired comparisons between media and has yielded fewer results about any particular combination of media which best combines their strengths and weaknesses.

While these three traditions together illuminate our understanding of the effects of communication media, they tell us little about comparative costs. In their light we can expect that education will have measurable effects on the lives of learners, that through direct and indirect channels, communication media can affect people's everyday lives and that various kinds of media can be effective in teaching. But little of the research in these traditions addresses itself to questions of cost and comparative cost. Attempts were made to do so in a set of studies carried out for UNESCO in the mid-1960s on "new educational media" (Schramm, 1967). The studies did not, however, have a consistent approach to costing and few attempted to draw comparisons between new and traditional ways of education. Only in the last ten years have there been rigorous attempts at this sort of cost comparison. The early studies were stimulated by interest in the British Open University and led to a measure of agreement on methodology. Studies on the University by Wagner (1978) are similar in approach to recent case studies of instructional media for formal education in the third world (Jamison, Klees and Wells, 1978; Ferraton, 1982).

The starting point, then, is that there are prima facie reasons to suggest that the use of instructional media can have measurable educational effects on students and may be of potential value for education. Techniques have been developed for the analysis of effects and costs and so for comparisons between instructional media and conventional education.

In keeping with an expanded concept of education and the variety of activities now subsumed under such a concept, the roles and expectations surrounding the uses of communication media have broadened considerably in recent years. It is no longer accurate to limit a discussion of communication media exclusively to the realm of ancillary aids to the learning process. The trend towards systematic education planning, planning involving a wide variety of resources and clientele, prevails in most countries as well as in the numerous international organizations working to diffuse educational innovations of all kinds. This trend also implies a purposeful and integrated approach to the use of communication media.

Some of the most interesting projects and experiments involving instructional media have taken place in areas where educational needs appear most pressing and where traditional educational resources such as schools, trained teachers, and learning materials of all kinds are in the shortest supply. Yet the performance of the media to date in various educational reform and development projects has not been uniformly successful. Many projects have been launched, but few have survived long enough to demonstrate the scale or quality of impact that their originators and administrators had initially anticipated. Far too often, the vision of what the media could accomplish in education has not been preceded by adequate analyses of specific educational problems that were to be addressed or by a proper delineation of the roles the media could most productively play. Even when such preliminary work has been done, logistical and

administrative problems have frequently undermined the effectiveness of media-based programmes at the local levels. For these reasons even the optimistic advocates of communication media have become more cautious in their assessment of what these tools can do.

We have entered an era of reassessment and realism in which the widely agreed-upon potential of the media is counterbalanced by a deeper appreciation of the complexity and pervasiveness of the obstacles to change. The media still hold a compelling attraction for planners hoping to make a major impact on education in a relatively short time. Unlike some of their predecessors, however, the current generation of educational planners realize that, to be successful, any programme must surmount the persistent political, social and economic forces that have undermined so many of their efforts in the past.

It is now necessary to discuss, in the context of developing countries, a series of planning issues bridging education and communication. To do this properly, it is essential to begin by attempting to clarify some of the underlying assumptions and defining the limits of the issues to be treated in this chapter.

Some Assumptions

As stated earlier, communication media have spread throughout the world and created a network of inter-connectedness among almost all nations. Table 2.1 illustrates both the extent of this growth as well as the rate at which it accelerated in the low-income countries of Asia, Africa and Latin America between 1963 and 1973.

TABLE 2.1

**Mass Media Change in Low-Income Countries:
1963-73 (units per thousand inhabitants)**

Region	Radio Receivers	Television Receivers	Daily Newspaper Copies	Cinema Seats
<u>Africa</u>				
1963	32	1	10	6
1973	54	4	14	4
Percentage change	+69	+300	40	-33
<u>Asia</u>				
1963	12	1	17	8
1973	41	4	20	6
Percentage change	-242	+300	+18	-25
<u>Latin America</u>				
1963	104	22	73	33
1973	171	68	62	22
Percentage change	+64	+209	-15	-35

Source: UNESCO Statistical Yearbook (1975) and
World Communications (1975)

Beginning with newspapers, film and radio, then with television and today with computers, satellites and other sophisticated delivery systems, modern communications have thrust into almost every corner of the world. The rapid and largely unplanned spread of these technologies has generated a series of reactions from many countries. Some are alarmed by the increasing attention people are paying to these media and the kinds of cultural and political messages they convey. Low income countries and even industrialized countries are concerned about the possible negative effects of these messages on adults as well as on children.

Just as radio spread rapidly during the years after 1960 when transistors made cheap portable radios a possibility for many people, even in poor rural areas, television is now spreading throughout many areas of the world. Today television vies with both schools and the family as a socializing force on the young (Halloran, 1980). Many children in the United States, United Kingdom and Germany, for example, actually spend more time in front of the television set than they do in the classroom; so much time, in fact, that educators and some parents are beginning to wonder whether the informal learning of this experience does not outweigh the impact of school (Bates, 1984). The reaction of educators in many cases has been either to blame the mass media for many of the problems that schools are experiencing or to turn to the media as a panacea for the task of educating the young. In each of these reactions there is a common underlying assumption, that mass media have a direct and overpowering influence on their audiences. One purpose of this chapter is to examine such an assumption in the light of the evidence that is now available on the impact of communication media when applied to education.

It is necessary to note that value judgements and empirical data each play a part in analysing the multiple roles which the mass media have

been assigned both in and out of school. Any evaluation of the media must ultimately rest on a series of values that the society and the school embody, and the job of interpreting empirical evidence concerning their impact on learning, and education generally must ultimately be made in the light of these values (McAnany, 1978).

Without delving deeply into the general issue of technology transfer, we can identify three aspects of the subject that apply to the study of educational media. These are determinism, dependency and costs (Coulet, 1981). The first assumption concerns the widely shared notion that growth of modern communication technology is inevitable and that its application to a wide variety of problems will help societies to 'progress'. The assumption of linear and uniform progress in development that is often related to such attitudes frequently does not square with the uneven development patterns which many nations exhibit (Golding, 1974). A related and equally dangerous assumption is that particular technologies have no history and no historical context and that they are therefore easily adapted to new problems and circumstances.

A second general issue concerns the socio-political consequences of all technology transfers. The essential question here is the degree to which the control maintained over a particular technology by the exporting nation (through patents, proprietary information, personnel expertise, etc.) affect the autonomy and decision-making ability of importing nations. Does a technology which may have proved cost-effective in the exporting nation cost more than it is worth for the importing nation?

The problems of technological determinism and dependency in the transfer of the communication media are just beginning to draw the attention of the scholars, although there are strong historical parallels with indus-

trial technology (OAS, 1977). In communication technology, however, the concern has both hardware and software dimensions. As the hardware becomes more sophisticated, it often creates among recipients a dependency on those advanced countries that have the technical knowledge to install and maintain it. At the same time, it may create a dependency on management techniques and skills that are vital to its success. The software dependency at first does not seem critical, since it is assumed that countries know what they want to teach and only require the new media to facilitate more efficient dissemination. Two dangers must be recognized here, however. Because communication media can place such great demands on curriculum planners to produce material to satisfy recently installed technologies, there is often a great temptation to purchase ready-made or slightly adapted lessons from producer countries. This was certainly the case in Zambia between 1965 and 1977 when the vast majority of educational programmes transmitted on television were BBC produced.

Finally, communication strategies in education are often adopted on the assumption that a cost-effectiveness model with its view of education problems as primarily quantitative offers planners the best basis for good decision-making. It is questionable whether the problem of cost in technology has been adequately grasped by both planners and policy-makers. This problem has been discussed for some years now (Jamison, Klees and Wells, 1978; UNESCO, 1982; Carnoy, 1975) but solutions are far less clear-cut and simple than many planners, grasping for quick solutions to difficult problems, would like to admit (Kicher, 1982). A peculiarity of almost all communication technology transfers is that they characteristically demand a high initial investment, making it difficult if not impossible to experiment with or to discard the system after an initial

trial, as can be seen in a discussion on ETV in Zambia (Chapter IV) in which a recommendation was made to close down educational television and re-deploy all producers in schools.

Planning for Communication Media

The process of education planning has undoubtedly become more complex over the past two decades or so, especially in low-income countries where problems are enormous and resources relatively scarce. A decade or more ago the problems seemed more straightforward and communication media were considered an important means for seeking to improve and expand education. Today, there has been increasing emphasis on political-economic aspects of planning (Hallack, 1974) as well as the 'non-rational' elements of educational systems, such as the clash of group or class interests, bureaucracy, and political party interest in policy-making (Levin, 1978; Carnoy, 1977). Nevertheless, planners are confronted by the fundamental challenge of trying to guide decision-makers in the best use of available resources to solve concrete educational problems of the country or region where they are working. If the planner's aim is to optimize the use of resources in an attempt to solve concrete problems, then what is needed is a knowledge not only of the problem but also of some alternatives for solution.

When the work of the educational planner is looked at comprehensively, a threefold process emerges: planning and design (in which the planner examines problems and alternative solutions, then chooses one and details this design); implementation of the design (where the planner looks at administrative, political and other obstacles to implementation and suggests some solutions); and evaluation (where the planner looks carefully at consequences in the hope of improving the system's effectiveness). All

TABLE 2.2

**Communication Media and Internal and External Efficiency
in Formal and Non-formal Education**

Internal Efficiency Sample short-term objectives		External Efficiency Sample long-term objectives
FORMAL EDUCATION	Provide quality instruction/ learning Improve learning Increase access to education by different strata/classes Reduce unit cost of education	Implement education reforms Improve employment oppor- tunity for educated Raise productivity of citizens
NON-FORMAL	Sensitize problems Motivate to study and action Spread knowledge of innovations Teach simple skills	Improve agricultural production and productivity Improve income Improve health, nutrition, family-planning, employment opportunities Improve quality of rural life

Source: UNESCO: International Institute for Educational Planning 1982

these three dimensions are fully discussed in Chapters VI and VII of this dissertation.

Table 2.2 presents, in a schematic way, some of the goals that planners seek in both formal and non-formal education.

In categorizing those goals that are most relevant to what communication media can help to achieve there is also a distinction between shorter and longer-term objectives. Shorter-term educational objectives are customarily pursued by applying innovations and then observing their immediate consequences for participants in learning, skills acquisition or change in attitudes. These generally are the main focus of evaluations of educational media.

The longer-term objectives, however, are the ones which planners often deal with, and they are frequently the ones cited to justify large media investments. The problem is that the consequences do not appear for years and cannot be evaluated with any degree of precision (Lenglet and McNany, 1977). Longer-term evaluations of such goals are often not performed as a consequence.

An additional problem is that planners must often reconcile two sets of goals: political ones used to gain support for a project among decision makers and the public; and programme goals, that is, what the project leaders hope to accomplish. For example, Sesame Street was promoted (in the United States) originally on the basis of a long-term goal of reducing learning gaps between the advantaged and disadvantaged children. Subsequent evaluations, however, concentrated on the short-term goals of general learning gains for the whole audience with minimal attention to whether the gaps were being reduced (Cook et al., 1975). In the case studies

presented in the next section of this chapter, the shorter-term goals have often been attained with some degree of success. There is, however, scant evidence concerning longer-term outcomes.

In addition to defining goals and objectives, planners also examine alternative means for achieving them. The choices among media for solving different educational problems are neither single nor self-evident (Hawkrige, 1982), as some educational technologists suggest. Customarily, the planner must consider the appropriateness of communication in terms of educational goals to be pursued, the costs of the media technology, its complexity and the social and political constraints of each context.

Implementation of even carefully developed plans creates still another set of problems for planners. When, for whatever reason, deadlines are viewed as absolute, communication technology can play an almost tyrannical role within an educational project, for once broadcasting networks are on the air they must have something to say. Resulting problems have been detailed in the evaluations of ^a large-scale television project (Mayo, 1978), but no number of case studies can give planners adequate protection against the demands of their particular situation.

Since evaluation is now widely recognized as an important part of planning, it is incumbent upon planners to be acquainted with the variety of programme evaluations that have accumulated in the past decade (Bates, 1984; Jamison and McAnany, 1978; Schramm, 1977). Once the design for incorporating the mass media in an education project has been created, planners must also create mechanisms for evaluating the performance of those media to determine both how they might be better utilized in the short run (formative evaluation) and how effectively they are contributing to the realization of project goals (summative evaluation).

Costs

Comparison between mass media, or between them and conventional education, requires that we should compare inputs and outputs, although much of the literature has concentrated on outputs. Earlier comparative studies (e.g. Woelfel and Tyler, 1945; Trenaman, 1967) often did not discuss costs. Where cost data was included, as in UNESCO's studies in 1967 on 'new educational media' it was limited in scope and not presented in a standard form (Schramm, 1967). More recently, however, both UNESCO and the World Bank, stimulated by their interests in the cost of education, have commissioned and stimulated a range of studies, and there is now something approaching a consensus on the techniques to be used.

In the light of this work, Jamison, Klees and Wells (1978) have suggested a standard form for analyzing the costs of multi-media projects. Their analysis results in a cost function which relates fixed and variable costs. A fixed cost is one which does not change with the number of units produced and a variable cost is one which does change with the number of units produced. For example, in a radio or television system, the programming and transmission costs are about the same regardless of the number of students, until the coverage area reaches a size where a single station can no longer service it. On the other hand, the reception costs depend upon the number of students, inasmuch as every classroom will need a receiver and every student will probably need work books or other supplementary materials. Consequently, Jamison, Klees and Wells (1978) write

The simplest equation for the cost of an instructional media system is $TC(N) = F + VN$ where the total cost (TC) of a system serving a certain number (N) of students is the sum of the fixed costs (F) plus variable costs per student (V) times the number of students. What the planner wants to know is the size of V: What does it cost, on the average, to add one more student to the system?

(p107)

The other concept is equally important. Suppose that a country or a school system launches into an expensive system like instructional television, then discovers after a few years that it is not pleased with the decision. Obviously, the average cost would be greater if the project were abandoned early than if it were carried through to the point where the capital investment were amortized (Schramm, 1977).

These are the basic questions about costs that need to be answered in the process of deciding for a media system A as against media system B. But estimating costs is only one step in planning. This first step will tell the educator whether a specified system will come within his or her resources, how much it will cost to operate the system at a given size or expand it, and what are the cost considerations in possibly cutting the experiment short. So far, the essential information given in this section can be expressed in financial terms and measured in such terms against other systems. But the really important measure is product. What will such expenditure buy? The educator has specific goals in mind; he or she is thinking of investing in a media system to bring about changes he or she feels should be made. Consequently he or she must consider not only the cost of alternative systems but also whether one system will come closer than another to accomplishing the specified goal. In other words, outputs must be weighed against inputs.

This is what the economist calls cost-effectiveness analysis. It is less specific and more difficult than simple cost-analysis because the outputs of education are less simple and specific than the costs. They are far from unidimensional.

Cost-effectiveness analysis is designed to determine the "best buy" in terms of immediate results (such as enrolments or results of learning

tests), but education is designed also to serve long-range social and economic needs. Estimating the input of an educational system against its output into these long-range goals is called cost-benefit analysis. Economists have most often tried to express a cost-benefit ratio for education in terms of the cost versus its contribution to individual earnings.

The choice, therefore, of what instructional system to implement is affected by the costs of that system. In fact, costs are a constraint of the system, and in order to determine what system of inputs best serves the purposes and goals of education, information must be available on the costs of alternative inputs.

It is then possible to draw up a balance sheet between educational inputs and educational outputs. Jamison and Wells (1981) explained that

Cost-effectiveness analysis uses knowledge concerning the first linkage, between educational inputs and outputs, to help ascertain which of the feasible alternatives will result in "maximum" educational output. (p2)

Schramm (1977) claims that "there is one major summary of the costs of instructional media in the literature" (p78). This is by the General Learning Corporation (1968). Other studies that contribute to our knowledge of cost effectiveness are Miller (1970) and Jamison (1979).

The General Learning Corporation study considers instructional television and instructional film, instructional radio and audiotape and omits "little media" such as filmstrips, slides, transparencies, and graphics. The study presumes a large usage of media up to 1,000 hours of material per year in each school system, and the costs reflect this. Indeed, these costs - assuming that Zambia or any other developing country is willing to use cost-effectiveness methodology - are greater than their system

would normally be expected to bear. Nevertheless, the figures are illustrative of the costs of "Big Media" over those of "Little Media" in the United States. The constraints are, (a) number of students, (b) area covered, and (c) heavy media usage. The study found that given these constraints, "Big Media" cost between three and twelve times the cost of "Little Media". Additional factors complete our knowledge of these cost systems. For instance, the cost of "Big Media" such as television can depreciate when there are great numbers of students involved, once the basic infrastructure is established; the same is also the case with film. In each of these systems "recurring costs, comprising production, distribution and reception costs... would include the appropriate capital charges, maintenance and overheads" (Schramm, 1977: p83). But Mayo, Hornik and McNaney (1976) found that instructional television can be relatively cheap when 350 students are involved: cost of conventional classroom instruction amounted to \$20.67 and the cost of instructional television \$16.53. Hayman and Levin (1973) stress production factors as a significant variable in the costs of television. They list four factors in production:

1. Recording of a conventional live classroom.
2. A teacher presents a lesson from a prepared script in front of a studio camera, with some technical editing.
3. Commercial production with all its professional implications including the use of trained performers and sophisticated systems for sound and visual effect. Complete technical editing operations would be employed.

(Hayman and Levin, 1973, cited in Arthur Melmed ed., 1973)

Miller (1970) provided another indication of costs of instructional media. His is interesting because of the wide disparity in the cost estimates for different media, pointing to such factors as quantity of students used in each medium. Significant about this is that cost estimates are essentially relative - that is to say, relative to class size. Utilization

by many students would cause the costs to decline and, correspondingly, too few students bring about an increase in costs.

Both the General Learning Corporation and the Miller studies are indicative of certain trends; namely, that (a) "little media" cost less than "big media" in small areas, (b) that radio is widely used in all areas considered - city, country and rural, and (c) television is generally costly, though under certain circumstances it may be less so.

Costs and Media Analysis

A determination of costs helps to define what alternatives are feasible. Costs vary with the situation, country, and tasks. They also vary on the amount that can be spent on a given need and the priorities that are attached to the needs - availability of money and financial resources, availability of products, and also currency restrictions. Planners must determine the relationship between educational inputs and educational outputs and also between educational outputs and what the society hopes to obtain from them.

According to Jamison and Wells (1981), two ways exist for determining cost information: one is from on-going projects, the other is from study of the components that comprise costs, e.g. manufacturers, catalogues, and so on.

A. Components of an education system involving media are:

1. Number of students using ^{the} system each year
2. Number of grade levels served
3. Average number of hours of programming received by each student in the course of a year

4. Number of distinct geographical regions served
5. Area in miles or kilometres of the geographical regions to be served
6. Measure of quality in programme materials
7. Number of pages of printed material provided for each student per hour of programme broadcast
8. Number of students who share a receiver (this will depend on class size and the number of classes that can share a receiver).

B. Cost variables:

1. Cost per hour of programme production
2. Cost of purchasing, installing and providing a building for transmitter, tower and antenna capable of serving a certain area. This also includes the cost of an inventory of programme tapes
3. Annual cost of power, maintenance, and operating personnel for a transmitter capable of covering a certain distance
4. Cost of installing one receiver, including building modifications required for lighting, security, and so on
5. Capital cost per receiver of power generating equipment. This equipment is assumed to have the same lifetime as a receiver
6. Cost of electric power, per receiver per hour, using the available power supply
7. Cost of books per page (Jamison and Wells, 1981: p138)

C. Cost of on-going projects:

Schramm (1977) states that

Radio stands out as the bargain, it is one-third to one-fourth the cost of television (some practitioners estimate its cost as one-tenth that of television), and the only one of these "Little" media usable for covering large areas. (p116)

Radio has been by far the least expensive of the electronic media of communication as many studies have shown (GLC, 1968; Schramm, 1977; Perraton, 1982; Bates, 1984). According to the General Learning Corporation study, cited in Schramm, 1977, total costs of instructional television

fall between \$30 and \$40 per student per year for local area. They converge on \$10 for the city and roughly the same for metropolitan areas... The results for the audio systems, language learning, laboratories and radio systems from the second band and all fall in the \$8 to \$10 range for the local area, and in the \$4 to \$6 per student per year range for the city. The radio system is about \$2.50 per student per year for the metropolitan and \$3.50 and \$2.50 for the state and region, the lowest cost for any system.

(General Learning Corporation, 1968: p42)

The estimate cost of doing the same job with films is about \$50 per student, with very little change in the case of large audiences or broader coverage, because of the expense of duplicating and delivering films.

(Schramm, 1977: p80)

But these cost estimates are incomplete and mention must be made of components which might affect the decision as to which medium is to be used. Costs comprise production, distribution and reception costs. The production costs of television and film are high, but the costs for television go down as the audience increases. The production costs for radio are relatively high but also decrease when the audience increases (Schramm, 1977; Bates, 1984). Delivery systems for television are more costly than radio. Reception costs for radio are cheaper than for both closed circuit television and film. But costs of media are influenced by the use for which they are made and the audience they serve.

An appraisal of costs is subject to the uncertainties inherent in most evaluations of projects in developing countries. Jamison and Wells (1981) admit that data is "subject to substantial error and our divisions of costs into various categories is sometimes based on incomplete information

and hence may be somewhat arbitrary" (p19). McAnany and Mayo (1981) stress the difficulties of collecting and analyzing data for research in developing countries. Estimation of costs must be subject to qualifications imposed on them by indigenous conditions, world currency values, and exchange rates of interest (Schramm, 1977).

The low overall costs of radio against television (and indeed certain media over other media) emphasize questions of economy in media planning. They also emphasize distribution of media and logistics such as media apportionment in urban and rural areas. In developing countries this is an especial problem, for education in the formal sense causes migration from rural areas to city (King, 1980). This problem is compounded by a curriculum often irrelevant to the needs of the rural environment and dysfunctional with ^{the} aims of that environment (Coombs, 1985). Hence, the concern evidenced in some developing countries of arresting the migration from the rural areas and the devising of strategies to induce people to remain in rural areas (Education by Television, 1968).

Costs affect planning decisions and evidence suggests that an education system using technology will cost less than a system which does not (Hawkrige, 1982). Academy for Educational Development (1972) tempers this evidence by admitting that "while a new system based on technology would be unlikely to cut total cost initially, costs per student would be expected to decrease as soon as the system reaches significant magnitude" (p20). However, despite this wholesome evidence of the cost-effectiveness of technology, the problems of costs and their relationship to quality in education is an important one. Estimates must be made of various alternatives - what the costs of production, equipment, maintenance, and personnel will be in the future. Planning for the costs of alternative programmes

might allow for serious study of the problems of education and planning over a longer range than is now possible. It would also have the advantage of recruiting and training a set of people who will be able to confront a different set of problems that need to be faced.

Educational Broadcasting in Selected Countries

CENTRAL AMERICA - (a) MEXICO

Mexico, along with many other developing nations, faces a bottleneck at the secondary school level. There are not sufficient places in the present secondary school system to allow all those students who complete primary school to continue their education if they so desire. This problem is most acute in rural areas since few secondary schools are located in these regions, and consequently most rural youths who want to pursue their education must leave their homes and go to school in the cities. In recent years the Mexican Government has made political commitments to provide universal primary and secondary schooling and in 1966 began experimenting with a system of instructional television called Telesecundaria, as a means of extending the secondary school system in rural areas.

In this study the overview of the system will be examined with a primary emphasis on the organization. The review is based on a case study prepared by Eduardo Arena (1979) an official of the country's Ministry of Education. Also, the study has been reported more fully in Klees (1974) and Mayo, McNany and Klees (1975).

What is Telesecundaria? They are small secondary schools of less than 100 pupils, mostly in rural areas and heavily dependent on televised instruction. They exist to provide secondary schooling where there is none, through employing both national and community resources.

Organization

Telesecundaria began on a small scale in September 1966, with a closed circuit broadcasting to an experimental school in Mexico City. Eighty-three Seventh Grade pupils, divided into four classes, received televised instruction in the standard subjects. The following year, open broadcasting began to 6,569 Seventh Grade pupils in 304 classrooms scattered throughout eight states.

While retaining the identical curriculum and goals of the traditional Mexican secondary school system, the Telesecundaria employs a combination of national and community resources. In place of large, federally financed school buildings, Telesecundaria classes customarily meet in space provided by the local communities. Such space consists of one, two or three rooms donated by the municipal government, local co-operatives or other social service agencies. Occasionally, space is given by a local patron or by one of the students' families. In communities where interest in the Telesecundaria runs particularly high, parent organizations have been instrumental in raising money for the construction and maintenance of permanent facilities.

Instead of fully trained and specialized secondary school teachers, the Telesecundaria relies upon classroom co-ordinators to oversee all instruction. The co-ordinators are drawn from the ranks of Fifth and Sixth

Grade primary schoolteachers, and they are paid by the federal government. Unlike their counterparts in the traditional system who specialize in one subject, Telesecundaria co-ordinators are assigned to one class of students whom they must instruct in the whole range of Seventh, Eighth, or Ninth Grade subjects. The co-ordinators are supplied with a monthly outline and schedule of the topics to be covered in each tele-lesson. Workbooks to assist students in the daily utilization of tele-classes have been specially designed and are distributed at low cost through commercial bookstores.

The television teachers and producers who are responsible for the development and presentation of the broadcast lessons are recruited from the traditional school system on the basis of their subject specialities, pedagogical skills and, in the case of the television teachers, their poise on camera. Television teachers are hired on an hourly basis and given special training in elocution, the techniques of television teaching, scriptwriting and the use of audio-visual aids. Approximately thirty television teachers were utilized in 1972 (Arena, 1979). Producers are given extensive technical training in audio-visual instruction as well as studio management. Their selection and training reflects a basic Telesecundaria policy that it is better to train academic specialists to be television producers than to expect experienced producers to become academic specialists.

Television carries the primary instructional burden of the system. In a week, students receive about thirty televised lessons divided among the various subjects and vocational activities. Tele-classes average twenty minutes in length, with the remaining forty minutes of each class divided between preparation and follow-up activities supervised by the

classroom co-ordinators. Tele-classes are broadcast between 7.45 a.m. and 2.00 p.m., from Monday to Friday and for one hour on Saturday morning with the rest of that morning being reserved for broadcasts to the classroom co-ordinators. To accommodate a very tight broadcast schedule, transmissions to the three secondary grades are staggered so that a twenty minute lesson to the Seventh Grade is followed immediately by one to the Eighth Grade, and finally by one to the Ninth Grade.

The system was initiated and run under the auspices of the Audio Visual Department known as Direccion General de Educacion Audiovisual (DGEAV) of the Mexican Secretariat of Public Education (SEP). Figure I shows the 1978 organization of DGEAV itself. It needs some explanation. The Legal Department deals with co-operative agreements between DGEAV and local or state governments using the programmes. Within the audio-visual production directorate are contained both television and radio departments, plus departments for materials, editing and training. The media engineering directorate deals with the maintenance and repair of the hardware through its laboratories and workshops. The administrative directorate contains departments devoted to personnel, accounting and supply functions. In addition, the DGEAV has a programming and evaluation unit which was added in 1978 to introduce programme planning and budgeting systems (PPBS) as required by the federal government. A pedagogical museum was also added to display new techniques and materials for in-service and pre-service teacher training activities.

Production activities of the Telesecundaria are centred on four studios maintained by the Mexican Secretariat of Public Education (SEP) in Mexico City. Two strong incentives for using studio-time efficiently are the fact that a large number of subjects are broadcast and that they are

FIGURE 2.1 : The Organizational Structure of DGEAV

DIRECTOR-GENERAL

PROGRAMMING AND EVALUATION UNIT

LEGAL AFFAIRS

PEDAGOGICAL MUSEUM

Audio-visual Production Director	Administrative Director	Media Engineering Director
- Television	- Human Resources	- Technical Television
- Radio & Taping	- Financial Resources	- Laboratories
- Materials	- Material Resources	- Workshops
- Editorials	- State Centres	
- Training		

Source: Eduardo Arena "The Mexican Direccion General de Educacion Audiovisual (DGEAV)". In Arthur Melmed (ed), The Organization and Management of Distance Media Systems: Some New Directions. Edutel Communications and Development, Palo Alto, 1979

almost all televised live. Each tele-teacher has only one hour in the studio to rehearse and deliver a twenty minute lesson.

All Telesecundaria lessons are transmitted over Channel 5 in Mexico City or over Channel 6, a repeater station in Las Lajas, Veracruz. Mexican law requires commercial broadcasts to donate 12.5% of their broadcast time for government use, although this rule has rarely been enforced. Channel 5 has far exceeded this requirement, donating 40% of its broadcast day to Telesecundaria. The growth of the Telesecundaria system, however, has been limited by the fact that it must rely solely on that channel. Coverage has been confined to those areas able to receive Channel 5's signal: the Federal District, and the states of Mexico, Hidalgo, Morelos, Oaxaca, Puebla, Tlaxcala, and Veracruz. A project was initiated in 1969 to send taped lessons by plane to the northern state of Sonora, but this effort was discontinued because of administrative and scheduling difficulties.

Utilization

Table 1 shows student enrolment in Telesecundaria from its inception up to the 1971-1972 school year. Expansion proceeded by adding one grade to the system each year, and by 1970 Telesecundaria was serving about 5% of the total school enrolment in its eight state region or approximately 3% of the entire Mexican secondary school population (Arena, 1979). There have been more requests by communities to establish Telesecundaria facilities than the Audio Visual Department has been able to handle, due primarily to limitations in the funds available from SEP to hire classroom teachers.

TABLE 2.3 : Student Enrolment in Telesecundaria

Grade	1967-68	1968-69	1969-70	1970-71	1971-72
Seventh	6,569	10,916	12,175	14,499	12,432
Eighth	-	5,324	8,240	9,459	9,194
Ninth	-	-	5,473	6,997	7,350
TOTAL	6,569	16,240	25,888	30,955	28,976

Source: D T Jamison, The Costs of Educational Media: Guidelines for Planning and Evaluation. London, Sage Publication Ltd., 1978

Since the television lessons are broadcast over an open circuit commercial network, there is the possibility of utilizing the system to provide secondary schooling on an informal basis to adult members of the populace. Some efforts were made towards this end early in Telesecundaria's history, but the substantial administrative apparatus needed to monitor such an activity discouraged its continuation. At the present time any such informal work is not monitored, and its extent is unknown.

As mentioned previously, the production level of the Telesecundaria system is high, as television is used to transmit a large amount of the formal instruction. Each year a student receives approximately 1,080 twenty minute programmes, that is, about 360 hours of televised instruction (Arena, 1979).

Television reception in schools is through 22-inch black and white receivers with an antenna. There is usually no problem about obtaining electricity in the small towns. The receivers are purchased and maintained by local patrons in the federally funded Telesecundaria, but other arrangements may exist where states provide the funds.

The Telesecundaria graduate receives a regular secondary school certificate (or diploma as they call it in other countries), which does, however, state whether it was awarded by a tele-school or a traditional one. Whether the Telesecundaria certificate will have the same marketability as that of the traditional system is still an open question.

Finally, one important point relevant to long-term benefits, that does not necessarily reflect on the effectiveness of Telesecundaria vis-a-vis other alternative instructional techniques, centres on the problem

of rural education and rural development. Mayo, McNany and Klees (1975) state that many rural youths look on secondary schooling as a means to leave the rural areas for the city, to compete in the urban employment market. Most urban areas of Mexico, especially the capital city, are already overcrowded and unemployment is a serious problem. Unfortunately, it seems likely that the urban migration of these youths will often be met by a lack of sufficient employment opportunities.

CENTRAL AMERICA - (b) NICARAGUA

Nicaragua is a small, relatively poor country in Central America, with a high proportion of children and young adults. Its education system at the primary level consists of many small rural schools, with larger ones in towns. Some rural schools are virtually inaccessible during the rainy periods of the year. Rural schools in general are staffed by teachers who are not as well trained or experienced as those in towns.

Mathematics is not a subject-matter that immediately comes to mind in the context of educational radio broadcasting anywhere, least of all in developing countries. Yet the Nicaraguan Ministry of Education in 1973 accepted an offer from an American team with financial support to carry out a project in which primary school children would be taught mathematics by radio. This review analyzes the Radio Mathematics Project's organization and management. It is based on a case study carried out by Barbara Searle (1979) from the Institute for Mathematical Studies at Stanford University in California.

The Radio Mathematics Project started in the district around the town of Masaya, which is about 30 kilometres from the Nicaraguan capital.

Managua. This was a development project designed to provide knowledge about systematically designed radio classroom instruction in mathematics in a developing country. Radio had never been used for any direct teaching in Nicaragua in schools before. For the Ministry of Education, it was an opportunity to test a method of providing improved mathematics teaching at a low cost to classrooms whose teachers lacked sufficient training in, or indeed knowledge of, mathematics. Hawkridge and Robinson (1982) state that by 1978, about 8,000 pupils were being served in Grades 1 to 4. Bates (1984) says the Ministry

also managed to continue the project successfully throughout the major part of Sandinista's 1979 blood revolution. (p22)

Organizational Structure

The Radio Mathematics Project was under the joint sponsorship of the Ministry of Education and the United States Agency for International Development (USAID), with both agencies contributing to it financially. A Nicaraguan Director was appointed to work hand-in-hand with the Stanford appointed Director.

The Ministry retained control over policy regarding course content and the location and expansion of the project, but by virtue of being 30km away from the Ministry's office in Managua the project was able to gain semi-autonomy. Ministry officials knew relatively little about project operations, despite efforts to keep them informed.

As Figure 2 shows, the project office in Masaya in 1978 was organized into six departments, each headed by a Nicaraguan, although in earlier

TABLE 2.4: The Radio Mathematics Production Cycle

Week	1	2	3	4	5	6
Action:	Prepare lesson outlines	Write teaching dialogue for radio lessons and write teachers' guide	Write scripts including entertainment segments	Record radio lessons	Broadcast lessons, observe and test students	Analyze data, change later lessons where necessary

Notes: This cycle began for a new set of five lessons each week

Source: Searle, "Impact of Project Goals"

years Stanford staff occupied these positions. The largest department was that of support staff; the others consisted of a few people each, since the total staff in the project office numbered only thirty.

The Curriculum Department was responsible for preparing curriculum plans for each Grade being served, both the master plan for the year and detailed plans for each day's lesson. In this department, the mathematical content of each radio script received a final check before recording, and the teachers' guide for each lesson was written here too.

Scriptwriting was the responsibility of the radio production department in 1978, although earlier the scriptwriters had been housed in the Curriculum Department. The Radio Mathematics Project found that it was important to place scriptwriters close to the producer, since the latter had the final say in production. But the Curriculum Department retained the right to check on content before recording.

The radio producer not only headed the Production Department but also took responsibility for all recording sessions.

The Utilization Department printed and distributed teachers' guides and conducted teacher training sessions each year before the schools opened. The Formative Evaluation Department's staff observed in classrooms, designed and administered tests and prepared weekly data summaries. The Research Department, composed of people drawn temporarily from other departments, tested students at the beginning and end of the school year, administered questionnaires to teachers and carried out occasional special testing.

Many of the Nicaraguan staff were trained on the job by the Stanford team. Finding staff who would become good scriptwriters was particularly difficult.

Objectives

Searle, Friend and Suppes (1976) report that the principal goals of the project determined its organization. These were:

to increase achievement in public primary schools in the field of mathematics; to provide for easy and wide utilization; to minimize the cost per student; and to provide an instructional system acceptable to children, teachers, parents and officials. (p68)

Furthermore, Bates (1984) also believes that

the Radio Mathematics project in Nicaragua was established to improve the quality of instruction due to the low level of education of the teachers or their lack of training, and the lack of other suitable resources such as books. (p24)

These goals were interrelated: an effective project that could not be used widely would be of little value, just as a cheap one that was rejected by children or parents would never be disseminated even if it were effective. The field-testing of instructional materials was therefore conducted under conditions that reflected as closely as possible those in schools throughout Nicaragua.

Also, these goals remained unchanged during the project. During development of instruction for each Grade there was a continuous process of evaluation which Searle calls "fast feedback". This fast feedback from the classrooms functioned primarily as a basis for making changes in plans and scripts of the next lessons. Indeed,

the most crucial management activity was establishing and then monitoring the production schedule. Since lessons were produced within a short specified period, one after the other, any bottleneck that occurred in the production process could rapidly cause staff to work long hours of overtime to retrieve the situation. (Searle, 1979: p69)

The Director, therefore, held a management meeting at least once a week with the department heads to consider progress of lesson production and research.

Production and Distribution

The radio lessons and teachers' guides for the First Grade were developed and field-tested during the school year of 1975. One Grade was added each year up to 1978.

For each school day, a half-hour radio programme had to be produced, together with a teachers' guide for a post-broadcast lesson. Each radio lesson was made up of segments lasting up to three minutes. Some segments were designated "entertainment", the remainder "instruction". The latter were each devoted to a single small mathematical concept or skill, and were used to teach or practise it. The former were songs or games, intended to change the pace of the lesson. Thus a radio lesson contained considerable variety to maintain students' interest. Searle, Suppes and Friend (1976) state that

the script was written so that radio characters spoke directly to the children, waited for them to respond, and then replied as though they had seen or heard the responses. (p70)

The lesson provided for responses from the children four or five times a minute, thus offering practice and reinforcement. Yet the sequences of exercises of a specific type were not long enough for children to

answer by rote. The format and topic changed very frequently. The teachers' guide for the post-broadcast lesson contained material which teachers were expected to adapt to the needs of their individual pupils, but which complemented the radio lessons.

Table 2.4 illustrates the production cycle for lessons. Each week, preparation started of the week's lessons to be broadcast five weeks later. In the first week of the production cycle, curriculum specialists wrote five lesson-outlines. In the second week, scriptwriters wrote instructional dialogue for these lessons, and the curriculum specialists reviewed this dialogue, in the same week the teachers' guide was drafted. In the third week, the scriptwriters wrote the script for each lesson, using what they had written the week before and incorporating entertainment segments. Recording took place in the fourth week. In the fifth week, the lessons were broadcast and students were observed and tested in classrooms. Data from this teaching week could then be used to change the outlines for lessons five weeks later. This kind of schedule placed strains on the production staff, as there could be no slippage during the school year.

Lessons were recorded by a professional technician at a local commercial radio station. Professional actors - two adults and three children - read the script. The former played multiple parts as necessary, but the latter often served as a model for the children in classrooms by responding at appropriate points in the broadcast lesson. It took about one hour to record a thirty-minute lesson. Pre-recorded segments (such as music) were inserted by the technician where required. No other editing was done after the recording sessions.

**FIGURE 2.2: The Organizational Structure of the Nicaraguan
Radio Mathematics Project**

DIRECTOR OF THE PROJECT

CURRICULUM SPECIALIST

- Curriculum Assistant
- Teachers' Guide Writer

FORMATIVE EDUCATION DIRECTOR

- Classroom Observers
- Test Designer and Administrator

RADIO PRODUCER AND DIRECTOR

- Script Writers
- Studio Personnel (on contract)

RESEARCH DIRECTOR

- Research Assistant
- Keypunch Operator

UTILIZATION DIRECTOR

- Teacher Trainer
- Print Production Staff
- Distribution Staff

SUPPORT GROUP SUPERVISOR

- Accountant
- Secretaries and Typists
- Maids and Night Guard
- Drivers

Source: Barbara W Searle, "The Impact of Study of the Nicaragua Radio Mathematics Project". In Arthur Melmed (ed), The Organization and Management of Distance Media Systems: Some New Directions. Educel Communications and Development, Palo Alto, 1979

Utilization

The radio lessons were broadcast each morning at a fixed time, from Monday to Friday, by the national radio station. Following the radio lesson, the teacher was expected to take up one or other of the suggestions in the teacher's guide for the rest of the time allocated to mathematics. The relevant page of the guide was in an easy to use format.

Teachers attended a three-hour workshop at the beginning of the school year to learn where to get the radio receiver and what to do if it broke down; how to change batteries; when to turn on the radio and how to find the right page in the teacher's guide.

Evaluation

Evaluation was a particular concern in the Radio Mathematics Project, both to provide data for fast revision of following lessons and to provide evidence of the project having achieved its goals. Daily observation in a sample of classrooms, weekly achievement testing, testing at the start and end of the school year, questionnaires to and interviews of teachers, and students' attendance and achievement records from teachers were all regularly used as sources of information. In addition, project staff collected data through conversations with teachers, children, supervisors and parents; picked up complaints or suggestions from teachers, as filtered through the local school inspector; read letters from teachers, children and casual listeners.

The tests used to evaluate students' achievement over a year were specifically designed for the project and went through proper piloting. Educational standards, as measured by objective performance tests, were raised.

Bates (1984) reinforces this view about the value of educational radio broadcasts,

In Nicaragua, at all grades covered by the project scheme, pupils taught mathematics by radio learned more than pupils taught in traditional classrooms, and these results were consistent across different types of school and levels of ability. (p58)

This is the most important finding of the project.

Finance

The Ministry of Education provided salaries for a substantial number of project staff and paid for furniture, office rent and office supplies. All costs in the schools were covered by the Ministry too, except for costs of materials provided by the project. Transmission facilities at the national radio station were provided by government. All other project costs were paid for by the Stanford team out of funds made available by USAID.

AFRICA - (a) THE IVORY COAST

The Ivory Coast is a small West African country of some 7 million people of whom more than 50 per cent are under 20 years of age. Since independence in 1960 its economy has experienced considerable growth based on coffee, cocoa and timber exports and in foreign labour (both skilled and unskilled), capital and techniques.

The country inherited an educational system from France that was ill-adapted to national needs and that served only 54 per cent of the children

of primary school age in 1970 (Hawkrige and Robinson, 1982). As early as 1961 the government decided to reform the structure and content of the system, with help from France and UNESCO.

The government was influenced by work being carried out in educational television projects in El Salvador, Niger and Samoa, and saw advantage in using educational television as an instrument of reform. In particular, it hoped that by using television to provide a higher standard of teaching, together with a more relevant curriculum, the schools would be able to promote children regularly every year, with very few drop-outs and a consequent increase in school efficiency.

In addition, educational television offered some promise of greater unification of educational provision, of integration of different subjects, of bringing to large numbers of children the teaching of specialized teachers with high qualifications, of up-grading the work of classroom teachers through using television for regular courses of teacher-training, and of increasing motivation among both students and teachers. After a long period of preparation between 1968 and 1971 by the Ivory Coast primary education officials in collaboration with France and the relevant international organization, the Ivory Coast's new school system was introduced in September 1971. Broadcasting began on a national basis, but only to 447 classes. More classes were provided with receivers each year, the aim being to include all primary schools by 1980. By 1979-1980, 15,635 classes belonged to the Programme d'Education Televisuelle (PETV) - Educational Television Programme - representing some 84 per cent of the students (Kicher and Orivel, 1980).

It was also proposed that the slack capacity in television production and reception facilities should be used to provide non-formal, vocationally based, part-time education for primary school leavers who did not continue in the formal school system, and for rural and urban youth generally. In fact, a series addressed to all rural adults was piloted in 1973 in some thirty-five villages. New series were added each year up to 1976 for general adult audiences.

Organizational Structure

During the first few years, the project operated with little administration and on a model that resembled the traditional management of the schools. But as the project expanded, the need for management of stocks, staff and markets (in the sense of schools) grew very quickly. A Unit for Data Processing was created in 1972, and, as it became equipped with modern computing facilities, this unit became essential to the project's managers. This was recognized from 1976, when it became the Educational Organization and Management Unit, situated in Abidjan - the capital city of the Ivory Coast.

Figure 2.3 shows the administrative structure in 1978 of the Ministry of Primary and Television Education, within which the project is located. This Ministry is unique in education anywhere in the world, and is of full Cabinet status within the Ivory Coast Government. The Ministry has a number of directorates, of which the Directorate of the Educational Television Complex (based in Bouake, 250 kilometres from Abidjan) and the Directorate of Primary Schools and Training Centres (in Abidjan) have, since 1976, worked together under the authority of the General Directorate of Studies and Programmes.

FIGURE 2.3 : The Organisational Structure of Part of the Ministry of Primary and Television Education in the Ivory Coast in 1978

MINISTRY OF PRIMARY AND TELEVISION EDUCATION

DIRECTORATE-GENERAL OF STUDIES AND PROGRAMMES

DIRECTORATE OF PRIMARY SCHOOLS AND TRAINING CENTRES

- Initial and Continuing Training Department
- Nutrition Education Department
- School Map Department

DIRECTORATE OF EDUCATIONAL TELEVISION COMPLEX

- General Secretariat
- Pedagogy Department
- Multi-media Production Department
- Television Production Department
- Print Production Department
- Polytheque: book, film and teaching material library

GENERAL INSPECTORATE

EVALUATION SERVICE

DIRECTORATE OF FINANCIAL AFFAIRS

DIRECTORATE OF PERSONNEL

ARCHITECTURE AND SCHOOL CONSTRUCTION UNIT

EDUCATIONAL ORGANIZATION AND MANAGEMENT UNIT

DIRECTORATE OF OUT-OF-SCHOOL EDUCATION

Out-of-School Television Department

Source: David Hawkrige and John Robinson, Organizing Educational Broadcasting. London: Croom Helm, 1982

The complex has five departments, as well as a general secretariat. The Pedagogy Department influences curriculum and lesson content. The Multimedia Department runs a closed-circuit television network for training teachers plus an audio-visual loan service. The Television Production Department, staffed largely by French, Canadian and UNESCO expatriates, makes programmes for the schools. Table 3 shows the number of staff in each category employed at the Bouake Centre by the year 1975.

Clearly, the number of people employed at the Centre grew very rapidly and a further seventy posts were requested for the 1976-77 school year (Eicher and Orivel, 1980).

These requests for additional staff can be partly explained by the fact that the Bouake Centre was getting ready to produce programmes at the secondary level when the first generation of television learners entered the first year of secondary education in September 1977 (Kaye, 1976).

Apart from these administrative arrangements for the broadcasting project within the Ministry, a private company, based in Abidjan, called the Compagnie Africaine de Television (CATEL) was entrusted with installing and serving the receivers, masts and aerials. It organizes mobile teams which visit the schools once a month. If a breakdown occurs between the visits, breakdown teams with radio-equipped vehicles can be called out and quickly reach the place concerned. This system seems to be quite reliable.

Eicher and Orivel state that as breakdowns average only one per set every two years, those in charge of the system are thinking of extending the planned average life of the sets to seven or even ten years. In addition,

TABLE 2.5: Staff categories at the Bouake Centre

	1969	1970	1971	1972	1973	1974	1975
GOVERNMENT EMPLOYEES							
Ivory Coast Nationals	-	19	49	60	131	154	173
National Casual Workers	-	73	75	86	166	200	259
FOREIGN TECHNICAL ASSISTANTS (French, Canadians, UNESCO)							
	13	47	86	114	144	126	133
TOTAL	13	139	210	260	441	480	565

Source: Eicher, J C and Orivel, P, "Cost Analysis of Primary Education by Television in the Ivory Coast",
In The Economics of New Educational Media, Vol.2, Cost and Effectiveness, UNESCO, Paris, 1980

a new model is at present being planned that would require almost no servicing and whose breakdowns could be put right by the teachers themselves.

Objectives

The reform had several objectives, but its two main aims - which were complementary - were to make it possible to achieve 100 per cent enrolment in primary education by 1985 and to provide an education which is appropriate to the characteristics and needs of society in the Ivory Coast. In theory, the methods employed were to make it possible to reach those objectives at a lower cost than by relying on the traditional approach. Among other things, it was thought that "television teachers" would be trained more quickly than ordinary teachers and could be paid at a lower rate.

These objectives were modified as the project progressed. In 1974 they included political awareness-raising, thereby encouraging and establishing a national identity; and stemming the migration of youth to towns (Hawkrige and Robinson, 1982).

Production and Distribution

The national television network in Abidjan, which reaches about 80 per cent of the country, carries the programmes for schools on each week day. Kaye reports that these programmes incorporate new ways of teaching French, modern mathematics, basic education and environmental studies. All the programmes are broadcast in French, the country's official language and the language of instruction in schools, although many

students do not speak it or understand it well. There are about sixty local languages spoken in the Ivory Coast, emanating from five main tribes. The government chose French in order to give the country a common spoken and written language that would not only permit some degree of cultural unity but would also facilitate its international relationship. Educational television offered an excellent opportunity for teaching through this language and thereby enhancing students' knowledge of it.

Since the villages do not have electricity, many receivers are operated with batteries, some with solar panels for recharging. All sets are located in schools, each classroom having its own set. Some of these sets are used by the out-of-school component in the evenings.

Printed teachers' guides and texts for students are prepared in Bouake to support the television series and are delivered by road at the beginning of each term to primary school inspectors' offices. Teachers have to collect the materials for their classes because the cost of delivery by road would be too high. Teachers in the project are expected to participate in in-service training. During the life of the project there have also been many seminars for teachers. For teachers in schools which are not yet converted to television, a weekly radio programme is broadcast to prepare them for the change. This is the only use of radio in the project.

The Out-of-School Television Department has its own production staff of about forty including ten per cent expatriate (Lenglet, McAnany and Grant, 1979). The out-of-school programmes are transmitted by the national television network to the schools in the evening, but as Lenglet, McAnany and Grant point out, the signals can be received by up to 200,000

homes that have sets, mainly in towns. As attendance of adults at the schools has declined, the programmes are being aimed more at families at home.

Teachers in classrooms within the project are expected to prepare their students for the programmes. They use the printed materials, which are attractively produced and presented, much more so than texts used in other schools, public or private, in the Ivory Coast. During the broadcasts teachers watch their students' reactions, and question them immediately afterwards about what they saw and heard. Then, for a further 30 minutes or so, students do the exercises suggested in the teachers' guide or in their workbooks. Sometimes they work individually, sometimes in groups.

As for the out-of-school component, primary school teachers were appointed as animators for the evening sessions with young people and adults. An animator was expected to read guidelines and posters (all in French) beforehand; attend periodic workshops organized by the Out-of-School Television Department; notify villagers concerning the topics of forthcoming programmes through students; open the classroom, turn on the receiver and summon villagers by ringing the school bell; translate the French commentary into the local language during or after the programme, or arrange for somebody else to do it; lead a discussion afterwards to test comprehension, answer any questions, develop the subject further, repeat the main points; and be available generally to help villagers take action related to the programmes. All these things were carried out by primary school teachers for no pay at all.

Lenglet, McAnany and Grant analyze why this component of the project is not being used in villages. Audiences do not attend, they say, because

many schools are closed, animators are unenthusiastic (because they are unpaid), curiosity has waned and the programmes cannot be understood. Those who do attend find themselves squeezed onto benches made for young children with the only light in the room being the one coming from the television screen. They cannot understand the French commentary themselves, and it is difficult for an animator to provide simultaneous translation.

Hawkrige and Robinson state that in 1977 the Ministry decided to give priority to training nationals to run the project. The Initial and Continuing Training Department, within the Directorate of Primary Schools and Training Centres, carried out this work through several institutions, such as the Teacher Training College in Bouake. Training is now provided for teachers, school principals and inspectors of schools. There is also a special supplement for teachers in the fortnightly Party newspaper to which teachers subscribe. Television production staff, usually recruited from among the teachers, also receive training. A few trainees are sent abroad to France, Belgium or Switzerland.

Evaluation

Hawkrige and Robinson say that television teaching was most effective in teaching spoken French, with the children of television schools improving their proficiency in the language markedly more than those in other schools. Less satisfactory progress was, however, recorded in written French, and changes are to be made in the methods of teaching the written language. Similarly, changes have already been made in the content and pedagogy of the modern mathematics programmes, which were initially radically new to both teachers and students.

A general survey carried out in 1978 with the help of inspectors, principals and primary school teachers, reported criticism of the educational television lessons devoted to study of the environment. The teachers said there was little relevance of the broadcasts to regional realities; there was no follow-up; the programmes integrated disciplines in an artificial way; and the broadcasts were too fast in pace, too overloaded with information and lacked suitable educational objectives. The programmes did not motivate students to discover their own environments.

~~However~~, there is a strong view held by project staff that educational television has succeeded in introducing new methods and attitudes. Children participate much more actively in television classrooms, there is more work in small groups, and classwork now calls much more upon children's spontaneity. The traditional teacher-student relationships have been changed by the introduction of a third partner, television.

Finally, and perhaps most importantly, educational television has provided for greater equality of educational opportunity. Prior to the project, urban students had great advantages over the rural, because urban teachers were better qualified.

There are doubts about the adult, out-of-school component. As pointed out earlier, it has failed to reach its original target audience. It is difficult to specify any demonstrable impact of the broadcasts. However, as the out-of-school audience in the towns has grown, the content of broadcasts has changed, becoming less directly instructional and more generally informative. As a consequence, its impact has become even more difficult to measure.

Finance

The Educational Television Programme project in the Ivory Coast was launched with the help of many external sources of aid. Kaye (1976) states that the sources involved were UNESCO, the Co-operation Francaise (FAC), the United Nations Children's Fund (UNICEF), and Canada. An International Bank for Reconstruction and Development (IBRD) loan made it possible to finance the building of the new Bouake Centre.

This assistance is specific, each partner supporting a particular sector of the project. UNESCO contributed highly skilled manpower and audio-visual equipment; Canada financed the investments for the written materials, printing works and about thirty technical assistants to run it. UNICEF contributed mainly to the training and re-training of school-teachers, and FAC covered part of the cost of French technical assistance and half the cost of investments in audio-visual equipment (e.g. purchase of television sets). The Ivory Coast government was responsible for the teachers' salaries and other major costs associated with both components.

Studies of the school component conclude that the overall costs are very high, probably higher than those of similar projects elsewhere. For example, the average cost per student is much higher than in the Mexican Telesecundaria. Costs are high in the Ivory Coast because batteries are too expensive to supply and maintain, there is far too much production capacity and salaries for project staff and teachers are high (Kicher and Orivel, 1980).

AFRICA - (b) KENYA

Establishing a Radio-correspondence Course Unit

Straddling the equator on the east coast of Africa, Kenya is a country which covers an area of more than 582,000 square kilometres and has a population of about 12 million (according to the 1969 census).

The economy of the country is based mainly on agricultural industry. A high proportion of Kenya's population lives in rural areas and derives its livelihood either directly or indirectly from farming. The Government is the largest employer in the monetary sector of the economy. Private enterprise in commerce and small processing and manufacturing industries is encouraged by government in all areas where people live.

Since Kenya's independence in December 1963, the country has embarked on a series of development plans for the social, economic and educational development of the country. There has been a rapid development in the field of education, especially at primary and secondary levels. One of the Government's chief educational aims is to achieve universal primary education for all school age children, which, in its turn, presupposes the availability of qualified teachers in sufficient numbers. The Ministry of Education has therefore continued to strengthen and expand the training and upgrading programmes for teachers in order to bring about effective changes in education.

In order to provide education to more children, the Ministry of Education had to employ considerable numbers of under-qualified or even unqualified teachers in the schools during the early years of independence when educa-

tional expansion took place in all directions. It also increased enrolments in the primary teacher training colleges.

In spite of these developments in teacher education, the total output of the teacher training colleges could not match the rising demand for qualified teachers or even replace the existing unqualified staff in the schools. Hence the Ministry of Education mounted in-service teacher training and upgrading programmes as the only way of providing more qualified teachers. The programmes were quickly accepted by teachers because they permitted them to obtain academic and professional qualifications while employed. This review focuses attention on the establishment of a Radio-correspondence Course Unit in that country.

The idea of the Ministry of Education establishing radio-correspondence education in Kenya was first proposed in 1964. At that time the Kenya Education Commission, set up to look into the educational system of that country, urged consideration of a combination of lessons by radio with an approved correspondence course. Furthermore, the Commission suggested that if the required facilities could not be provided by the already established commercial correspondence colleges, it ^{might} be necessary for the Ministry itself to enter the field of education by correspondence (Kenya Education Commission Report, 1964). Two years after publication of the Commission's report, the Government of Kenya sought technical assistance from the United States Agency for International Development (USAID) for the establishment of the Correspondence Course Unit in the Institute of Adult Studies at University College, Nairobi (now the University of Nairobi).

Top priority was given to courses preparing adults, and particularly primary school teachers, for upgrading purposes. There were 37,923 teachers employed in Kenya's primary schools in 1968. Of these, 10,438 were professionally qualified. Out of the 27,285 qualified teachers, there were 16,992 P3 teachers who were the mainstay of the primary schools, comprising about 60 per cent of the qualified teaching staff and almost 45 per cent of the total teaching staff (Ministry of Education, Annual Report 1972).

Normally, a P3 teacher will have had seven (in some cases eight) years of primary education plus two years of teacher training. For such a teacher to become eligible for promotion to the next higher grade of P2, he/she is required to pass a national examination, the Kenya Junior Secondary examination (KJSE) which is formally taken after two years of secondary education. Prior to 1968, a candidate was required to pass at least five subjects at a single sitting (in the same year) in order to earn a KJSE Certificate. At the recommendation of the Correspondence Course Unit (CCU) staff, this requirement was changed for all P3 teachers so that they were allowed to sit for the examination in as few as two subjects a year and to carry forward credit for individual subject passes from one year to the next, until they had accumulated passes in five subjects. Thus, the first correspondence courses produced by the Correspondence Course Unit in 1968 were aimed at preparing these teachers, and other adults who had completed primary education, for the KJSE.

In 1969, the CCU undertook a second programme to run concurrently with the KJSE Preparatory Courses. At the request of the Ministry of Education the CCU agreed to co-operate with the Kenya Institute of Education in its in-service training course for unqualified teachers. The unqualified

teachers' upgrading course is intended to improve the teaching effectiveness of previously untrained teachers. The programme is conducted in two phases. The first is professional training in methods of teaching organized by the Kenya Institute of Education (KIE) and consisting of a year's study divided into three short residential courses during school holidays. Between the residential sessions, the courses are supplemented by radio lectures. Candidates who successfully complete the first phase of the programme are then admitted to the second year's academic course conducted by the CCU. The unqualified teachers, however, study only three subjects - English, Mathematics and either History or Geography - at the first year secondary level. Those who successfully complete the correspondence course and pass the final examination are upgraded to P3 status.

Operation of Programme

To date, the CCU has offered the following subjects at both Form One and Form Two levels: English, Kiswahili, History, Geography, Mathematics, Biology and Physical Science. Jamison and McAnany (1978) state that the instructional programme provided by the CCU comprises a synthesis of the following:

- (a) Correspondence study guides, textbooks and other teaching materials such as maps, mathematical instrument sets, science experiment kits, and so forth;
- (b) Supplementary radio broadcasts covering the material in one or more lessons of the study;
- (c) Occasional face-to-face teaching during residential schools (p51)

The instructional process is made to function by efficient machinery for establishing and maintaining contact between the student, the teacher and the Unit through the system for recruitment, enrolment, distribution of study materials and the handling of lessons and end-of-course examinations.

The Unit is equipped with its own printing, duplicating and binding facilities, registration, mailing, records and accounts sections, a self-contained radio production studio, and a science laboratory. The Adult Studies Centre adjacent to the CCU provides all facilities for residential courses for up to 60 students. The CCU staffing complement comprises 11 members of academic staff, all appointed under the University's terms of service. All members of staff are Kenyans. The academic staff consists of the Head of the Unit who is also an Assistant Director of the Institute of Adult Studies, correspondence tutors, a course development tutor, a radio/TV specialist and a course editor. The ancillary staff includes an administrative assistant, an accountant and a team of typists, printers, stores and records clerks.

The correspondence course material in one or more lessons is supplemented by a 15-minute radio programme which is broadcast twice a week over the Voice of Kenya. Radio offers one of the most practical and effective means of communication in many developing countries. To most people living in the rural parts of Kenya, therefore, radio offers the only source of news and information about what is happening outside the small communities and villages. It was because of this and other factors that the CCU decided to develop radio broadcasts as an integral part of the instructional system. The CCU radio programmes are allocated a fixed air time from 1700 hrs to 1800 hrs every week-day throughout the year.

The radio lessons are optional, and there are many students who work ahead of the radio programmes, some of these do listen to the programmes at later stages. The radio lessons are particularly aimed at the slower students and are used to pace and encourage them. The radio teacher tries to highlight the important points in a lesson and to provide a summary at the end of each teaching unit. Occasionally the radio teacher will arrange for a question-and-answer type of programme in which problems common to many students are discussed and common mistakes are corrected.

The radio broadcasts have attracted very many casual listeners besides the students enrolled with the CCU. A survey conducted in 1975 by the Voice of Kenya revealed that there are a minimum of 318,000 and a maximum of 817,000 adult listeners who have their radios on when the CCU broadcasts are on the air (Ministry of Information and Broadcasting, 1975). Consequently, the CCU has been modifying the radio programmes into a more flexible format to cater for those listeners who are not studying for examinations but find the programmes interesting and informative. This audience can only be termed "accidental" because when the programmes were launched it was thought that they would be useful only to those who were enrolled and received written materials regularly. The notion was proved wrong in the first year of operation. As a result, the CCU had to modify gradually the radio programmes so as to cater, not for a specialized group of listeners, but for a general audience with wide interests.

Evaluation Results

Kinyanjui (1968), points out that in the four-year period from 1969 to 1972, over 10,000 unqualified teachers successfully completed their radio-

correspondence upgrading to the P3 level. This completion rate is one important index of success; another is that the supervisors of upgraded teachers, according to a survey, reported that about 95 per cent of them improved their performance after taking the upgrading course.

There is a somewhat sharper measure of performance for teachers being upgraded from P3 to P2 in that they must pass the Kenya Junior Secondary Examination. Even here there are difficulties in comparing CCU-trained students with graduates of traditional schooling: no data are available to allow matching students' backgrounds and abilities, and, as a source of definite bias in favour of the CCU students, traditional students must take all five examination subjects at one sitting whereas CCU students need not. This discrepancy notwithstanding, the difference in pass rates in favour of CCU students is still impressive: the average pass rate for CCU candidates was close to 50 per cent; for others for most years, it was less than half that (Nturibi, 1970).

Kenya's radio correspondence courses provide an effective mechanism for upgrading teacher quality. The CCU students are learning the prescribed material. The system's cost is substantially less than for traditional instruction and, probably more important, it allows teacher upgrading to occur without demanding either an expansion of the teacher training force or a withdrawal of teachers from their on-going teaching responsibilities in the primary schools (Ferraton, 1982).

ASIA - EDUCATIONAL RADIO IN NEPAL

The Kingdom of Nepal is a small country in Southern Asia. It is situated south of the Great Himalayan Range. It is bordered to the North by Tibet, to the West and South by India, and the East by Sikkim. It has a total land area of 54,362 square miles and its capital is Katmandu.

The population of Nepal is made up of several ethnic groups resulting from large-scale migrations from neighbouring areas of Tibet, Sikkim, Bengal and India. Tribal divisions and the caste system still influence the social and political life of Nepal. But perhaps the most serious problem standing in the way of rapid economic and technological development is poor communication. Transportation by land and by air remains inadequate in spite of the progress that has been made since the late 1950s. The elephant and the buffalo are still the chief means of transport.

One area in which the effects of a poor communications network, inadequate transportation, and communal exclusiveness have been most strongly felt is education. Like many developing countries, Nepal is faced with serious educational problems. Although much progress has been made within the last two decades, a lot more still needs to be done. Progress has been particularly notable in the efforts to improve not only the quality of, but also access to primary education. According to the United States Agency for International Development (USAID) report, Project Impact Evaluation Report No. 19, (May 1981), in the Project Identification Document (Second Draft, 1982) the level of literacy in Nepal in 1951 was a low two per cent, and the number of trained teachers was estimated at 20. However, with assistance from USAID, Nepal has made impressive strides towards improving the situation. The level of literacy had risen to

17 per cent in 1975 and in the same period the number of trained teachers went up from 20 to 7,287. Enrolment also went up from 8,505 in 1951 to 401,035 in 1975 (AID Report, 1981).

In 1971, the Government of Nepal had taken a bold step towards solving the country's educational problems by introducing the National Education System Plan (NESP). The NESP specified new curricular weightings at all levels of education, endorsing an emphasis on language and numerical skills at the primary level. It restructured the ten grades of pre-university education into three-grade primary, four-grade lower secondary, and three-grade upper secondary schools. In addition His Majesty's Government declared education free for all Nepalese.

The NESP resulted in a rapid expansion of enrolments in primary schools. However, there was not a corresponding increase in the number of teachers. In 1977 there were about 20,000 primary school teachers in the country. Of this number only 8,000 were trained. Of the remaining 12,000, 6,000 held the School-Leaving Certificate (SLC) but lacked training. The other 6,000 had neither SLC nor training (Project Paper, March 1977).

The NESP left the task of teacher training to the Institute of Education of the Tribhuvan University. However, the need for teachers was such that even though the institute had the capacity to turn out 800 teachers annually, the shortage remained acute. Two problems afflicted the Institute itself. Apart from the problem of teacher educators, it soon became obvious that this method of training teachers was very expensive. It also became obvious that if the large number of untrained teachers was to be satisfactorily trained, and in a less expensive way, some alternative method had to be used. It was in this context that the Radio

Education Teacher Training programme was seen as an attractive alternative.

The project

The Radio Education Teacher Training programme (RETT) was conceived of as a research and development project to develop and test a training programme for untrained rural primary school teachers through the medium of radio, reinforced by written self-instructional materials and periodic workshops. The RETT was expected to create a cost-effective mechanism and methodology for assisting untrained teachers to meet certification standards (Graham and Page, 1980). It was also envisaged that the RETT would, in the long run, create facilities for an ongoing programme of radio education for a wide variety of audiences in a wide variety of subject areas including agriculture, health, family planning and cultural themes.

Southern Illinois University at Carbondale, USA, through a contract with USAID assisted the Ministry of Education in Nepal in the implementation of the RETT project. The formal contract with SIU-C was signed in 1978. The 1978-1979 and 1979-1980 school years were devoted to start-up activities. The 1980-1981 school year was used as the pilot year and 117 untrained teachers were enrolled in the programme. Also during the pilot year scripts, radio programmes, manuals and observation check-sheets were produced for the first full year of operation designed to reach about 1,000 teachers in the 1981-1982 school year. The project was expected to expand to an audience of 2,500 untrained primary school teachers in the 1982-1983 school year. By the end of the first phase of the project the RETT was expected to have provided training for about 6,000 untrained teachers in the country (Okwudishu and Klasek, 1986).

Radio programmes

There were five one-hour programmes each week. Each programme included three segments, with each segment standing on its own but linked to the overall subject matter of the programme. Each segment was 20 minutes long. The first and third segments were formal instructions based on the curriculum. The second segment provided relief and was generally devoted to discussions of general interest to the listeners. The decision about how many of the ten instructional slots each week should be given to any subject depended on the importance attached to that subject.

Utilization

In that 1981-1982 school year, about 1,100 untrained primary school teachers were added to the 117 teachers who participated in the project's pilot year and who were asked to continue for a second year. There were, therefore, about 1,217 teachers receiving radio lessons in that school year, with 165 hours of radio programmes.

Costs for RETT

In their analysis of the data Okwudishu and Klasek (1986) adopted the cost-evaluation methodology developed by Jamison, Klees and Wells (1978).

The following cost function was used:

$$\text{Total cost} = TC(N, h) = F + V_n N + N_h h$$

where

- N = number of students enrolled
- h = number of hours programmed
- F = the fixed costs of the system which consist of all cost components invariant with respect to hours or programming and number of students
- V_n = variable cost per student
- V_h = variable cost per hour of programming.

From the above equation the following costs were calculated:

Average cost = $AC(N) = TC(N)/N$
per house cost of instruction per student = $PHC = AC/h$ as a
function of the values of h and N .

Three interest rates (0 per cent, 7.5 per cent, and 15 per cent
were used to annualize capital expenses. The interest rates
were used in order to show that cost calculations are sensitive
to the choice of interest rate.

(p176)

The cost function for the RETT was presented in a manner that gave annu-
alized total cost, TC , as a linear function of two independent variables.
These were the number of teachers enrolled in the programme (1,217) and
the number of hours of radio lessons broadcast (165) during the 1981-
1982 school year.

Using a 7.5 per cent social discount rate average cost of RETT was found
to be substantially high. Okvudishu and Klasek (1986) state

At \$240.33 per student per year, and a per-student-hour cost
of \$1.46, the RETT was found to be one of the most expensive
radio projects in the world. However, if enrolment was
increased to, say, 5,000, average cost would fall to \$58.50
while per-student-hour cost would fall to \$0.35. (p178)

Okvudishu and Klasek (1986) further conclude

Average cost per student per year was found to be \$17.86,
\$18.73 and \$19.73 for 0 per cent, 7.5 per cent, and 15 per
cent social discount rates respectively. The per-student-
hour costs were \$0.108, \$0.133, and \$0.119 for 0 per cent,
7.5 per cent, and 15 per cent social discount rates
respectively. (p180)

These figures are rather high when compared with figures from other media
projects. For example, in the El Salvador project, the average cost
to the Government of El Salvador, after subtracting foreign loans and
grants, was \$17.75 and the per-student-hour cost was \$0.104. The lower

cost of the El Salvador project could be explained by the fact that even though it had a higher fixed cost than the RETT, the enrolment (48,000) and the number of hours of programming were much higher (Jamison, Klee and Wells, 1978).

Cost Comparison with the Traditional System

In their study of the On-the-Spot Teacher Training Programme in Nepal, Shrestha and Vaidya (1978) reported a figure of 1915.31 rupees per teacher per year for the Campus-Based Teacher Training Programme, and 893.33 rupees per teacher per year for the On-the-Spot Teacher Training Programme. In dollar terms these figures would be \$82.54 per teacher per year, and \$38.71 per teacher per year, for the Campus-Based and the On-the-Spot Teacher Training Programmes respectively. However, Graham (1983) states that a revised estimate of the cost of attending a Campus-Based Teacher Training Programme showed the cost per teacher per year to be \$329.

Using a 7.5 per cent social discount rate the cost per teacher per year using the RETT was found to be \$240.33. A comparison of the costs of the RETT and the Campus-Based Teacher training Programme showed that the latter was higher by \$89. Therefore, the RETT was found to be a more cost-effective method of training primary school teachers in Nepal.

THE CARIBBEAN - RADIO SANTA MARIA IN THE DOMINICAN REPUBLIC

Project Origin and Rationale

In the Dominican Republic, the Spanish-speaking nation which shares the Caribbean island of Hispanola with Haiti, are exhibited most of the development dilemmas facing Latin America as a whole. Despite a promising annual growth rate of almost 10 per cent in the late 1960s and mid 1970s, the Dominican Republic is still confronted by a relatively high rate of population growth (approximately 3.1 per cent a year), economic dependency on few prime extractive industries (notably sugar, cocoa, tobacco and bauxite), and a sharp disparity between the employment opportunities and rewards available to its urban versus rural population (McAnany and Mayo, 1980). In real terms, the Dominican Republic's rural population, which has always constituted the nation's most underprivileged sector, has seen its economic position eroded in the last generation.

New opportunities and services have not been distributed uniformly either by the government or the private sector. As a result of deteriorating conditions in the countryside, a sharp increase of urban migration has occurred. The government has inaugurated a number of economic and educational policies aimed at slowing, if not reversing this trend, but it is by no means certain that such initiatives will weaken the forces of inequality that are deeply rooted in the country's social system.

One promising strategy for closing the gap between the urban and rural sectors, according to the Dominican Republic's rulers, is educational reform. Accordingly steps have been made taken in recent years to make four grades of education universally available, to minimize grade repetitions and in so doing to enhance system efficiency, to revise the

curriculum and generally to prepare young people better for careers in technical fields and professions. The emphasis on young persons enrolled in school represents only a partial solution for the Dominican Republic's pressing educational problems. While enrolments of the school-age population at all levels continue to expand, hundreds of thousands of older citizens and school leavers must survive without the necessary skills and credentials to find productive work. It is to this population that the Radio Santa Maria (RSM) Project is addressed.

Radio Santa Maria was established in 1964 under the auspices of the Roman Catholic Church. Its initial purpose was to attract rural and urban disadvantaged adults into a certified literacy programme, but it has evolved into programmes leading to certificates at the primary and intermediate levels.

Audience Characteristics

According to Robert White, who completed a detailed study of RSM for UNESCO in 1977, yearly enrolments in the system have averaged 12,000 to 14,000 annually since 1973. Rural teenagers make up the bulk of the system's participants. These young people are drawn heavily from rural communities where educational opportunity has not been available beyond the first two or three years of primary school. For these students, RSM offers the only means by which they may continue their education, short of moving to a larger town and finding a place in one of the few adult-education programmes offered by the government. Preferring to stay at home with their families, most of the students enter the system at the fourth, fifth, or sixth grade level. A majority have not been out of school for more than three years and 30 to 40 per cent have not yet celebrated their fifteenth birthdays (White, 1977).

Survey data collected by White suggests that the clientele served by RSN in most respects parallels that served by the adult primary school equivalency programs administered by the Secretariat of Education. Both programs cater predominantly to young persons anxious to pursue their education beyond the basic three- or four-year minimum offered in many parts of the country. The desire to qualify for higher education and eventually for better-paying jobs in the urban sectors are the motives which White attributes to the high level of interest and motivation exhibited by RSN participants. Education beyond the basic primary grades is apparently viewed by many rural adolescents as the best means available for securing a life off the family farm.

The Learning System

The key element of RSN's learning system is the weekly set of printed lessons which are distributed to each student. These consist of six to eight printed sheets which contain both explanatory material and exercises derived from the national curricula for the respective grades. However, two noteworthy modifications are made in the national curricula. First, the amount of time each student is expected to spend on each subject unit is reduced. This permits each course, fifth-grade mathematics, for example, to be covered in a little less than six months. Second, the contents of most subjects for a given grade are organized around 'central themes'. These themes are expected to help the students integrate what they have been studying in different subject areas and, at the same time, raise their social consciousness. Wherever possible, topics of current national concern are woven into the development of the semester's 'central theme'.

The principle of active student involvement, exemplified by the daily exercise which the students are required to complete in each subject, is reinforced by the use of radio. In the broadcast classes which run for an hour each day, straight exposition by a single voice is avoided. Instead, a conversational format is customarily employed in which one actor poses the kind of questions that the students are likely to have in the field. A second actor plays the helpful teacher, encouraging the student and helping to clarify the latter's doubts. In White's view "This helps to create an atmosphere of the active student posing questions, discovering the answers, and building a logical pattern of thoughts" (p32).

Involvement of the students is further enhanced by regular contact with a field teacher. Such teachers, who numbered 520 when White conducted his study in 1977, maintain the crucial link between the students and the central office. In addition to performing routine administrative duties such as enrolling new students, collecting fees and overseeing all examinations, the teachers hold weekly sessions for all students within their designated sectors. At these sessions students are encouraged to bring up problems they have encountered with their completed exercise sheets. In addition, the more dedicated and skilful teachers often provide some supplementary instruction in one or more subject areas. Occasionally, the weekly meetings are used for more in-depth discussions of the central themes.

Simmons (1980) states that although the field teachers receive some compensation (approximately \$0.15 per student per week) for carrying out the duties outlined above, community spirit and religious values appear to explain better their dedication to the system. Most of the teachers

are young persons who are still pursuing their own education, mostly at the secondary level. Approximately one-third are primary school teachers, but the majority have no teaching credential^s and are not formally recognized as teachers by the Dominican Republic's Secretariat of Education. However, what the young teachers lack in formal education and training they appear to make up in dedication to their students, to the radio system and to the principles of lifelong education. In many respects, the teachers serve as role models for their students because they share so many of the latter's background characteristics and aspirations.

Evaluation of Effects

One of the most difficult problems facing distance-learning system is the maintenance of contact between the centre and the field. Without up-to-date information on how well elements of a system are distributed and used, the danger is increased that learning performance will suffer and that participants will eventually abandon the system. As mentioned above, RSN relies upon a unique corps of 520 field teachers to provide a feedback to the central administration. Such feedback consists primarily of weekly reports submitted by the field teachers and, as White (1977) points out, one of the best indicators of field-teacher effectiveness is the regularity and thoroughness of such reports. Additional feedback is provided by a small cadre of supervisors who attempt to visit all the sectors on a rotating basis. However, the ratio of supervisors to sectors is too low to permit such in the way of direct or regular monitoring of the system as a whole.

In an effort to obtain a more representative and objective assessment of RSN's performance, White compared the achievement levels of students

in the radiophonic schools with those in conventional adult-education classes. Demographic as well as achievement test data were collected from samples of sixth and eighth grade students to test the hypothesis that students enrolled in RSM's programme learn at a level equal to or greater than that of their counterparts in the conventional system. Additional data were collected from samples of graduates of the two systems to test the hypothesis that graduates of RSM rank equal to or above the average of their secondary school classes.

Although the limited and non-random sampling strategy of White's study prevented him from drawing anything more than tentative conclusions from his data, he felt that both his hypotheses were substantiated and that RSM was offering a comparable, indeed superior, education to that of the conventional system. Perhaps even more important than White's summative judgement, however, were the conditions and qualifications he identified with respect to RSM's operation.

Chief among White's concluding observations was the critical importance of the local field teacher. When field teachers were present and working adequately, students enrolled in the RSM system out-performed their counterparts in the conventional adult-education programme. Achievement in mathematics seemed to be specially dependent on regular field-teacher contact, as did the overall academic performance of rural students.

Costs

The equality in performance between students of the two systems is significant considering that per student cost instruction, radio is apparently lower than that of the conventional system. There are not enough data

on the costs of the two systems to allow a complete cost analysis, but a broad-brush comparison suggests lower per student costs for radio programme students. Simmons (1980) states that

With data provided by White, who includes broadcasting and assumes more supervisory personnel per student than are currently provided, a cost equation of $TC(N) = \$152,000 + \$8.7N$ can be constructed. For 20,000 students, this is \$16.30 per student. If the system were to enrol 40,000 students, the same number in the programme run by the Secretariat of Education, the per-student cost would be \$12.50. Information on the cost of the conventional system was quite general, but excluding classroom costs and special subject adult education programmes, the budget seems to have risen from \$629,331 in 1970 to \$1,044,788 in 1974. Since the enrolments only increased from 37,013 to 40,561 the estimated per student cost rose from \$17.00 to \$25.76. (p131)

If the viability of Radio Santa Maria's learning model and its cost-effectiveness are to be preserved, it is apparent from White's analysis that field-teacher weaknesses must be remedied. Specifically, methods must be improved for diagnosing and correcting individual student's learning difficulties. This may be possible through better use of the weekly learning sheets and strengthening of the elements of the system. Improved training and supervision of the field teachers themselves will also be required.

Teacher costs comprise the single greatest outlay of Radio Santa Maria and it is unclear how much higher such costs can climb relative to other elements of the system. How RSM's leaders resolve the problems associated with field-teacher performance and responsibility will probably determine more than any other single factor the success of their system in years ahead. In this respect, the criteria eventually adopted for balancing innovative teaching tools such as radio with traditional educational resources such as trained teachers, may provide the planners of future projects with useful guidance.

Critical Issues for Planning the Use of
Communication Media in Education

This section will discuss four planning issues that are pertinent to the use of communication media in education. They are: the democratisation of educational opportunity; the quality of instruction and learning; the impact of education through technology on rural areas; and the participation of people in their own education. Each of these issues will be discussed in the light of the evidence presented earlier in some cases of this chapter, as well as of evidence from other sources.

Democratization of Educational Opportunity

One of the common arguments for employing communication media is that they allow for marked expansion of educational opportunity without adding proportionately to the costs that are usually incurred in expanding traditional educational services. Two dimensions of 'educational opportunity' must be distinguished at the outset. The first views democratization as a simple quantitative expansion of participants in the educational process. The second is more qualitative in character and concerns expanded opportunity for sectors of a society which have often been excluded from traditional educational programmes, particularly women, rural youth, school drop-outs and other minorities. Such a notion of opportunity, implied in the latter, involves enhanced access (that is, the ability to enter a learning system), achievement (that is, the ability to benefit from exposure to that system), retention (that is, the ability to remain in the system over time), certification (that is, the ability to finish a prescribed course and receive some formal recognition for having done so), and application (that is, the ability to use any new knowledge or certification to better one's life chances).

Let us first examine the issue of 'democratization' through quantitative expansion (though this is not the most important aspect of the concept) in the light of some of the cases reviewed in this Chapter II and from other sources, too. The fundamental goal of the Nicaraguan Radio Mathematics Project was not to expand enrolments but rather to improve instruction and learning at a reasonable cost. Examining other projects that aspired to improve instruction, it can be noted that increased enrolments did occur in both El Salvador and the Ivory Coast when television was introduced into the schools, although such increases were not a direct result of the use of television (Mayo and McAnany, 1980; Kicher and Orivel, 1978). In both these cases, increased enrolment occurred through larger class sizes and double-sessions or the construction of new schools. Television was relied upon to maintain, and indeed enhance, the quality of instruction while enrolments were increased. It must be noted that one common denominator of some cases reviewed is that they are add-on projects, that is, media that have been incorporated into regular formal schools without radically changing existing structures.

Distance learning strategies are another means for expanding educational opportunities, but such strategies do not operate within the traditional structures of schools. Radio Santa Maria is a relatively successful example of such an approach. Here a primary equivalency degree is earned in home study with radio by individuals who for various reasons are not able to enrol in educational programmes sponsored by the Dominican Republic Government. Another example of a school-based (instead of at-home study as in Radio Santa Maria) distance learning strategy is the Telesecundaria project of Mexico. Here learning centres were created with a totally televised curriculum, printed materials and a monitor meeting students regularly (Mayo, McAnany and Klees, 1975). In both Dominican and Mexican

cases radio and television respectively have been key factors in expanding the opportunity to study of rural youths.

Both the Indian Satellite Instructional Television Experiment (SITE) and the Tanzania radio campaigns were successful in expanding educational opportunities for rural adults. The satellite in India allowed access to television programming to hundreds of thousands of people, where no access would have been possible otherwise without years of heavy investment in terrestrial communications infrastructure. In Tanzania radio permitted millions of rural adults to participate in two large-scale campaigns in health and nutrition. However, in both India and Tanzania, communicating with mass rural audiences depended on (a) the ability of planners to design messages that could be easily assimilated and (b) the back-up support of other human and material resources.

In addition to numbers that have gained access to education through communication media, it is instructive to ask which social groups have actually enjoyed such expanded opportunities. As noted above, in Tanzania and India a large cross-section of the rural population had access. In Radio Santa Maria, the clientele was rural but from somewhat more privileged social and economic backgrounds. Radio Mathematics had an impact on all children attending primary school, both urban and rural, and it actually seems to have benefitted the slow-to-average learners most. Still, the benefit of such programmes generally accrues most to relatively privileged persons in the society who can stay in school. Even radio, which is perhaps the most universally available communication medium has exhibited a socially biased penetration in many low-income countries (Bates, 1984).

Another danger in many innovative learning systems that use one or more communication media is that while they provide large numbers with nominal access (through radio listening or watching television) they do not provide the ancillary learning resources and support necessary to ensure students will remain in the system. Many governments may favour such systems because, at the relatively low cost of providing only a media message, they can defend a policy that has provided opportunity for entry of large numbers of students into the system but not the assurance of their completion of studies. Schramm (1978) and Perraton (1982) make attempts to estimate drop-outs from various distance learning systems, but show that it is difficult to generalize. Although a special television experiment in Niger showed a remarkably high retention for its first four years (Silverman, 1978), there is no convincing evidence from other projects that media-based instruction 'alone' is any more successful in preventing drop-outs than traditional systems. Furthermore, long experience with classroom television indicates that the fascination for the medium soon wears off unless other factors (such as good curriculum content) are available to keep students interested.

Certification is also an important aspect of educational opportunity. Directors of many technology projects in formal and non-formal education have often had to struggle to procure official certification of their graduates. This was true of Santa Maria, also of the Mexican Telesecundaria. When certification was withdrawn for a time from a teacher-preparation course by radio in Kenya, the programme lost most of its students until certification was restored (Perraton, 1982). Even with the guarantee of certification, however, there is some doubt whether such recognition might not be considered less valuable than degrees or diplomas from regular schools. Telesecundaria graduates in Mexico appear to be entering higher academic levels on an equal footing with graduates

from traditional secondary schools. Similarly, El Salvador's ETV graduates seemed to do as well as their counterparts from traditional schools (Kless and Wells, 1978). Nevertheless, planners of distance learning systems and others employing communication media to expand opportunity need to examine carefully the value of their qualifications both for entry to higher academic levels and in the job market.

To what extent are participants in media-based educational systems able to apply their education to future employment? There should be a distinction between formal and non-formal education on this point, because the goals of the two are frequently quite different. In most formal school projects, there is an assumption that having a degree will help one find employment, but this long-term goal is often obscured by shorter-term objectives of better learning, more efficient use of resources, or higher retention rates. The radio mathematics programme in Nicaragua made no explicit mention of the long-term value of a primary degree to employment. Radio Santa Maria planners seem to be keenly aware of the value of their system's qualifications and are largely motivated by the desire to help their students secure better employment.

In many non-formal projects, no certification is provided and knowledge gained is assumed to be useful more for the immediate improvement of the participants' well-being. Yet even if technology can enlarge access to useful knowledge, it cannot necessarily guarantee that this knowledge can or will be applied. Tanzania's health campaign in 1973 did show evidence of some clear application of new knowledge (750,000 new latrines dug) and some presumed benefits for health. In the Ivory Coast, an adult-education television project had limited applications of its contents, for a variety of reasons (Lenglet, 1979); and White (1977) found only

limited changes in agricultural and health practices as a result of listening to and discussing radio programmes in Honduras. Nevertheless, radio in a Guatemala project (AED, 1978) helped small farmers adopt significantly more innovations than control groups. In another case, radio campaigns of short spot announcements in Nicaragua and the Philippines have had impacts on knowledge and some behaviour changes in nutrition and child health (Cooke, 1977). Despite these encouraging examples, most large-scale media in non-formal education show less clear-cut results. That technology has the ability of providing information to large numbers of potential learners is evident. What needs to be examined in each case is whether those learners continue to attend to the message, learn from it and can ultimately apply it with some benefit to their personal lives.

Improving the Quality of Instruction and Learning

A number of arguments are frequently raised concerning the quality of instruction in media projects. The teaching effectiveness of the media has been documented in this review and in numerous other studies (Schramm, 1977; James and McNany, 1978). The issue is not really whether different kinds of communication media have the potential to teach but how they can be usefully applied in particular contexts, given the various constraints of budget and bureaucracy. It would be appropriate here to identify some of the more important conditions that facilitate learning with the media.

It is helpful to distinguish between external versus internal conditions of the learning setting. External conditions are those not under the direct control of educators. They encompass students' socio-economic

background, their class, sex, parents' educational levels, as well as the political and social forces that affect the school system as a whole. Internal conditions are those more amenable to the direct control of educators and educational planners: instructional design, curriculum development, evaluation, personnel training, management, and so on. There are also other conditions that are difficult to clarify. One is motivation. It can be argued that such external factors as health, economic needs of the family, distance to the school, and so on, have a decisive influence on learning motivation, but well-run programmes (for example, ones that teach and provide a successful learning experience) seem to contribute to the students' motivation to learn and to remain in the programme. Wherever it is placed, motivation would seem to be a factor of key importance.

In Nicaragua, some of the internal factors that contributed to the success of learning have already been noted. Several factors that might be called external were not noted, however. The team that managed the project was mainly from outside the country. It was experienced in curriculum development and mathematics teaching and it enjoyed an independent budget and the backing of a large bilateral aid agency. To a large extent the success of this pilot programme in teaching mathematics stemmed from its leaders' ability to avoid constraints that have undermined similar undertakings elsewhere. As a consequence, children in the experimental classes were able to learn significantly more than their peers in control (traditional) classes. About these impressive results there can be no argument. The test of the Radio Mathematics model will be whether it can be used in other places to achieve the same results. Among the special conditions that will affect success at a national level will be the political will of a country and the degree to which members of its national

educational bureaucracy understand and are willing to inaugurate all components of such a system. This, in turn, will depend on the costs to the bureaucracy in terms of authority, workload and status that the innovation demands. Also important will be the widespread teacher acceptance, necessary extra budget for add-on costs and the technical skills in production and management to make a national media system work.

Special conditions and circumstances also shed light on the reasons for Radio Santa Maria's success in providing quality instruction. Among others was students' level of motivation. Future students in the same rural areas may not exhibit the same high motivation because the most promising candidates will have passed through the system after a few years and those who remain will be less talented and less likely to take advantage of such learning opportunities. Also, the organizational efficiency of the project is due, at least in part, to the fact that Santa Maria is a small private group with a great deal more flexibility than the ordinary educational bureaucracy. Finally, the project recruits many of its local tutors from among groups with religious motivation. Transfer of this project to a national Ministry of Education would almost certainly change the motivational structure of the teachers (as well as the costs) and have different results. Still, similar projects such as the Mexican Telesecundaria have managed to show good results within the structure of a national Ministry of Education.

These examples do not fully define all the conditions that might contribute to the improved learning of students in media-based projects. They illustrate, however, the necessity to identify those conditions within each context that can contribute most to the improvement of learning and those that block or slow achievement.

Impact of Communication Media on Rural Areas

There is a long and multifaceted debate concerning the needs of rural people and how best to meet them. Recently, educational planners in many nations have had to expand the traditional scope of their interests in formal school systems to large-scale non-formal and adult education projects that aim at mass audiences. With an increased recognition of the need to improve agricultural productivity and to make more efficient the delivery of social services to rural populations, educational planners have found themselves becoming involved in agriculture, health, nutrition and family planning education, as well as in the more familiar concerns with literacy and numeracy.

Communication technology used for educational purposes in rural areas has a history that dates back more than thirty years in many countries. At the beginning, radio and printed materials were used in simple ways to reach rural populations. In recent years technology has been called upon to help meet diverse informational and instructional objectives. Some of the cases discussed in this chapter were wholly or partly rural in focus. Radio Mathematics was tested in rural as well as urban areas of Nicaragua; Radio Santa Maria specifically aimed at a rural audience; Tanzanian campaigns reached mostly rural audiences; India tested its satellite for delivery to many villages in the rural areas. There are a large number of other cases where the primary audience of educational media projects is rural: Mexico's Telesecundaria (Mayo, McAnaney and Klees, 1975); Radioprimeria (Spain, 1977); out-of-school television in the Ivory Coast (Langlet, 1979); Senegal's Radio Educative (Jamison and McAnaney, 1978); Honduras' Radio School (White, 1977); and in many other countries.

These broad experiences can be summarized in terms of four main goals for which communication media have been applied: mobilization; information; education; and co-ordination.

Mobilization. Reaching a large number of people to bring them together to achieve some collective purpose in action is one definition of mobilization. The mass media seem to be natural tools for this purpose and they have been called upon frequently for this task. However, one of the problems with the mobilization strategy for many low-income countries is that it has political consequences in sensitive rural areas where problems of inequality are most manifest and when people mobilized for one purpose begin to gather momentum for others. Brazil's radio schools called MEB (Basic Education Movement), begun in 1961, gained great momentum in the first three years of their existence, enrolling 100,000 campesinos (common people). This movement was cut short by the 1964 military coup because of its political undertones (De Kadt, 1973). Honduras used radio to incorporate some tenets of Paulo Freire's pedagogy but it failed to translate education into action at a crucial time (White, 1977). Senegal inaugurated broadcasts on radio for peasants and a feedback system for telling their problems to government decision-makers. Although some significant political impact occurred, the mobilization of rural peoples' interests was soon dissipated (Cruise-O'Brien, 1980). A private group in the Ivory Coast adopted a French approach called animation rurale to mobilize rural people to solve their own problems but was forced by government to disband the effort (Elliot, 1978). These examples underline the fact that mobilization implies not only learning but the active application of that learning in the social and political realm.

While communication media unquestionably have the ability to reach large audiences in rural areas, they also run the risk of creating an awareness

of problems without providing any mechanism for solving these problems. Since many of the problems stem from the inequitable distribution of wealth and power in society, those in power see education which makes people more aware of the problems as a threat and react swiftly against it. Two conditions for using the media for mobilizing rural people seem to emerge from the experiences of the cases cited. The first is a secure political power base for freedom of action in carrying out mobilization, as was the case in Tanzania, such a condition is fulfilled; but when the originator is a non-government group and the mobilization is likely to touch upon rural problems in any depth, then adversary conditions are almost inevitable and a power base is needed to survive. The second condition is that the media are only a part of any mobilization effort and that a critical condition for success is the organization of people. In other words the media alone are rarely, if ever, sufficient mobilizing agents.

Information. There is some debate over what is education and what is merely information. This is an important question in areas where communication and education overlap because mass media are often dismissed by traditional educators as mere transmitters of information. The question may justifiably be asked whether or not a farmer listening to a daily broadcast on how to improve his farming technique is actually engaged in an educational experience. Regardless of whether one sees this learning as different in degree or in kind from courses in agronomy in an agricultural school, educators are being called upon more and more to help rural people learn a number of important new contents and skills outside the familiar classroom situation.

A number of media-based rural programmes are providing people with information that they can apply immediately to their daily lives. The SITE

case, mentioned earlier, provided farmers with much needed information. Similarly, the Basic Village Education project in Guatemala (AED, 1978) provided carefully prepared agricultural information to farmers by radio. Other examples are found in the nutrition and health campaigns mounted in the Philippines and Nicaragua to teach mothers of very young children how to improve nutritional and health practices (Cooke, 1977). All these cases involved the delivery of simple information on a regular basis for application to daily practices through the medium of radio or television.

A useful distinction can perhaps be drawn here between information that is provided for immediate versus longer-term use. In agriculture, health, nutrition, family planning, and so on, the criterion for evaluating an information campaign is not that the audience listened and learned (though these are necessary conditions) but whether they were able to apply the knowledge to any significant degree. Educational planners who are accustomed to measure learning as the final outcome of most projects have to re-think some evaluation criteria from formal schools to see cognitive learning as but one step in the process.

If the media have not lived up to the planners' hopes for helping rural people to improve their lives, the former must be prepared to examine not only how the media were employed but also the obstacles that were present in the environment to prevent learners from applying the information. Information by itself is not enough to assure applications of new knowledge because such application frequently requires additional resources (tools, credit, even more time) that are not available to poor rural people. Another obstacle may be that the messages are irrelevant to the rural audience since they often convey the biases of urban educators

and media producers who do not understand the mentality and daily needs of rural people. Finally, even if messages are relevant and can be applied without further resources, they still may not reach the poorest rural people because for them even a radio may be too expensive to buy (McAnany and Mayo, 1981).

The role of information in rural development is undoubtedly important. It has, therefore, not been the purpose of the above discussion to cast doubt on this, but rather to indicate that the task of the media is formidable in overcoming the obstacles. When the conditions are favourable, the impact of the media will generally be due not to the media alone but rather to the human and material resources that surround their application.

Education. For more traditional educational tasks like literacy, numeracy and other specialized cognitive skills, communication media have been used for a number of years. Radio Santa Maria illustrates a successful use of radio to provide instruction to rural people where none existed before. Yet it also illustrates the contradictions that rural education contains. White's study (1977) showed that the distance learning classes provided an effective and relatively cheap instructional system for almost 20,000 primary students every year. What is also clear, however, is that many students, once they obtain their qualifications, plan to migrate to urban areas to look for employment. The net effect of good education is to draw off some of the best local human resources and leave rural areas worse off than before. A similar finding was reported in Mexico's Telesecundaria study, where communication (television) helped provide education to rural youth (Mayo, McAnany and Klees, 1975). What these experiences show is that education, whether employing communication media

or not, cannot of itself overcome many of the rural areas' most pressing problems.

For adults who are settled in rural areas and have less incentive to migrate, there is a need for education in cognitive subjects (literacy and numeracy) as well as in applied subjects (agriculture, health, nutrition, etc). The record for the use of technology in rural education is a long one and its use in non-formal adult education is looked more to now than ever before (McAnany, 1973; Spain, Jamison and McAnany, 1977; Jamison and McAnany, 1978).

Co-ordination. As social services are extended to more rural audiences, there is an increased need for co-ordinating and organising these activities. One of the arguments in favour of using communication media in rural education is that it can reach isolated groups more readily than other means. Santa Maria, Telesecundaria, and the rural television in the Ivory Coast were all meant to reach new audiences with useful education and information messages. However, as has been discussed, merely reaching them with messages will not provide the kind of experience that will lead to acquisition of cognitive skills or to behaviour change. To do this, as some cases have illustrated, a system of field agents, monitors or teachers as well as supervisors is needed.

As the number of these agents in the field expands with expanding rural services, the need for communication to co-ordinate activities is also greatly increased. Media in this case concern not only the hardware aspects of communication (one-way or two-way, telephone, etc) but an analysis of the human communication structure within the organization. The need for feedback or two-way communication is evident in educational organizations, yet the lack of practice to reinforce the belief indicates

that there are serious problems in its execution. The Radio Mathematics case in Nicaragua illustrates how carefully formative evaluation, in the form of frequent student-learning feedback, contributed to a final curriculum that gave such positive learning results. Radio Santa Maria created a highly effective weekly feedback system (both from field teacher to students and from teacher to headquarters). It developed not only an effective system for the delivery of worksheets to the teachers and then to students but also a method of collecting part of the student fees that provided the operating funds for the whole organization. The SITE system was much more and involved a great deal more personnel and equipment, but a feedback system for evaluating television programmes as well as management needs in the field (such as set maintenance) was established and managed to keep the widely scattered villages in touch with regional and central headquarters. In fact what SITE demonstrated, if anything, besides the technical aspects of satellite use for television, was a management and co-ordination system using communication. Again Tanzania demonstrated a co-ordination in planning in bringing together education, mass communication, and health agencies as well as the Tanganyika African National Union (TANU) political party in the health campaign of 1973.

Participation of People in Their Own Education

It is in the area of participation that general doubts about the role of communication media in education must be raised. Taken as a whole, the use of media in education generally tends towards centralization and therefore limitation of people's control over their own education. The mass media seem to reinforce a general trend in societies towards centralization, bureaucracy and bigness. As school systems grow, the

tendency is towards control and centralization and specialization; all of which makes it harder for people to control their own and their children's education.

The degree of participation that people can have in the process extends over the whole range from simply getting people involved in a learning activity through a medium like radio to a local group owning the means of message production for reaching their own local people. As technology becomes cheaper, a greater degree of control can be exercised by local groups that own and are able to use this technology. However, there is a problem to be considered here. New technologies are constantly replacing the older and cheaper technology becomes quite difficult to come by. For example, it is difficult to buy black-and-white television equipment in some developing countries, as it has become obsolete with the dominance of colour. Also, communication media generally reinforce the main trends in a society. If the trend is towards centralization and control, then communication media will be used in such a way as to reinforce this value, whether it be in education or mass entertainment. What the author has tried to indicate in this section is the potential for communication media in helping to serve the interests of local communities, but their widespread use in this way depends upon a great deal more than the hardware and its financing - it depends upon the educational philosophy and policies that dictate their use.

SUMMARY

This chapter has reviewed literature related to the study and formulation of the model plan of expanded educational broadcasting system for Zambian secondary schools. One prospect which emerged was the application of

educational media to educational problems. Evidence was provided of countries which have successfully applied educational media to their educational problems. The review also shows that educational broadcasting systems need result-oriented management that acts on evaluation and information from schools.

The review has the following implications for educational planners:

- (a) Careful economic analysis is needed for the useful application of instructional media to education in low-income countries. Questions not only of cost but also cost-effectiveness need to be raised before decisions are made to invest in such systems.
- (b) Since television seems, for most purposes, to work no better than radio and is much more expensive and complicated to implement, television should almost 'never' be used for instruction in low-income countries. Exceptions to this general conclusion might occur in relatively rare cases when the marginal cost of television is usually low or when visual methods are absolutely essential for instruction.

CHAPTER III

METHODOLOGY

This chapter on research methodology describes the procedures that were used in collecting data used in the formulation of the plan. The descriptive survey research was adopted as the procedure for data gathering because it was found to be a useful tool for fact-finding and an acknowledged means of obtaining information on social facts, beliefs, and attitudes (Kerlinger, 1964; Cannel and Kahn, 1953).

There are basically three main techniques of data collection. Data can be collected through (a) mail questionnaire, (b) telephone interviews and (c) personal interviews. Each of the above methods has its own advantages and disadvantages (Erdos, Mayer and Payne, 1973). The telephone interviewing technique was ruled out because (1) the use of this method would have been very costly; (2) some of the questions might have been too personal in nature to ask over the phone; (3) it requires more time to administer than the mail questionnaire and (4) not everyone has a phone. Kerlinger (1964) confirms that the telephone is not the most appropriate instrument for obtaining detailed responses. The personal interview approach was set aside due to time and monetary constraints. For example, all the respondents lived in Zambia and the mail questionnaire was less costly than travel to interview the subjects of study or to utilize the telephone survey. This process of elimination left only the mail questionnaire method which has several weaknesses associated with it.

Non-response bias is probably the major potential problem confronted in using mail questionnaires. In this instance, the severity of the

problem was mitigated through the use of a cover letter and a government stamped addressed envelope. The resulting response rate was 60 per cent which is, according to some authorities, acceptable (Miller, 1970: pp82-84).

Functional illiteracy can cause problems in mail questionnaire research. Such illiteracy can increase non-response bias; it can also cause the responses on the questionnaire returned to be invalid. This problem did not arise in this particular study because all the respondents were literate people - educational leaders and secondary school teachers. However, the same methodological statements that could be made about the mail questionnaire are also true of interview studies: the same care must be exercised in selecting respondents whether they are to be contacted by mail or in person (Helmsdatter, 1970: p70).

Approach

There were four approaches to the study:

- (1) Determination of problem areas of Zambia's education system and examination of alternative solutions by means of a review of literature;
- (2) Design of a plan for expanded educational broadcasting system based on data collected in and about Zambia by questionnaire given to secondary school teachers and administrators;
- (3) Feedback on the proposed plan using a questionnaire administered to a panel of educational leaders in Zambia, and
- (4) Modification of the plan as a result of the feedback received.

A discussion of the steps taken follows.

Sources

A search of the literature was initiated to collect data on the educational system and to identify critical problem areas which could be the focus of the plan for expanded educational broadcasting services.

In Zambia, primary sources included: Ministry of Education Annual Reports 1974, 1977, 1978, 1980, 1983; Educational Statistics 1974, 1977; Second National Development Plan 1972-76; Third National Development Plan 1979-83; Educational Reform Document 1977.

Some additional contributions came from reports of individual secondary school teachers.

Designing a Plan for Expanded Educational Broadcasting Services

There were four main problems which were identified from the literature review. These were: (1) Shortage of trained teachers, (2) Curriculum problems, (3) Inadequate supply of educational materials and equipment and (4) Lack of administrative and technical personnel.

The likely causes for each problem were analyzed and alternative solutions examined, bearing in mind the special claims of educational media to bring about benefits if planned comprehensively as part of a restructuring of educational system, e.g. curriculum reform, teacher training, physical facilities, and educational materials. This analysis formed part of the framework of a plan for the development of expanded educational broadcasting. The development of the plan was also influenced by the

results of related educational radio and television projects in developing countries and from some research work which were carried out in the country. For example, three unpublished dissertations concerning Zambia and one concerning Guyana were consulted: Mukoboto (1982) looked into the dimensions of secondary school curriculum design activities; Myirenda (1981) considered the contribution of distance learning to adult education; Chideya-Chibota (1972) studied the use of unified television service to promote education in Zambia. Gibbons (1976) considered the application of educational technology in Guyana schools.

In addition, a development model applicable to institutional settings was used in the design plan. There are two interrelated functions in such a model - operations and management functions. The six operational functions which have been defined in the plan are

- (a) Logistics
- (b) Production
- (c) Utilization
- (d) Design
- (e) Evaluation
- (f) Research and development

The management section includes functions which will monitor and control the above operations. They are:

1. Organization Management which involves planning, establishing and maintaining the organizational structures to operate and manage media service.
2. Personnel Management which includes a number of activities performed to provide qualified, adequately prepared staff to operate and manage media services.

Further considerations, including cost estimates and the relationship of recommendations to non-formal education, were considered, but were not specifically incorporated in the plan.

Data Collection

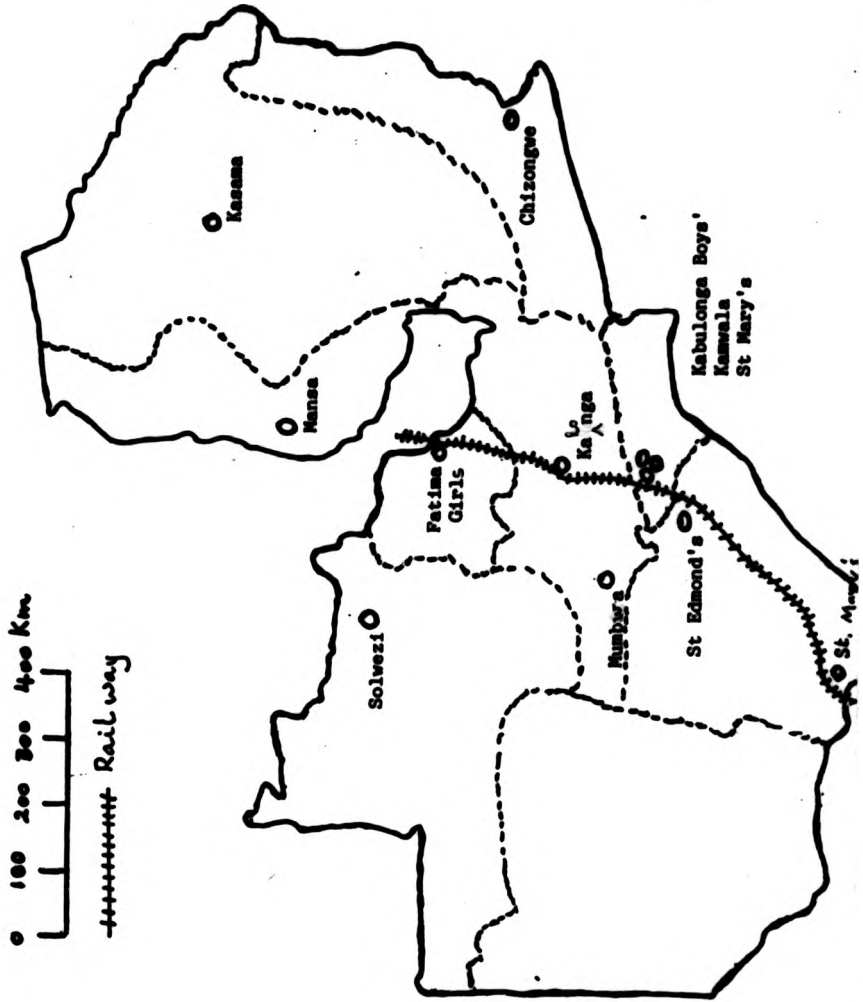
Collection of data relevant to the formulation of the plan was necessary. Part of this procedure was done through library resources and part through data collected by questionnaires administered in Zambia. As the main objective was to develop a workable plan that can be implemented in the education system, it was thought advisable to find out the orientation of educational leaders (experts) towards educational broadcasting. A further reason for doing so was that educational innovations are difficult to introduce and implement without the cooperation of educational leaders in a given system (Chilanga, 1986).

Accordingly, eight members of Zambia's educational leadership were selected from the members of the Ministry of Education departments and other related institutions. The choice was considered on the basis of (1) educational expertise, (2) knowledge of the workings of the Zambian educational and political systems, and (3) access to educational planning. The aim of the process was not only to gather data for the project, but also to secure the commitment of the respondents to it. Responses were received from six of the eight panel members reached.

The Schools in the Sample

The schools in the sample were all secondary schools with complete Grade 8 through Grade 12 classes. Seven of them were boarding schools. Among

FIGURE 3.1 : Schools in the Sample



the surveyed schools, five were boys', three were girls' and the remaining four schools were co-educational. Figure 5 shows ^{the} positions of the mentioned schools on the map of Zambia. Stratified sampling of secondary schools by school regions was done to ensure that at least a school from each of Zambia's nine regions was represented. These nine school regions coincided with the country's nine geographic and administrative provinces. However, one province ^{was} missed out - Western Province.

Questionnaire Design: Primary Data

The procedure used for data collection in the development of the plan involved the use of two different sets of questionnaires: One was for secondary school teachers and administrators, and the other for educational leaders. A five part questionnaire was constructed. It consisted of

- (1) Demographic characteristics of the respondents
- (2) Utilization of educational broadcasting
- (3) Attitudes of the respondents to educational broadcasting
- (4) Feasibility of the expansion of media, and chances of successful implementation.

Questions of the "Yes" and "No" type were used in the questionnaire because these questions force a choice and compel a respondent to indicate agreement/disagreement with recommendations contained in the proposed plan (Kerlinger, 1964). However, an opportunity was given for the panel to voice opinions and expand responses. A brief discussion of the major parts of the questionnaire follows.

Demographic Section. The purpose of this section was to obtain information about each respondent in terms of his or her position in the society, responsibility, qualifications and concerns regarding education in the country.

Utilization of Educational Broadcasting. The purpose of this section was to determine respondents' views on the use of educational broadcasting and to determine present utilization of educational broadcasting services.

Attitudes Toward Educational Broadcasting. The purpose was to discover the respondents' disposition to the field of educational broadcasting and its potential for solving educational problems in Zambia.

Feasibility of ~~the~~ Expansion. This section was constructed to find out the feasibility of each element of the expanded educational broadcasting services with regard to the educational problems of Zambia.

Chances of Successful Implementation. The purpose of this section was to examine the ways and means for facilitating implementation of a programme of expanded educational broadcasting services.

Questionnaire Design: Guidelines

The basic purpose of a questionnaire is to get information. In designing the questionnaire, two important guidelines were taken into account. (1) Data required for the modification of the plan presented in Chapter VI were translated into specific questions. This was done so that the questions measure the variables which were required by the research objectives. (2) Efforts were made to make the questionnaire as standard

as possible so that there was no variation in the interpretation of the questions by the respondents.

The following steps were taken in designing the questionnaire.

- (a) Specific questions were formed based on the type of information that was required. These questions were then field-tested.
- (b) Care was taken to ensure that the respondents were familiar with the questions that they were asked. Questions were asked such that the respondents could answer the questions based on their memory and they did not have to undertake any physical search process to get the information for the questions.
- (c) The sequence of questions in the questionnaire was such that it matched with the sequence of steps involved in the proposed plan.
- (d) The questionnaire length was fairly limited to encourage high responses.

Testing of the Questionnaire

The questionnaire was pre-tested through personal interviews with Zambian in-service teachers at Moray House College in Edinburgh. This was done to find out whether any changes were warranted in the questionnaire with regard to its wording or its length.

This pre-testing involved going over each question with these teachers in order to determine whether their interpretation of each question corresponded to the interpretation by the author. This resulted in changing the structure and wording of some of the questions.

The questionnaire was again pre-tested at Stirling University using five Kenyan teachers and a Zambian teacher who were all studying for a Bachelor of Education degree. This pre-test resulted in the deletion of certain redundant and somewhat irrelevant questions to reduce the length of the questionnaire. The final result of the pre-test indicated that the questions had face validity.

The importance of pre-testing is clearly emphasized by Oppenheim (1984) when he states that:

Pre-testing can be of the greatest help in devising the actual wording of questions, and it operates as a healthy check, since fatal ambiguities may lurk in the most unexpected quarters. (p26)

Teachers from Kenya and Zambia were used in the pre-testing because they were acquainted with the use of schools' broadcasts in these two sister African States.

Administration of the Questionnaires

After the questionnaire was developed it was mailed to the Acting Controller of EBS who, in turn, distributed it to the teachers and a select panel of educational leaders.

A cover letter and a government stamped addressed envelope were sent to all the respondents in secondary schools. The select panel of educational leaders received their cover letter also. The cover letters (shown in the Appendix) involved a number of different appeals to the reader to fill in the questionnaire. The letters promised respondents confidentiality. However, educational leaders and some respondents who were based in Lusaka, the capital city, did not receive stamped

addressed envelopes. The complete questionnaires were collected after a few days. A time limit was given to ensure that the questionnaires were not lost by the respondents. The administration of the instrument was conducted between 15 October 1986 and 3 February 1987.

Data from Secondary Sources

In addition to primary data, secondary data were collected from the Ministries of Education, Information and Broadcasting, and National Development for Economic Planning. Data collected from these sources included:

- (a) Reviews of economic reports and economic development plans
- (b) Reports of educational matters including curriculum development plans, teacher education and technical education and vocational training programmes
- (c) Reviews on the history of the growth of education in Zambia.

Plan for Analysing and Reporting the Data

After the questionnaires were received, the respondents were divided into two groups: teachers and administrators. For each group, the responses to the various questions were recorded using each of the categories, i.e. "Yes", "No", and "Not sure". Tables were prepared for each category responses. For each of the questions, the reasons given by various respondents were grouped. The frequency of responses were reported in percentages. From this effort the final draft of the proposed plan was developed.

Feedback on the Proposed Plan

The proposed plan was reviewed by a panel of six persons who were in a position to assess its appropriateness and feasibility as well as to influence its implementation and also contribute to its improvement. The panel was selected on the criterion of holding a senior position in either academic or professional areas of education. Names were obtained from lists of prominent educational personnel provided by the Ministry of Education. They were:

An Assistant Secretary, planning
A Senior University Lecturer
A Director of Technical Education
A Chief Inspector of Schools
A Director of Manpower and Training Services
An Acting Controller of Educational Broadcasting
A Provincial Education Officer
Head of Audio-visual Service

The questions posed to the members of the panel dealt with four sections of the plan: (1) organization, (2) personnel, (3) the programs, and (4) the recommendations. The expanded educational media programme consisted of six functions: logistics, production, utilization, design, evaluation, and research and development. Each function was defined and developed according to its likely place in an expanded educational broadcasting plan. For each function, a question was asked about its appropriateness, workability, implementation and efficiency. These terms were defined in the context of the meaning attached to them in the plan.

Appropriateness indicates whether a recommendation is suitable and relevant to the education system.

Implementation is concerned with the execution of innovative decisions.

Feasibility refers to what is practical within the context of the education system.

Efficiency examines whether the plan will do what it says it will do in a cost-effective manner.

To obtain the feedback necessary for the proposed plan, the researcher provided each of the eight with a copy of the plan. The copy was mailed together with a cover letter requesting each person to respond at his or her earliest convenience. Instructions were given to each member of the panel to read the plan section by section and record responses on the questionnaire provided. Free and frank opinions were solicited. Responses were received from six of the eight panel members.

Modification to Plan

The plan was modified on the basis of a simple numerical majority on each segment of the questionnaire. One alternative possibility was presented to the government of Zambia for "the risk incurred in deciding to use a particular medium without real analysis of the needs to be met is greatest when technology is exciting". (AED, 1972: p32). The alternative selected was, in the judgement of the researcher, that which would obtain the best results, keeping in mind such influential factors as human and financial resources, technical requirements and workability.

Outcomes of Study

What has emerged is a framework which may assist the Government of the Republic of Zambia in expanding the services of the present educational broadcasting system. The study has included:

- (a) A statement of recommendations to the Ministry of Education regarding the expansion of educational broadcasting for implementing national educational objectives at the formal secondary education level;
- (b) A review of the objectives of education in a national context and a determination of the extent to which these are consistent with the objectives defined in the study;
- (c) A review of similar experiences in developing countries in which educational broadcasting systems are introduced.

SUMMARY

The methodological approach to the study is made up of four parts:

1. Determination of problem areas of Zambia's education system and an examination of alternative solutions by means of a review of the literature;
2. Design of a plan for expanded educational broadcasting services based on data collected in and about Zambia;
3. Feedback from a panel of educational leaders in Zambia following a questionnaire; and
4. Modification to the plan as a result of the feedback received.

The next chapter discusses the Zambian education system.

CHAPTER IV

EDUCATION IN ZAMBIA: AN ANALYSIS

The purpose of this chapter is to consider the general trends of education in Zambia against the background of national political independence and to study the relationship between government policy and social and economic development.

In a developing country in particular, education and economics influence and promote national development (Majumdar, 1985). But education and economics do not alone influence or promote national development, socio-cultural factors also contribute to that process (UNESCO, 1980). Education must be seen as an integral part of the many components which affect the development process (UNESCO, 1980). In order to understand the thrust of present day education in Zambia, it is necessary to look back at the education system in operation before the attainment of independence.

Education in Colonial Times

British South Africa

Company Period

Between 1882 and 1905 there was intensive missionary activity which led to the establishment of several mission stations throughout Zambia. The education which went on in these stations emphasized reading (particularly the scriptures), writing and counting and included some instruction in simple trade skills or hygiene. It was never intended that this education should create an educated class of Africans. By 1924 about 50,000 African children were in school, of which only 600 were in non-mission schools (Mwanakatwe, 1968). According to Mwanakatwe (1968), a few of these

mission institutions provided a good education, especially those at Sefula, Kafue, Mbereshi and Chipembi but in others the standard of teaching was poor. The missions received very little financial support from the British South Africa Company (BSAC) which only controlled one institution for Africans, the Barotse national school. On the other hand, the BSAC made financial provision for European education which included bursaries for children to pursue their education in Southern Rhodesia (now Zimbabwe), South Africa or Britain.

Colonial Office Period

Two important developments in African education began under Colonial Office rule. First, the Phelps-Stokes Report in 1924 recommended that the Northern Rhodesia (Zambia) government spend money on African education in the form of grants-in-aid to missions. Secondly, in 1925, a Director of Native Education was appointed and subsequently a Department of Native Education was set up, which, by 1938 had established a superintendent in every major region responsible for co-ordinating mission activities, distributing funds, supervising schools, and so on. Both the Phelps-Stokes Report and the Director recommended a massive effort to extend primary education but were initially hampered by lack of staff. During this period the Northern Rhodesia government spent very little on African education. Expansion did, however, take place from the 1930s, largely spearheaded by the missions, but with financial grants from government and assistance from the Department of Native Education. By 1960 six years of primary education were available and compulsory in a number of designated urban areas. About 50% of the enrolment proceeded to the two-year upper primary school (Dresang, 1975).

Teacher training was not developing. In 1926 there were only two teacher training institutions, but by 1939 there were thirteen set up by missionary schools. The government itself began a teacher training programme at the Jeanes School at Mazabuka in 1930. There were no officially recognized junior secondary schools in Northern Rhodesia until 1939 when the government opened a secondary school at Munalu. Nwanakatwe (1968) states that by 1946 secondary school enrolment was 143 and reached 7,050 in 1963. The majority of primary schools and a large number of secondary schools were still under mission control.

The missionaries were also pioneers in the provision of vocational training in Northern Rhodesia. Before 1930 mission institutions were providing training in carpentry, building, agriculture and other manual work as well as the three Rs. The government began providing vocational and agricultural training for Africans in 1929 at the Jeanes School and the Agricultural School at Mazabuka and in 1934 established the Central Trade School (later Hodgson Technical College). By 1963 there were five junior secondary trade schools run by the missions and others maintained on behalf of the government by local education authorities offering three-year post-primary courses mainly in brickwork and carpentry. By 1958 404 students were enrolled for various trades but in 1962 and thereafter most trade schools were closed. The scope and extent of these trade courses was insufficient to support a newly independent country.

Education under the Colonial power occupied a vastly different set of priorities from those set by post-independence national government. Dumont (1969) writes that Colonial education was essentially an academic exercise which culminated in lucrative jobs and enhanced social prestige, having little to do with development; if development took place it was purely

incidental. Mwanakatwe (1968) agrees that this form of education served but to perpetuate and fasten links between colony (as Zambia was then) and the Colonial power, Britain, but did little by way of encouraging local development. According to Mwanakatwe, this was seen in their exclusion of an entire range of possibilities from educational curricula. Education facilities were so meagre that Zambia became independent with a paucity of indigenous manpower with a high level of skills and training (Dresang, 1975).

Dresang (1975) identifies two main features in Colonial education. First, the content of educational curricula in primary, secondary and higher education did not concern itself with local realities. Educational content did not expose Zambians to their own environment, but standards were based solely on that of the Colonial power and knowledge of the education system and social and cultural experiences of what obtained in Great Britain. Generations of Zambians were prevented from discovering and becoming aware of their cultural heritage, the transmission of which was and is an integral part of the education process. Second, the methods of teaching in schools were designed to produce a product to function in a manner designed to perpetuate the education system; furthermore, teaching methods were above all concerned with achieving results, the end products of which were functional positions in a bureaucratic hierarchy.

The Problem

At independence, in the context of the people's demand for increased and better educational facilities in Zambia, the new government's performance was expected to surpass the efforts of previous Colonial

governments. The government, therefore, decided to establish a national system of education which could be supported by its economic and human resources, and which was consistent with its social and economic objectives.

Educational policy was formulated in three main areas:

- (a) Reorganisation and expansion at the primary and secondary levels.
- (b) School curriculum revision, and
- (c) The establishment of a coherent tertiary level of education.

Education policy, however ambitious and far-reaching, needs administrative and technical expertise to carry it out, and much more consideration had to be paid to these two areas, especially in the domain of economics and education.

Factors Affecting the Problem

Educational change does not take place in isolation. Social, economic and demographic factors impinge on it (Cameron, 1983). Some of these factors are next discussed.

Social Factors

Social patterns and groups in Zambia have been affected by colonization and the development of a high wage, capital intensive, modern sector located on the line-of-rail alongside a traditional subsistence sector. Historically, development was concentrated in these line-of-rail regions during the Colonial times while the rest of the country remained comparatively underdeveloped and thinly populated. Because they started from

a relatively good development base the regions along the railway-line from Chilabombwe to Livingstone are still highly developed. An urban-rural imbalance which covers both economic advantage and opportunities for education, health, and so on, has thus been created which the government has recently been trying to redress with little or no success. The rural subsistence farmer, therefore, remains at the bottom of the Zambian social structure even when compared with the unskilled Zambian who migrates to an urban area. Because of deteriorating rural-urban terms of trade and the devastating effects of successive bad harvests occasioned by unsatisfactory rainfall, rural households are probably worse off now.

Urbanization

Urbanization, resulting largely from poor living conditions in rural areas and the demand for employment opportunities, continues to be a central feature of Zambian society and a problem to government (Kelly, 1986).

Zambia is the most urbanized country, after South Africa, in sub-Saharan Africa. In 1980, 40 per cent of the total population lived in urban areas (CSO, 1984). The dispersal of industrial development to small towns was accompanied by increased growth rates in these towns as they experienced a large inflow of rural migrants. But the opportunities for paid employment in the formal sector outstripped demand. In these circumstances some took employment as domestic servants, but often at low wages. Others found employment in the informal sector (carpentry, tinsmithing, petty trading, ~~Cyrt~~ mending and so on) or as casual labourers but again at very low incomes. The absence of an assured regular income

to meet basic needs has resulted in there being a large number of poor and very poor households in the urban areas. The adverse circumstances of these households have been aggravated by the declining purchasing power of money and the increase in inflation. Shortage of commodities, or their availability only through certain retail outlets at greatly elevated prices, has also adversely affected the quality of life in the urban areas.

The rapid urbanization has meant excessive demands on the public services. This is notably so in the area of housing and has led to the development of squatter settlements where large numbers reside in overcrowded and unhygienic conditions, in makeshift houses, with insufficient supplies of clean water and inadequate sewage facilities. In these settlements the incidence of sickness and disease is high, but the health services are unable to respond to all the needs because of the shortage of personnel, the insufficiency of clinics and the frequent non-availability of drugs. Neither has educational provision kept pace with the growth of the urban population. There are altogether too few schools and classes, especially in the large urban areas, and the indications are that children from the low-income families predominate among those not attending school.

Health services in Zambia are free and are being extended to a progressively large proportion of the population. However, in recent years the health services have deteriorated. The rapid expansion of the population has meant that the already limited health services have had to try to reach out to an ever-growing number of people. The deterioration has affected the rural population more adversely than the urban.

Emphasis on medical provision has been changed from curative to preventative services with the commencement of a primary health care programme in 1981. Significant progress has been made in the implementation of this programme with the training of community health workers. The main health problems in Zambia are diarrhoeal diseases (especially in children), malaria, malnutrition, measles and pneumonia. There has been a widespread deterioration in the nutrition situation in recent years, due to a combination of many factors including drought, rapid inflation, worsening rural-urban terms of trade, population growth and urbanization. The wide-spread prevalence of malnutrition and its role in other health problems are of particular concern in the educational sphere because of its possible effect on classroom achievement.

Economic Factors

From 1964-1969 Zambia's Gross Domestic Product (GDP) expanded rapidly in real terms as a result of higher Copper output and the rise in world prices of Copper. Since 1970, however, there have been fluctuations in the GDP as a result of fluctuating Copper prices, a decline in demand for most primary commodities following the rise in the price of oil, and a decline in Copper production encompassing the Mafulira Mine Disaster of 1970, labour supply problems, and the disruption of supply lines and re-routing problems as a result of border closure by the then Prime Minister of Rhodesia (now Zimbabwe) Ian Smith. Zambia's economic situation has been further exacerbated by a succession of poor harvests due, mainly, to inadequate or unsuitably distributed rainfall. This has resulted in the import of foodstuffs and their distribution to the rural population who under more favourable climatic conditions would have produced surplus to their requirements. However, Zambia faces major problems

(apart from unfavourable weather conditions) in its agricultural policy. Cameron et al. (1985) list the following:

- (a) problems over import of fertiliser and stock-feed,
- (b) low producer prices (the result of pressure from urban consumers to keep prices low) which do not encourage the farmer to increase production,
- (c) absence of an efficient organizational frame-work,
- (d) inadequate markets and transport facilities,
- (e) lack of skilled manpower, and
- (f) the migration of the able-bodied and educated young men and women to the towns.

(p476)

A combination of these external and internal factors has led Zambia from its comparatively comfortable status in the 1960s to its impoverished condition today. To alleviate some of these difficulties it was necessary to raise funds abroad, mostly by way of loans, but the burden of foreign debts to which this gave rise has led to an even worse condition with much of the income realised by exports being absorbed in serving the debts. In 1984, the public foreign debt stood at ZK4,900 million (US\$2,740 million). By standards in developed countries this may not be excessively large, but by Zambian standards it is, being the equivalent of more than 100% of the GDP for 1984. Chiposa (1987) states

The external debt service payments which amounted to ZK2.74bn in 1986, were the major factors contributing to the government's budget deficit (of ZK2.99bn 1986) as a result of the massive depreciation of the kwacha. Zambia's external debt increased from US\$750 million at the end of 1976 to over US\$5.1bn at the end of 1986. About half is owed to the international agencies, another US\$2bn to the Paris Club and about US\$1bn to Commercial banks. Of the US\$1bn, all but US\$400m is for trade credits.

(p37)

As the real value of exports declined, and as debt service payments increased, so the amount of foreign exchange available to finance imports

became less and less. The rising price of oil imports served to make matters worse. Imports had to be reduced. The government tackled this by rationing access to foreign exchange. As a result, imports fell over the period 1974-1986 to less than one-third of their former value. Extreme shortages of essential commodities developed, leading to high levels of inflation, and a black market in foreign exchange became rampant. The response by government was to increase the regulation of consumer prices and to extend subsidies to basic commodities. The impact of price control, together with inefficiencies in foreign exchange rationing and the associated non-availability of raw materials and of spare parts, reduced the profitability of domestic industry, and further depressed both investment and maintenance expenditures.

These events necessitated urgent action. Following a meeting with the International Monetary Fund (IMF) and the World Bank, the government decided to introduce a far-reaching set of economic reforms aimed at achieving structural change and diversification in the economy and a reduction in its dependence on foreign exchange. These reforms were discussed at the World Bank-sponsored Consultative Group meetings in 1984, where they received the support of the donor community, and pledges of additional financial assistance. The main elements of these reforms were:

- exchange rate devaluation of 60 per cent (which resulted over the two years ending in July 1985 in a 40 per cent real depreciation of the Kwacha);
- reduction in government spending-expenditure on consumer subsidies and capital items were cut;
- a freeze on recruitment to the administrative posts of the Civil Service;

- an increase of taxation on mineral exports;
- introduction, in October 1985, of foreign exchange auctioning.

These measures, which were meant to achieve financial stabilization, were strengthened by nearly US\$400m of debt re-scheduling on the part of the government's creditors. In addition, a range of policy reforms was announced in each of the mining, agricultural and industrial sectors, aimed at improving their efficiency and output.

On 1st May 1987 Zambia broke links with the IMF and an auction system for foreign exchange was stopped. Despite the fact that Zambia had adhered to the conditions of economic recovery suggested by the IMF, the conditions were, however, destined to fail because of structural weaknesses in the Zambian economy: over-reliance on Copper exports for hard currency, over-reliance on imports for capital and raw materials for industry, and non-diversification of the economy.

The effects on Zambia of the IMF stabilization programme have been painful. The four years of experimental programmes with the Fund have brought no improvement in the standard of living of the people. Instead, per-capita income has dropped from US\$630 in 1981 to less than US\$200 in 1987. Galloping inflation has set in, while escalating unemployment has become a permanent feature. The mortality rate has risen sharply; especially among children, because hospitals cannot afford to import necessary drugs (Mallet, 1988).

Chiposa (1987) states that the disagreements between the IMF and Zambia came at the April 1987 talks in Washington, when the IMF insisted on these further measures:

- that no administrative mechanism be used to control the exchange rate;
- that the price of fuel be increased by at least 75% from 1st May 1987 and thereafter be adjusted on a monthly basis;
- that the price of fertiliser be doubled; and
- that a positive interest rate policy be introduced, which would have meant that interest rates would match the inflation rate - presently running at 63%.

(p18)

Accepting such conditions would have exacerbated an already tense political situation. High fuel prices would have had a ripple effect; fertiliser would have become out of reach of peasant farmers, who produce 60 per cent of the staple food, maize; and high interest rates would have increased costs of production.

The Interim National
Development Plan

Following the abandoning of the IMF programme, the government established a new economic recovery programme on 14th August 1987. The principal objective of the programme - the Interim National Development Plan (INDP) - is to stabilize the economy by controlling inflation. On the whole, the plan's objectives are not very different from those pursued under the IMF package. The principal objectives of the plan, whose theme is "Growth from own resources", are as follows:

- (a) To release resources for development by compressing non-essential and luxury imports and limiting debt service payments. Except for new loans which will be paid in accordance with their terms, debt service is limited to 10% of net export earnings.

- (b) To reactivate the economy by increasing capacity utilization in enterprises producing essential or basic goods for export.
- (c) To stabilise the economy by controlling inflation. This strategy is to be implemented by stabilizing the exchange rate (now fixed at ZK\$ = US\$1), interest rates (now fixed at 15-16%) and other production costs as well as by regulating final prices. The Prices and Incomes Commission, working with importers and manufacturers, will settle maximum prices for all items.
- (d) To promote a self-sustaining economy through increased profitability and reinvestment of profits in enterprises using local raw materials.
- (e) To diversify exports by promoting non-traditional exports and the export of manufactured goods. To reduce over-dependence on Copper, the plan emphasizes diversification of the export base by promoting non-traditional exports such as gemstones, manufactured goods and agricultural commodities in order to maximise foreign exchange earnings.
- (f) To increase employment opportunities through the establishment of village and small-scale industries based on local raw materials. Capital-intensive and import-oriented industries are to be discouraged in favour of labour-intensive methods of production and technologies using local raw materials.

(Budget Address, Times of Zambia, 30 January, 1988: p7)

Zambian industry is capital-intensive and highly dependent upon imported inputs. The objective of the plan in this regard is to attain a restructured industrial sector which will be based upon the use of national resources.

However, it is difficult to see how the government's new recovery programme can work in the absence of externally (i.e. IMF) imposed discipline. After all, it was partly lack of discipline which led to the current economic crisis, as Zambia has remained dependent on imports for the country's way of life at a time of a continuing fall in earnings from Copper (Mallet, 1987).

The net cumulative effects of the economic problems and constraints facing the country have manifested themselves in reduced capital investment programmes and lowered investment in social services. The low level of spending has had an impact on the quality of services in the spheres of health and education. In many instances public funds appear to stretch no further than the payment of salaries. Only a negligible amount is set aside for materials - and because of foreign exchange and distribution difficulties these are not always available. An increasing proportion of the costs of social services is being borne by the public, either officially or unofficially. At the same time prices are rising, unemployment is increasing and the prospects of speedy economic recovery are very dim.

Demographic Factors

Compared with other African countries Zambia's population is very small. In the last census in 1980 the population was 5.68 million, of whom 65,000 were non-Zambians. The rate of growth is increasing. Between 1963 and 1969 the average annual growth rate was 2.5 per cent; between 1969 and 1980 it was 3.1 per cent; today it is 3.4 per cent. Ohadike (1981) points out that this is high enough to ensure a rapid replacement of the population over a short period of time: the population has been estimated to double by the year 1990 (CSO, 1984).

This high and increasing rate of growth is due to a constant high fertility rate (i.e. the average number of live births to a woman during her reproductive years) and to a declining death rate. There is no evidence to suggest that the fertility rate, which stands at 7.0, is likely to decrease in the near future. The crude birth rate, which was 47.7

live births per 1,000 of the population in 1969, rose to 49.2 in 1980. At the same time the mortality rate fell. In 1969 the death rate was 19.7 deaths per 1,000 of the population but by 1980 it had fallen to 16.7. This was largely due to improved and more widely available medical services; as these extend further it can be expected that the death rate will fall further (it is still quite high in comparison with other African countries), so that with no decrease in fertility the rate of population growth will increase even more. Associated with the decline in the mortality rate was an increase in life expectancy from 45.0 years for females in 1969 to 52.5 in 1980 and from 41.5 to 50.4 years for males.

From the 1980 census figures there were 2.7 million males to 2.8 million females. Due to the rural-urban migration there has tended to be a disproportionately high number of females in the ^{rural} areas as the young males usually leave their wives in search of jobs in the urban areas:

Female headed households in the rural areas are quite prevalent, and the work load of rural women without husbands or relatives has increased dramatically while their ability to feed their families adequately has been affected by the shortage of male labour. (CSO, 1984)

In 1980 the total population of children under the age of 15 years was nearly 49 per cent and more than half of it - 51.5 per cent - was aged 15 or less (see Table 4.1). The primary school age-groups of 7-13 year olds constituted more than 21 per cent of the total population, while the age-group that would be catered for by universal basic education, the 7-15 year olds, accounted for more than a quarter of the entire population. There were fewer boys than girls in the 7-10, 11-13, and 14-15 age groups, but the difference is not very pronounced (Table 4.1).

Because the overall rate of increase of the population is 3.4 per cent,

TABLE 4.1

School Aged Population Distribution by Age and Sex 1980

Age	Male	Female	Total	As % of Total Population	Cumulative percentage
0-6	718,844	721,983	1,440,827	25.45	25.45
7	95,336	95,836	191,172	3.38	28.83
8	101,326	102,774	204,100	3.60	32.43
9	83,670	84,551	168,221	2.97	35.40
10	95,256	94,324	189,580	3.35	38.75
11	67,950	72,035	139,985	2.47	41.22
12	88,445	85,536	173,981	3.07	44.29
13	63,219	63,625	126,844	2.24	46.53
14	69,149	68,861	138,010	2.44	48.97
15	60,675	61,759	122,434	2.16	51.13
15+	1,326,147	1,440,545	2,766,692	48.87	100.00
Total	2,770,017	2,891,833	5,661,850		

School-Aged Groups

7-10	375,588	377,845	753,073	13.30
11-13	219,614	221,196	440,810	7.79
14-15	129,824	130,620	260,444	4.60
7-13	595,202	598,681	1,193,883	21.09
7-14	664,351	667,542	1,331,893	23.52
7-15	725,026	729,301	1,454,327	25.69

Source: 1980 Census, Table C-9

TABLE 4.2
Actual and Projected School-Aged Population
1980-2000

Age	Actual		Projected Populations		
	1980	1985	1990	1995	2000
7	191,172	230,633	277,526	333,236	408,718
8	204,100	245,022	293,445	353,847	420,086
9	168,221	202,133	242,301	292,458	354,145
10	189,580	227,493	272,830	328,360	397,142
11	139,986	168,576	202,570	245,083	297,495
11	173,981	207,573	248,221	298,862	360,994
12	126,844	152,610	183,225	221,482	268,744
13	138,010	164,591	196,954	239,178	288,949
14	122,434	147,351	176,878	213,751	259,146
15	1,193,883	1,431,097	1,718,707	2,078,147	2,517,537
7-13	260,444	313,200	375,903	453,534	549,416
14-15	1,454,327	1,744,297	2,094,610	2,531,681	3,066,953
16-18	373,885	449,692	651,196	651,196	788,584
All Ages	5,661,850	6,725,300	9,758,300	9,758,300	11,834,099

Source: Census Table C-9 and Special CSO Projections, 1980

the child population is growing at a faster rate which is as high as 3.8 per cent for the 7-13 year old age group. Projections for this group show that it will increase from its 1980 level of 1.194 million to 2.518 million in the year 2000, that is, it will be more than double (Table 4.2). The projections give some idea of the magnitude of the task that must be undertaken in order to achieve not only universal primary education but also to give good education to the pupils in secondary school.

Increase in population, therefore, places a strain on the education system as well as the employment situation.

The Education System

Academic Year

The academic year for schools lasts from January to December and consists of three terms: January to April, May to August, and September to December. The teacher training colleges run a three-term year from May to the following April: May to August, September to December and January to April. Institutions belonging to the Department of Technical Education and Vocational Training have a four-term year running from January to December: January to mid-March, April to early June, July to mid-September and October to early December. The University has a year which runs from October to July: October to mid-December, January to mid-March and late March to early July.

Structure

The current formal school system has an interim structure comprising a 7-2-3 pattern, being seven years of primary schooling followed by

two years of junior secondary and three years of senior secondary. Progression from one stage to the next is based on performance in selection examinations. This structure is designated as interim because eventually the primary and junior secondary sectors will merge into a nine-year basic education course for all children, followed by a highly selective second stage that will consist of a number of programmes, among them the three-year senior secondary course. Immediately preceding the primary grades some pre-school facilities exist.

There is limited provision for special education at both primary and secondary levels, staff being trained at an in-service training college for teachers of the handicapped. Additional formal education is offered to adults in night schools, special study groups with access to distance learning materials, and by correspondence.

At an informal level continuing education opportunities have been created for youths and adults who either have not completed their formal education or never had access to it. These facilities include literacy classes, correspondence studies and in-service courses. At another level, there are extension services which enable personnel to upgrade their knowledge and skills in such fields as agriculture, fisheries, public health and community development.

Schools

There are four kinds of schools that provide education in Zambia: (1) Government schools, (2) Grant-aided schools, (3) Private schools, and (4) Mine Trust schools. The majority of primary schools are day schools but some pupils receive weekly board and a few full board. About

60 per cent of government secondary schools are boarding. The grant-aided schools are mainly mission schools to which the government contributes 75 per cent of the cost of their capital works programme in the form of a grant and to which a grant on recurrent expenditure is also made. There are very few private schools in Zambia. Private schools must be registered with the government so that fees and educational provision can be monitored, though those which provide education for expatriate children are not bound to follow the Zambian curriculum.

The Copperbelt Trust operates seven primary schools and one secondary school on behalf of the mines in the Copperbelt. Only children of mine and mine-affiliated companies are allowed to attend. The syllabus, based on that of the Zambian primary and secondary schools, is taught by expatriates. Fees are very low. Mpemba Secondary School, in Kitwe, prepares students for British "A" Level examinations - with emphasis being placed on the sciences.

Educational Reforms

Following the United National Independence Party (UNIP) document of 1973, the Ministry of Education began an educational reform exercise and in 1976 published "Education for Development: Draft Statement on Educational Reform". This document was subject to a six-month national debate after which the Ministry of Education reflected further and in 1978 the present proposals were published as Educational Reform Proposals and Recommendations. These proposals, quite different from those of 1976, are not an agenda for action in education but rather a statement of Zambia's aspirations and objectives. The reform proposals are intended to be translated into plans and programmes in separate exercises over an

unspecified period of time. However, recognizing the need to be guided by a comprehensive and detailed plan for the implementation of the Reforms, the Ministry of General Education and Culture (MGECC), in 1984, requested the University of Zambia (UNZA) to undertake a study on the implementation of the reform proposals and recommendations. This exercise culminated in the publication of a document: 'The Educational Reform Implementation Report, 1986 - 2000'.

The Reforms concern themselves basically with two issues, (a) the quantitative development of the formal school system, and (b) its qualitative integrity. Cameron (1983) points out that the main recommendations for the development of Zambian education contained in the education reform document are as follows:

- (a) to provide nine years' universal education from Grade 1 to Grade 9. Eventually a 6-3-3 pattern of education will be established although in the interim it is thought a 7-2-3 system will apply. The first step will be the expansion of primary school education until it provides places for all up to Grade 7, which means that over the next few years there will be only a little expansion at junior secondary level (to eventually ease the progression rate from Grade 7 to Grade 8) and virtually no expansion at senior secondary level. By providing universal education from Grade 1 to 7, regional differences in educational provision should be overcome;
- (b) to expand primary teacher training. More in-service courses are expected to be provided for untrained teachers. Conditions of service of Zambian teachers are to be reviewed and improved wherever possible;
- (c) to establish resource/teachers' centres at the Curriculum Development Centre and some of the primary teacher training colleges;

- (d) to revise the curriculum for primary, secondary and teacher training courses, especially in the fields of primary English, Zambian languages and practical skills, and secondary mathematics, science and technology;
- (e) production units to be more educationally orientated;
- (f) to place more emphasis on the development and production of low cost teaching equipment and local production of educational materials and textbooks;
- (g) localization of the Cambridge School Certificate examination;
- (h) to continue to emphasize self-help schemes in local communities to provide and maintain educational facilities;
- (i) to expand technical education and vocational training particularly by better utilization of present college facilities;
- (j) to improve and expand special education and in particular to ensure that all handicapped children receive basic and further education.

(p510)

Some of the recommendations requiring little or no finance have already been carried out, for example, Subject Committees met during 1980 to work out curriculum changes recommended in the educational reform document. The localization of the Cambridge School Certificate has also been completed.

Educational Organization

The formal education system is the responsibility of three main authorities: the Ministry of General Education and Culture (MGE/C), the Ministry of Higher Education (MHE), and the provincial administrations. The two

Education ministries were created in 1982 as a result of partitioning the responsibilities of the then Ministry of Education and Culture. Each Ministry has its own function although there is inevitably some overlap between them. MGEK is responsible for the pre-schools, primary schools, secondary schools, continuing education, special education and educational broadcasting. The Ministry of Higher Education has professional oversight of all Teachers' Colleges and technical education and vocational training, and is the ministry through which the University is responsible to government. The Examinations Council of Zambia, the Curriculum Development Centre and other related educational services, as well as the Kenneth Kaunda Foundation with its educational publishing and distributing division also fall under responsibility of this Ministry.

Responsibility for the funding and administration of primary schools has been devolved to the provincial administration within the office of the Member of the Central Committee for a province or region. Provincial Permanent Secretaries are Civil Service heads who manage the funds voted to primary education by Parliament.

Professional oversight for primary schools is maintained by the Ministry of General Education and Culture through its regional and district officers. Thus the regional Chief Education Officer is responsible to the Provincial Permanent Secretary for financial and administrative purposes, and to the Permanent Secretary, M GEC, for professional purposes. This Ministry monitors the qualitative performance of the school system through the School Inspectorate at national headquarters and in each region and district. The Inspectorate is further aided by a recently developed cadre of resource teachers, four in each district, whose brief is to assist in familiarising colleagues with aspects of curriculum change.

Primary School Education

Plans. Objectives of primary education set up to 1965 as stated in the Transitional Development Plan (TDP) included

- (a) moving towards universal primary school education;
- (b) providing facilities for 75 per cent of the students completing the lower primary course to complete upper primary course, and
- (c) all children to be able to enter school in 1970 when three out of every four children would complete the full primary course.

The TDP was followed by the First National Development Plan (FNDP) covering the period 1 July 1966 to 30 June 1970. FNDP reiterated the goal to move towards universal primary education. Specifically, the educational objectives of the FNDP included

- (a) expanding primary education so that all the seven year old children could enter Grade I in 1970 or as soon thereafter as possible;
- (b) providing facilities in urban areas so that all children who were in school at that time and entering school in 1966 and subsequent years could complete a full primary course of seven years;
- (c) providing primary education facilities in the rural areas so that about 75 per cent of the fourth grade children could proceed to Grade V, and
- (d) providing facilities so that about one-third of all primary leavers could enter Grade VIII. (Form I).

The Second National Development Plan (SNDP) concerning the period January 1972 to December 1976 aimed at providing "for continuing quantitative growth at all levels and in all sectors" (p227). However, the SNDP

realized that the goal of universal primary education was much more difficult to achieve than was expected. Accordingly the major objectives for the expansion of primary education were stated as follows:

- (i) to provide sufficient new lower primary streams to keep pace with the growth of population
- (ii) to provide sufficient new upper primary streams to achieve a national progression rate of 80 per cent from Grade IV to Grade V by 1976.

The Third National Development Plan (TNDP) covering the period between 1979-1983 provided the basics for Zambia to implement the educational reforms.

Enrolment

Zambia has had an impressive achievement in its efforts to provide facilities for universal primary education, especially during the years of severe economic difficulties. Primary enrolments continue to increase faster than population growth. However, although tremendous improvement on primary school enrolments has been recorded, it has not been possible to enrol every seven year old child into Grade I. Johnston et al. (1987) state that in 1986 there were 1.4 million pupils enrolled in primary schools compared to 729,801 in 1971. In all, it is estimated that in 1986 there were 3,054 registered primary schools, with a total of 29,599 classes.

In analyzing the performance of primary education for the purpose of this study, it will suffice to highlight only a few major indicators in order to provide a framework for understanding the education situation of children in Zambia in recent years. Much of the statistical informa-

tion on both primary and secondary education is drawn from various sources such as Central Statistical Office (CSO), Ministry of General Education and Culture (MOEC) and the Educational Reforms Implementation Project (ERIP). The latter submitted a comprehensive report in 1986 to the World Bank through the MOEC about educational provision in Zambia on the basis of the reform goals and objectives.

A close examination of the overall enrolment figures for the period 1980 to 1984 (Table 4.3) will reveal that for any given year, the enrolment of boys is greater than that of girls. A second observation to make from the Table is that by looking at enrolment figures for any given years, it is possible to infer the number of drop-outs, for a given grade. As an example, if one follows the Grade I cohort of 1980 it will be found that altogether there were 169,038 pupils. However, in 1984, when the same group of pupils progress into Grade 5, only 161,318 were in school, giving a difference of 7,720 (4.6 per cent), representing the total number of drop-outs.

Also, it can be seen that of the 83,378 girls in Grade I in 1980, only 75,869 were in Grade 5 in 1984, giving a difference of 7,509 (9 per cent) who were unable to proceed to Grade 5 in the entire country for a variety of reasons. The corresponding drop-out figure for boys is negligible as only 111 of those who were initially enrolled in that category dropped out (as compared to 7,509 girls who fell out). As can be seen in Table 4.4, fewer girls than boys enroll in all the provinces and more of them drop out of school as has been indicated already.

The overall enrolments for the entire country as provided do not give an accurate view of disparities in the provision of education for the

TABLE 4.3
Primary School Enrollment 1980-84

Year	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Total
1980								
Boys	85,660	84,429	83,470	83,097	70,447	70,440	76,903	554,435
Girls	83,378	78,915	78,915	74,599	60,259	56,460	52,457	487,435
Total	169,038	165,744	162,385	151,696	130,706	126,900	129,360	1,041,938
1981								
Boys	89,041	87,567	85,736	84,628	72,442	71,713	76,844	568,039
Girls	86,608	80,355	80,355	77,044	63,319	58,760	54,460	505,295
Total	175,649	172,288	166,091	161,632	135,761	130,478	131,304	1,073,314
1982								
Boys	92,740	92,311	89,049	87,841	75,782	75,222	80,629	593,674
Girls	89,852	88,081	83,915	79,531	67,255	61,961	57,455	528,095
Total	182,592	180,392	172,964	167,372	143,037	137,183	138,084	1,121,769
1983								
Boys	98,037	98,070	94,677	92,393	81,204	80,155	87,353	631,973
Girls	95,343	92,946	88,946	84,636	70,877	66,872	62,414	562,097
Total	193,380	191,016	183,573	177,029	152,076	147,101	149,767	1,194,070
1984								
Boys	104,116	102,108	99,394	96,348	85,449	84,921	94,049	666,347
Girls	101,073	98,173	92,759	88,059	75,849	70,138	68,118	594,263
Total	205,189	205,189	192,151	184,407	161,318	154,859	162,167	1,260,610

Source: Education Reform Implementation Project, 1986

TABLE 4.4

**Primary School Enrolment as Percentage of Nominal Primary
School Age-group 7-14 by Province and Sex, 1980**

Province	Boys	Girls	Total
Copperbelt	71	70	71
Central	98	89	94
Lusaka	69	68	67
Southern	116	110	113
Lusapula	111	95	103
Northern	107	85	96
Eastern	86	71	79
North-Western	98	74	86
Western	83	71	77
Whole Country	88	79	84

Source: Situation Analysis of Children and Women in Zambia
GRZ/UNICEF, Lusaka, 1986

children; it is the provincial statistics which show some of the imbalances in the provision of education. The Country Profile, 1984 (p86) gives figures for the age under 7 to over 14 years for 1980. What can be noted is that the rates of enrolment differ from one province to the other, with lowest ones being recorded on the Copperbelt as well as Lusaka which can be classified as predominantly urban areas. A further striking feature is that sex differentials in enrolment are more prevalent in rural provinces.

Participation Rates: Regional and District Inequalities

In a Working Paper for the ERIP, Kelly (1985a), has given participation rates for grades 1 and 5 by sex and by district for 1984. According to Kelly, participation rate is obtained by dividing enrolment by relevant population. According to this formula, one can get "a measure of the extent to which an education provision is being utilized". Another observation to make is that the computed rates are based on the assumption that Grade 1 enrolment is confined to all and only seven year olds, while that for Grade 5 is confined to all and only 11 year olds.

Kelly suggests that a district could be considered adequately provided for if participation rate for a given population is in excess of unity, of about 1.10 upwards.

The Grade 1 participation rates (Figure 4.1) also shows that seventeen districts, most of which contain a large urban centre, do not appear to have enough Grade 1 places even to match 90 per cent of the seven year old population. Participation rates can be affected by two factors: namely: reluctance in taking up places or by a lack of sufficient school

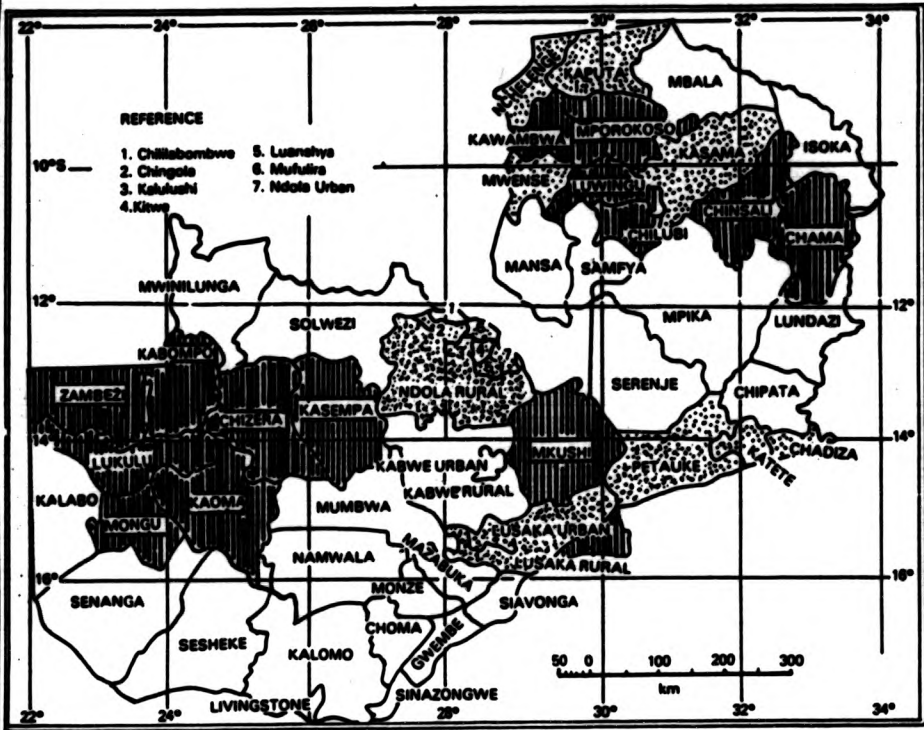


FIGURE 4.1 Districts Showing Very High and Very Low Grade 1 participation rates (both sexes), 1984

Source: CSO, Country Profile. Lusaka, Government Printers, 1984

places available. In the case of Katete, for instance, enough places are provided but children do not seem to take up those places, as for Chadisa, Lusaka Urban, Kitwe and Ndola Urban the participation rates are affected by the critical shortage of Grade 1 places.

The figure for 1984 Grade 5 (Figure 4.2) participation rates reveals districts which appear to be adequately provided with Grade 5 places and those that are short. A close examination of the figure suggests that rural districts are well taken care of. At the same time, it can be seen from the figures that the rural districts have the greatest inability to provide Grade 5 places for their 11 year old population. It will be noted again in ^{that} Kitwe, Ndola Urban and Lusaka Urban they cannot accommodate all their 11 year olds in Grade 5. However, this situation is as a consequence of educational practices rather than policy. There is a certain correspondence between the rank orders of districts which suggests that districts which are well catered for in regard to Grade 1 places for seven year olds are likely to accommodate their 11 year olds in Grade 5.

A further feature of the participation rates is the difference between boys and girls at the Grade 5 level. Participation by boys is generally higher than that of girls, even at Grade 1 level, although there is not a great difference in participation rates except for Kaputa, Senanga and Nchelenge districts.

At the national level, the participation rate for boys is 0.908 while that for girls is 0.878 in Grade 1. But the Grade 5 participation rates are 1.048 for boys and 0.77 for girls. It may be noteworthy that only in Kalulushi and Ndola Rural is the participation rate for girls higher

than for boys. It is further interesting to note that in fourteen districts, the number of girls enrolled in Grade 5 is less than 75 per cent of the corresponding 11 year old population: Luangwa, Ndola Rural, Serenje, Chilubi, Kaputa, Luwingu, Kalabo, Chadiza, Chama, Katete, Petauke, Kwense, Samfya and Mwinilunga. All these are rural districts. The high participation rates for boys suggests that opportunities do exist and that girls are making less use of these opportunities than are boys.

Progression Rates

In another Working Paper for ERIP, Kelly (1985b) discusses the progression rates from 1975 to 1984. This paper provides a very clear picture of what has so far happened with respect to drop-outs and/or completion rates at every stage of the primary school. It is, however, not possible in this study to provide all the details. Thus, only some prominent features will be discussed here.

Grade 1 to Grade 4 progression

It is noted that the progression ratio for the period 1975-1984 has been high in all districts, recording more than 90 per cent except during particular years for certain regions, such as the Eastern Province in 1976 in the case of girls, and for North-Western in 1977 and 1978 for both boys and girls. The ratio is higher in urban and line-of-rail regions such as Lusaka, Copperbelt, Central and Southern Provinces than in the rest of the country. The progression ratio is particularly high in Lusaka. An interesting feature for Lusaka and Copperbelt regions

is that the number of girls in Grade 4 is always greater than the number that began in Grade 1. In other parts of the country there is always a decrease in the number of girls between Grades 1 and 4.

Grade 4 to Grade 5 progression

Kelly gives the progression ratios from Grade 4 to Grade 5 for the whole country in 1983-84 as 89.9 per cent. This is broken into 91.3 per cent for boys and 88.4 per cent for girls. What should be noted further is that there is a variation between regions. For example, Eastern has 79.1 per cent while Lusaka has 105.0 per cent. For both Lusaka and Copperbelt regions, the progression ratio is over 100 per cent. This means that there were more pupils in Grade 5 in 1984 than there has been in Grade 4 in 1983. Again the ratio is higher for boys than for girls although it is possible that every pupil who enters Grade 4 in Lusaka or the Copperbelt will find a place in Grade 5. This trend has been noted since 1978.

For Central and Southern regions which have a comparatively large proportion of urban dwellers, the progression ratios have risen from 80 per cent to just over 90 per cent. In recent years, there has been a rise in the ratio in North-Western from 70 per cent between 1976 and 1979 to over 90 per cent. Similarly the progression rate in Luapula has shown a remarkable improvement from 64.2 per cent in 1976 to 86.9 per cent in 1984. On the other hand, Eastern (79.1 per cent), Western (80.9 per cent) and Northern regions, twenty pupils in every hundred must stop due to insufficient Grade 5 places. Thus the three regions are at an educational disadvantage.

An analysis of the data by district for the same period and grade levels (4 to 5) reveals districts which have low progression ratios which may result from lack of Grade 5 places or available places not being taken by pupils due to small population density, or due to qualified pupils unable to enrol in Grade 5 for economic, personal, social or other reasons. Obviously the implication here is that facilities are being under-utilized. However, in the majority of cases where Grade 5 enrolments are smaller than those of the corresponding Grade 4, the reason may be due to insufficient Grade 5 places for children who complete Grade 4.

When the progression ratios are considered according to distribution on an urban-rural basis, the picture which emerges for all the districts in the country is as follows:

Table 4.5 Urban Rural Progression Ratios

Percentage	Urban District	Rural District	Total
100 or more	11	2	13
95 - 99	1	5	6
90 - 94	1	3	4
85 - 89	0	11	11
80 - 84	0	10	10
Less than 80	0	11	11

Source: Kelly, "Progression Through the Primary School: Regional Analysis, 1975-1984". June 1985

From the above information it can be seen that only 10 rural districts have progression ratios above 90 per cent. Among these are Mumbwa, Kawambwa, Mozabuka and Monze which are centred around towns. If the objectives

of having every Grade 1 pupil proceeds through to Grade 7 without interruption is to be realized, the districts that need particular attention will have to be pin-pointed.

Another observation made by Kelly worth mentioning here is that with the present enrolments about 450 new Grade 5 streams would be required in order to ensure that every Grade 4 pupil proceeds into Grade 5. During 1980-1984, 514 new Grade 5 streams were established throughout the country. Kelly further projects that if a similar growth rate could be maintained for the period 1985-1990, possibly sufficient new Grade 5 streams could be established to cater for every student currently enrolled in Grade 4, without taking into account the rapid increase in Grade 4 enrolments arising from increases in Grade 1 figures occasioned by the growth in population.

Grade 1 to Grade 5 progression

With the enrolment data available for recent years, it is interesting that in Lusaka and Copperbelt, the Grade 4 enrollees, whether boys or girls, outnumber those that had enrolled in Grade 1 four years earlier. For example, in 1980 there were a third as many pupils in Grade 5 than there had been in this cohort's Grade 1 in 1976. In the Central Province, a similar tendency is becoming apparent for boys only. Although there are no hard facts to support this assertion, it is possible that the tendency is reflective of migration to the towns or the commonly known practice by some families of having children start Grade 1 in a rural area school where entry is relatively easier but where there may not be assurance of continuing up to Grade 5, and then transferring to an urban school at Grade 2, 3 or 4 levels with the hope that there will be no eliminations after Grade 4.

Grade 1 to Grade 7 progression

Here again, Kelly's analysis which is based on statistics from the Central Statistical Office and from Fagerline and Valdelin (1983) and Educational Statistics 1980 (Ministry of Education, 1982) is illuminating. A startling observation is that at Grade 7 level many more boys enrol than those who started Grade 1 in the large urban centres. For example, it is reported that in 1984 the Grade 7 enrolment for Lusaka is 150 per cent of the 1978 enrolment for the Grade 1 cohort for boys. The peculiar factor is that although Central and Copperbelt regions experience this occurrence the trend is prevalent in all the other regions for boys only.

It has been noted that for girls, the Grade 7 enrolment increase over its Grade 1 figures is found in Lusaka and Copperbelt only. On the other hand, the Grade 7 cohort for girls is less than two-thirds of what it had been at Grade 1 level, especially in Eastern, Northern, North-Western, Western and Luapula. The decrease in the enrolment figures for girls cannot be attributed to shortage of school places since the progression ratio for boys exceeded 100 per cent in every region. One explanation of this phenomenon may be that a number of boys repeated Grade 7 as it is reported that, for example, in 1980 there were 19,000 repeaters who represented 2 per cent of the total number of pupils enrolled (according to Country Profile Zambia CSO 1984: p87). The majority of repeaters were found in Grade 7 while one-fifth of them were enrolled in Grade 4.

From the preceding progression data, it is possible to draw a number of conclusions. First, the progression figures indicate that urban areas enjoy advantages while the rural areas face some disadvantages, especially Northern, Western and Eastern regions. But the rate of growth in Western

region appears to be the lowest in the entire country while Lusaka and Copperbelt are the most advantaged areas. Second, the disadvantages that the rural areas face affect both boys and girls. However, the disadvantages are more pronounced in the case of girls than boys. Third, when progression from Grade 4 to Grade 5 is taken into account, the most disadvantaged districts are Chilubi, Mpika in Northern; Kalabo and Lukulu in Western; Chadiza, Chama, Katete and Peauke in Eastern; and Ovembwe, Kalomo and Namwala in Southern. Fourth, the data analyzed suggests the need to take particular note of certain rural areas in terms of resource mobilization and to investigate what could be done in order to ensure that a large number of girls finish Grade 7.

Pupil-Teacher Ratio

In 1984, the pupil-teacher ratio stood at 45.5; this was lower than the average of 46.8 which had obtained over the period 1978-1982. The teaching force of 27,694 consisted of 24,210 trained and 3,484 untrained teachers. Thus about one-eighth of the teaching force was untrained. During the period 1978-1982 there were proportionately more untrained teachers, at an average of 13.3 per cent of the total. Approximately 20 per cent of the trained teachers were holders of a full School Certificate qualification, 65 per cent held a Grade 9 or Grade 10 Certificate and the rest were at lower levels of qualifications. For untrained teachers the proportions were 38 per cent with a full School Certificate, 46 per cent who attempted but had not passed the School Certificate and the remainder with lower qualifications. There were 52 pupils for every trained and 373 for every untrained teacher. The average number of classes per teacher was 1.07 in 1984, whereas in the previous years it had been 1.15; in relation to trained teachers there were 1.22 classes each.

but for the previous years this figure had been 1.34. The overall picture for 1984, therefore, was of a better staffing position in terms of the overall number of teachers and the proportion who were trained, than in the immediately preceding years.

Drop-out Rate

Progression from one grade to the next is automatic from Grade 1 to Grade 4 and from Grade 5 to Grade 7. Because of this, and because of the strong social demand for education, only negligible drop-out rates of less than one per cent are experienced overall at the Grade 1-2, 3-4, 5-6 and 6-7 levels, although the number of girls who leave school when they could have proceeded begins to be noticeable from Grade 3 onwards.

Expenditure in Primary Education

Some of the information regarding overall costs of education in Zambia is provided in the Educational Reform Implementation Project (ERIP) 1986, and in Country Profile Zambia 1984. It is estimated during the period 1975-1982^{that} the share of public expenditure allocated to the educational sector averaged 12 per cent. There was, however, a variation of between 11 and 13 per cent up to 1979 but in 1980 the average percentage dropped to 8 per cent. As the Country Profile 1984 (p92) indicates, the total spent on education in 1982 was K212 million. Out of that amount K197 million was recurrent expenditure while K15 million was capital expenditure which represented 5 per cent of the total expenditure.

TABLE 4.6
Estimated Costs of Recurrent Expenses 1981-84

Year	Boarding Expenses (000)	Student Requisites (million)	Service Charges (million)	Grand Total (million)
1981				
Estimate	226	33.6	1.99	35.80
Actual	70	2.1	.57	2.74
1982				
Estimate	228	38.1	2.18	40.56
Actual	133	2.3	1.14	3.58
1983				
Estimate	240	46.8	5.99	53.04
Actual	163	2.2	1.49	3.87
1984				
Estimate	179	54.7	3.13	58.08
Actual	165	2.2	1.66	3.99

Source: MGEC, Development Planning and Research Unit
March 1986

It will be noted from Table 4.6 that for a given year, the actual amount allocated falls short of estimated real cost resulting in considerable deficits. For example, for the year 1982, the deficit on boarding expenses was K94,700 while that on student requisites was K35.8 million. The deficit figures are highest in 1984 for both boarding and student requisites which came to K114,766 and K52.43 million respectively. Clearly, the figures indicate inadequate financial support for the primary sector.

A number of researchers interested in the financial provisions on education have recently analyzed the situation comprehensively calculating figures from data available at the CSO and MCEC (Fagerlind and Valdelin, 1983; Coombe and Lauvas, 1984; Kelly et al., 1986). Fagerlind and Valdelin (1983) have analyzed the figures in relation to state budgets and GDP for the period 1970-1980. The general observation they make is that the needs of the primary school sector have not been satisfied by the financial provisions over the past four years.

Kelly et al. (1986) in ERIP have analyzed financial provision for the period 1975-1985. Educational expenditure averaged 13 per cent of total budgeted expenditure over this period. After a significant drop in 1980 to 7.8 per cent, education even managed to increase its share to 16.78 in 1984, at the same time as ^{the} economic crisis became more entrenched. Thus, the percentage of education's share of government budget was 7.8 per cent in 1980, 10.91 per cent in 1981, 12.91 per cent in 1982, 15.24 per cent in 1983, 16.78 per cent in 1984 and 13.42 per cent in 1985. As a share of GDP, total government expenditure on education has also remained fairly constant between 4 and 6 per cent, in real terms even averaging closer to 6 per cent.

If primary education's share of the total education budget is considered, according to Kelly et al. (1986), the percentages are reflected, as follows: 42 per cent for 1980, 37 per cent for 1981 and 1982, and 42 per cent in 1983.

When the absolute expenditure figures are examined, it will be seen that there was a big jump from K63 million in 1981 to K89 million in 1982 largely due to salary increases awarded by the Muchangwe Commission. Although it is not possible to go into details, the recent implementation of the Lavu Commission of Inquiry Recommendations by the government will have a considerable effect on educational expenditure. In general, Kelly et al. observe that there has been a sharp rise in the unit costs per pupil from K58.70 in 1981 to K79.50 in 1982 while the 1983 one was K81.50. The trend is attributed to salary increases to teachers.

Similarly, the cost of teaching requisites per pupil has been calculated for the period 1980-1984. The figures are: K1.47 for 1980; K1.42 for 1981; K2.62 for 1982; K1.62 for 1983 and K1.76 for 1984.

It is clear from these figures ^{K&L} the per capita expenditure for student and domestic science requisites is steadily declining. Allocations for teaching and learning items are also becoming increasingly smaller in relation to the rest of the budget for primary education. Another conspicuous revelation from the analysis is that teachers' salaries have taken the greater share of the budget for primary education.

It can be observed that ^{the} overall effect of the reduced financial provisions on the primary school sector is that a lot of shortages of required items are experienced. Hence the quality of education of the school child is critically affected.

This situation raises serious questions about the sense of continuing to expand the primary school system, when this is clearly done at the expense of providing books. It provides a graphic example of the way the inexorable momentum of the expansion of the system, driven by selection imperatives, grinds on when all educational sense has been left far behind. This is an extreme example of a pattern which is general in the recession: as the revenue base shrinks, there are insufficient funds to run the inherited institutional infrastructure. Since the priority in recurrent expenditure is to pay salaries and maintain (or even expand) the establishment, reductions in recurrent expenditure are found in the allocations for paper, books, transport, fuel and so on. This situation can mean, in practice, that an institution has a full complement of highly salaried establishment which cannot be supplied with the wherewithal to do the job.

The situation is so pathetic that Kelly (1985) has observed that the insufficient allocations for the purchase of teaching and learning items has led to a situation in which the primary school system is unable to provide "chalk, duster, paper, writing instruments and books" at today's prices.

Secondary School Education

The secondary school system is much smaller than the primary in terms of number of institutions, enrolment and number of teachers, but has a more complex administration and a richer and more diversified curriculum. At present there are 23⁴ secondary schools in Zambia, of which 153 are government institutions, 37 are grand-aided and 44 are registered private schools. Government schools tend to be larger than aided or

private schools and in 1982 accounted for 78 per cent of the total enrolment, with the aided and private schools accounting for 16 and 6 per cent respectively.

In 1984 the total secondary school enrolment was 125,811. Almost 80 per cent of this consisted of junior secondary pupils in Grades 8 to 10. The output of secondary school graduates who complete the full 12 years of primary and secondary education is somewhat over 13,000. This number has been rising steadily since 1973 by an average of 600 a year. The number who complete the junior secondary cycle is approximately 30,000; this number has also been growing at a rate which increased from an annual average of some 950 a year between 1975 and 1980 to an annual average of more than 1,900 between 1980 and 1984.

Because the secondary system is so much smaller than the primary, not every pupil who completes Grade 7 can enter Grade 8. Progression at this level depends almost entirely on performance in the selection examination conducted in the October-November of the year when a candidate completes Grade 7. The progression rate from primary to secondary for 1984-1985 was 21.6 per cent. Table 4.7 shows figures for other recent years. However, the progression rate for boys is higher than that for girls. An increase in the progression rate is taking place at a time when the number of Grade 7 pupils is also increasing, and hence in absolute terms there is a substantial increase each year in the number of Grade 8 pupils. One of the problems in the progress towards universal basic education will be to maintain and if possible to increase the Grade 7-8 progression rate, when the number of Grade 7 pupils will be growing very rapidly, rising to over 300,000 in the year 2000 from its present level of around 160,000.

TABLE 4.7 Progression Rates from Grade 7 to Grade 8
1978-1984 for Boys and Girls

	Boys	Girls	Both Sexes
	%	%	%
1979-80	21.13	18.72	20.15
1980-81	21.10	18.81	20.17
1981-82	21.99	19.06	20.76
1982-83	23.66	20.57	22.38
1983-84	25.10	21.10	23.44

Source: Kelly, M. J. *et al.* (1986). Education Provision for All.
UNZA, Lusaka

Up to 1982 the structure of the secondary education system in Zambia was three years of junior secondary (forms 1-3) and two years of senior secondary (forms 4-5). For 1983 entrants to Grade 8 this structure was changed to become two years of junior secondary (Grades 8-9) and three years of senior secondary (Grades 10-12). The last output of Grade 10 (form 3) graduates left the system in December 1984. Transition from form 3 to form 4, and from Grade 9 to Grade 10, is not automatic. About half of those who complete junior secondary can proceed to senior, the selection being made on the basis of performance in the Junior Secondary School Leaving Examination (known, at various points in its history, as the Form 2, the Form 3, the Grade 10 and - now - the Grade 9 examination). The proportion of girls who proceed to senior secondary is consistently less than that of boys, even though girls' schools, and co-educational boarding schools with hostel facilities reserved for girls, take special steps to maintain the number of girls in the senior section of the school. Because of the shift of the selection for senior school from the end of Grade 10 to the end of Grade 9, 1984 was a transitional year with pupils being selected for progression after both Grade 9 (38.2

TABLE 4.8
Secondary School Data 1980-84

Enrolment	1980	1981	1982	1983	1984
Grade 8	24,437	26,091	27,279	30,906	35,098
Grade 11	11,478	11,538	12,179	13,052	13,471
J. Secondary	72,378	75,833	81,002	89,602	99,087
S. Secondary	22,217	23,029	23,857	25,486	26,724
Total	94,595	98,862	104,859	115,088	125,811
<u>Number of Classes</u>					
Grade 8	586	614	643	743	826
Grade 11	304	302	324	346	345
Grade 8-12	2,342	2,395	2,495	2,734	2,904
<u>Average Class Size</u>					
Grade 8	41.7	42.5	42.4	41.6	42.5
Grade 11	37.8	38.2	37.6	37.7	39.0
Grade 8-12	40.4	41.3	42.0	42.1	43.3
<u>Number of Teachers</u>					
Graduate	1,796	1,767	1,605	1,542	n.a.
Non-graduate	2,508	2,883	2,997	3,230	n.a.
Zambian	2,496	3,077	3,280	3,721	n.a.
Non-Zambian	1,808	1,573	1,322	1,051	n.a.
Total	4,304	4,650	4,602	4,772	n.a.
<u>Pupil-Teacher Ratio</u>					
Pupil per graduate	52.7	55.9	65.3	74.6	n.a.
Pupil per non-grad.	37.7	34.3	35.0	36.6	n.a.
Pupil per teacher	22.0	21.3	22.8	24.1	n.a.

Source: Kelly, M J, et al., 1986. Education Provision for All
UNZA, Lusaka

per cent of these were selected) and Grade 10 (34.4 per cent were selected at this level). But from 1985 onwards, selection will be after Grade 9 only and will be limited to approximately 50 per cent or less of the enrolment in that class.

The decision to change the secondary school structure from 3-2 to a 2-3 cycle is an integral part of the educational reforms, since the two years of the junior secondary section will ultimately form the final two years of the basic education cycle.

Table 4.8 shows a number of the educational parameters for secondary schools. The pupil-teacher ratios are of the size commonly encountered at this level - the average for the years 1978-1982 in East Africa was 22. Because the same teacher takes classes at the senior and junior level it is not possible to differentiate between the pupil-teacher ratios at the two levels. However, the average class-size is higher at the junior than at the senior level. There is a large pupil-teacher ratio in Grades 8-9 and a much smaller one in Grades 10-12. The class size is as one would wish it to be at secondary level; indeed, because an average is involved the size is already too large in many schools for effective teaching. In addition to the deleterious impact overly-large classes have on the quality of education, there is a problem of physical over-crowding. Many of the secondary schools were built with classrooms designed to seat 35 pupils; some were even intended for classes of 30 pupils. Severe organization problems, gross discomfort and unmanageable pedagogic difficulties are being experienced because of the need to pack too many pupils into a small space.

The over-crowding is also leading to the deterioration of the school fabric and furniture. The situation reflects the strong social demand

for education at the secondary level and a regrettable tendency to respond to this demand in ways that educationally, organizationally and financially have little to commend them.

Boarding Schools

One considerable difference between primary and secondary schools is that approximately half the secondary school enrolment consists of boarders. To some extent, today's secondary schools reflect the organizational arrangements of the primary school system a generation ago when there were comparatively few upper primary schools but many of them were boarding schools, and when progression to upper primary was on the basis of performance in a selection examination. The proportion of boarders in the secondary system remains high at 46 per cent of the total number enrolled at this level (Table 4.9). In government schools there is nearly the same number of boarders as day pupils, but in aided schools about 85 per cent of the pupils are boarders.

At the end of 1965 Zambia adopted the policy of abolishing boarding fees in all government and aided schools. From that time until April 1986 the costs for boarding were all borne by government. At the secondary level the cost was assessed as K44 per boarder in 1966 (K365 at 1984 prices) but in current prices this has risen to more than four times that amount (Table 4.9).

In November 1985, government announced that it would no longer meet boarding costs in primary and secondary schools. The announcement was greeted by a storm of opposition, originating in some measure from the inability of the public to appreciate the seriousness of the financial difficulties

TABLE 4.9

Secondary School Boarders, Numbers and Costs 1979-84

Year	Enrolment	Boarders		Total Boarding Costs	Boarding Cost per Pupil	
		Number	%		At Current Prices	At 1984 Prices
1979	91,795	52,215	56.9	5,416,318	103.73	225.22
1980	94,595	54,345	57.5	6,057,516	111.46	217.88
1981	98,862	53,933	54.6	6,418,853	119.02	207.38
1982	104,589	55,310	52.9	9,334,018	168.76	257.80
1983	115,088	57,364	49.8	9,440,975	164.58	205.62
1984	125,811	57,757	45.9	11,053,693	191.38	191.38

Source: Financial Report, 1979-84: MIRC, 1986

in which government found itself, partly from lack of realization of the fact that the system of free boarding had led to an inequitable distribution of national resources, partly from the suddenness with which the announcement was made and partly from the size of the fee that was imposed uniformly across the country.

The system of government payment of boarding fees was introduced in 1965 so that no able and promising student would be debarred on financial grounds from secondary school. Such provision may have been needed at that time when efforts were being made to bring about a large increase in secondary school provision, especially in rural areas, since experience had shown that quite a number of the most promising primary school graduates could not proceed to secondary level for financial reasons. Even today the situation is still the same, if not worse. The introduction of boarding fees will bring discomfort to many poor families in Zambia who do not have even enough food to feed themselves. Chiposa (1987) states that

Boarding fees, introduced both in primary and secondary schools last year, are to continue, although last year more than 4,000 pupils lost their places because their parents could not afford the fees. (p37)

Although the decision has now been made that responsibility for boarding fees should be transferred to parents some related points may still need attention. One is the establishment of a Bursary Fund for needy pupils whose parents are clearly not able to pay the necessary fees (as indicated in the above quotation). Also parents, through the school's Parent Teacher Association, should be involved in decisions about the level of fees for a particular school.

Many boarding schools in large urban centres are converting into day

schools. However, given the scattered population in some parts of Zambia and the low population density in rural areas, it will continue to be necessary for there to be some boarding schools at the secondary level. But the cost per student place is very much higher for boarding schools than for day schools, largely because of the need to provide dormitories, kitchens, dining halls and ablution areas.

HIGHER EDUCATION

A wide range of separate programmes, administered by different institutions or agencies, is found at the higher education level. Some of these programmes are offered by Ministries other than Education, such as the Diploma and Certificate programmes in agriculture, forestry and veterinary health which pertain to the Ministry of Agriculture and Water Development, the various nursing programmes under the auspices of the Ministry of Co-operatives at Co-operative College, Lusaka. Other tertiary level programmes or qualifying examinations are administered by professional bodies such as the Law Practice Institute, the Zambia Institute of Certified Accountants and the Engineering Institute of Zambia.

The tertiary level programmes with which the Ministry of Higher Education is concerned fall into three main categories: degree and other programmes at the University of Zambia (UNZA); programmes in teacher education which involve the Ministry of Higher Education in a direct way; and technical education and vocational training programmes which the Ministry of Higher Education administers through the Department of Technical Education and Vocational Training (DTEVT).

The University of Zambia

The University of Zambia was founded in 1965 to provide

"practical service to the nation at a critical time in its life with fulfilment of the historic purposes of a university as a seat of learning, a treasure house of knowledge, and a creative centre of research".

(The University of Zambia Act, 1965).

Degree and professional programmes are offered by the University through eleven academic and professional schools of study. Two of these are located in Kitwe and nine in Lusaka. In addition to the programmes that are offered on a full-time or part-time basis by face-to-face teaching the University has offered programmes by correspondence since 1966.

Organisation

The University is effectively autonomous and independent of the Ministry of Higher Education, although the Minister is required to convey to the Chairman of the Council and the Vice-Chancellor such general or particular Party or Government policies as may affect the conduct of the affairs of the University, and the University is required to keep the Minister informed on all its affairs (University Act, 1965). Finance is channelled through the Ministry, but once the government has settled the level of allocation, the University is free to determine how it is spent. The University Council is the employing authority and has jurisdiction over all development, finance and policy. All members of the Council serve for three years and are appointed by the President; not all of them are academics.

The organization of the University was modified by the 1979 University Act to incorporate the concept of a federal university. A post of Deputy

Vice-Chancellor was created, and each constituent institution of the University had a Principal to head it. However, the 1987 University Act abolished the federal system of the University and established two universities - the University of Lusaka and the University of the Copperbelt - each with its own Vice-Chancellor.

Enrolment

The total enrolment for the University in 1984/85 was 4,554 students, of whom 4,006 had their studies based in Lusaka and 548 in Kitwe. There were 3,688 students engaged in full-time undergraduate studies, 144 in part-time and 615 taking programmes by correspondence (all of this last group in Education, the Humanities and the Social Sciences). The number of postgraduate students was 107. Approximately one-fifth of the students were female, a proportion that has remained unchanged for years.

When the University was established it was intended that by 1980 the capacity of the Lusaka campus would be 5,000, but this target was not reached because the lack of finance prevented the expansion of student accommodation.

Staffing

Despite a very ambitious staff development programme, the University continues to rely heavily on expatriate staff as Table 4.10 indicates. Of the 207 non-Zambian staff, 123 are on university contracts, the rest being wholly funded or supplemented by aid agencies. A large number of expatriates are lecturers in the fields of Mining, Engineering, the Sciences and Medicine. The University has a staff development scheme

TABLE 4.10
Staff in Post at the University of Zambia 1986

School/Dept.	All Staff in Post		Senior Lecturers & Above	
	Zambian	Non-Zambian	Zambian	Non-Zambian
Agriculture	12	10	1	8
Education	31	23	6	15
Engineering	9	20	2	13
Humanities & Social Sciences	34	19	3	8
Law	12	2	3	0
Medicine	23	19	8	14
Mines	6	17	3	10
Natural Science	21	50	2	31
Vet. Medicine	3	14	1	10
Research Institute	16	13	5	10
Continuing Education	16	3	3	1
Business Administration	10	10	0	2
Environmental Science	2	7	2	7
TOTAL	195	207	39	129

Source: UNDP, 1986 Roles for Technical Cooperation, New York

for sending Zambian graduates overseas for postgraduate training, many going to Britain, Canada and the United States. The staff development programme in 1985 involved 195 fellows studying overseas, two-thirds of them financed out of the University budget. Devaluation of the Kwacha is bound to have a substantial series of effects on staffing and the fellowship scheme.

Teacher Education

Primary: There are ten primary teacher training colleges, four of which are grant-aided mission colleges. Theoretically the minimum entry qualification is Grade 9, but for the last few years colleges have accepted students with Grade 12 (Form V) Certificate and only mature students with Grade 9 have been accepted. The colleges also accept untrained teachers from the primary schools. Kitwe Primary Teacher Training College has the largest enrolment with almost 600 students in 1982/83. The other colleges average 250-300 students. Since 1976 lower and upper primary teacher courses have been merged to offer an integrated two-year primary course, though the Home Economics course remains separate. The curriculum consists of basic educational theory, educational psychology, general methodology and tuition in all the subjects studied in primary schools. About 75% of time is spent on methodology. Teaching practice forms part of the course - six weeks in the first year and six weeks in the second.

If the universal primary education goal is to be achieved by the end of the century, more primary teachers will need to be trained than at present. From a 1983 output of around 1,700 teachers, Kelly et al. (1986) calculate these needs as 2,200 in 1987 rising to 4,200 in the year 2000.

TABLE 4.11

Location, Capacity, Specialization and 1985 Output of
Secondary School Teacher Training Programms

Institution and Location	Specialization	Maximum Production Capacity	1985 Output
UNZA, Lusaka	Arts; Science	200	137
Nkrumah Teachers' College, Kabwe	Arts; Science; Commerce	200	169
Copperbelt Secondary Teachers' College, Kitwe	Science; Maths; Home Economics	150	87
Luanshya Tech. & Voc. Teachers' College Luanshya	Commerce; Industrial Arts	100	32
Natural Resources Development College Lusaka	Agricultural Science	20-25	21
Evelyn Hone College Lusaka	Art; Music	25-3	27

Source: Kelly, M J, et al. Special ERIP Investigation

Secondary: There are six institutions which produce teachers for the secondary schools. These are the University of Zambia, Nkrumah Teachers' College, the Copperbelt Secondary Teachers' College, Luanshya Technical and Vocational Teachers' College, the Natural Resources Development College, and the Evelyn Hone College of Applied Arts and Commerce. Table 4.11 shows the location, capacity, specialization and the 1985 production from each of these institutions.

Entrance to secondary teacher training colleges requires Cambridge Overseas School Certificate (now Grade 12). The Diploma course lasts two years and graduates of the colleges are equipped to teach at junior secondary school level, though, because of the lack of qualified staff, some are required to teach in senior secondary classes. Through the School of Education at UNZA the University maintains an associate relationship with both Nkrumah and Copperbelt Teachers' Colleges which means that the University moderates the curriculum and examinations and approves the selection of students and lecturers.

Under the TNDP plans were advanced for increasing capacity for the production of secondary school teachers and for the academic and professional advancement of secondary teachers' college staff. The output from the teachers' colleges was to be increased by bringing Nkrumah College to full capacity (500) by 1980, creating additional places from 1979 through the enrolment of day students, establishing a new college with a capacity of 500 and increasing the capacity of the Copperbelt Secondary Teachers' College from 300 to 500 as from 1982. An increase of 58 college lecturers over the period 1979 to 1983 was envisaged.

TABLE 4.12
Output of Qualified Secondary School
Teachers 1979 - 1984

Institution	1979	1980	1981	1982	1983	1984
UNZA	183	211	130	136	156	816
Mkumah	159	134	230	163	167	853
Copperbelt	137	140	129	101	102	609
Luanshya	98	78	95	95	84	450
NRDC	16	13	21	17	13	80
Evelyn Hone	12	25	13	7	-	57
TOTAL	605	601	618	519	522	2,865

Source: Educational Statistics, 1983 (Ministry of Higher Education)

If the colleges were expanded as planned their total annual output would have increased to 770. However, due to financial constraints, none of the quantitative developments proposed in the TNDF has taken place. The production of secondary teachers throughout the period of the plan remained below the possible annual maximum of 700, as may be seen from Table 4.12.

Problems of Teachers

The difficult environmental conditions under which the teacher in Zambia works at present do not encourage or stimulate him or her to continue to grow in his/her profession and become more proficient. Among such problems are the following:

- (a) Heavy teaching loads and large classes due to the shortage of teachers. Although the optimum class size has been set at 40 pupils, it is not unusual, due to the shortage of school places, for a teacher to have 50 children at the primary level and 45 at secondary level in class. This makes personal attention rather difficult and the marking of pupils' work more burdensome.
- (b) Bigger classes also result in overcrowding as a large number of children are squeezed in rooms designed for 35 or 40 pupils.
- (c) Lack of materials, textbooks, equipment and supplies have had disruptive effects on teachers.
- (d) Poor conditions of service and poor promotion prospects.
- (e) The weak position of the teaching profession and its lack of prestige compared with others like Medicine, Engineering and Accountancy.

(Ministry of Education, Educational Reform, 1977: p64)

Technical Education and Vocational Training

Between 1962 and 1967 most trade schools were closed. However, following the Saunders Report of November 1967, the government formally decided to establish technical education and trades training. This was accomplished through the establishment of a Commission for Technical Education which later became the Department of Technical Education and Vocational Training which has been responsible for building up full-time and part-time training programmes in technical colleges and trades-training institutes. The system of apprenticeship based on sponsorship was discarded. The courses were designed by Canadian specialists. No fees are charged to students for training or accommodation except for sponsored students.

Upon the formation of the two Education Ministries the Department of Technical Education and Vocational Training (DTEVT) was located in the Ministry of Higher Education. The Department has its own staff of inspectors and curriculum advisers and has established curriculum and standards advisory committees to liaise with industry on each programme that it offers. Currently DTEVT is responsible for one institute of technology; five colleges covering Arts, Commerce, Technical subjects and Technical teacher training; and seven trades-training institutes. Recruitment to these institutions is organized centrally. The administration of recruitment is handled by a Student Services unit.

The main technical colleges producing technicians and technologist level graduates are the Zambia Institute of Technology (ZIT), Northern Technical College (NORTEC) and Evelyn Hone College. These three colleges had 41% enrolment of 2,200 in 1984 though their capacity is about 2,800. Enrolments are limited by a lack of recurrent funding, staffing in particular areas (of the 284 staff in 1985, 114 were expatriate), and hostel accom-

modation (Kelly et al., 1986). Enrolments are decreasing in some colleges. Yet, there still is a shortage of technician level manpower in the economy and each institution reports that graduates easily find employment (UNDP, 1986).

Unless more finance becomes available to the colleges, courses will fold and enrolments further decrease. If government cannot provide funds directly, other sources must be tapped. UNDP states that in 1982, 20 per cent of students were sponsored and that fees have remained unchanged since 1975 and are now equal to only 10 per cent of the actual costs. Ways of increasing levels of sponsorship of students should be found and fees raised. Another potential source of additional revenue is the production of goods and services, the profits from which would remain with the colleges.

Curriculum Development

Great emphasis has been placed in recent years on restructuring the education system from purely academic subjects and a concentration on them to a broader based form of education more congruent with national aspirations. Education, hitherto the prerogative of the elite and the specially favoured, was to include all sections of the society, and opportunities created for development in technical, vocational and academic fields. To this end the Curriculum Development Centre (CDC) was established as a department of the Ministry of Education. Since the creation of the two ministries, the Department now falls under Higher Education. The goals of CDC are:

- (a) designing an appropriate pre-school curriculum;

- (b) the improvement of the quality of primary education through encouragement of teacher involvement in curriculum development;
- (c) contributing to the structuring of new forms of secondary education through programme planning and teacher orientation;
- (d) conducting short term research as a basis for programme planning and evaluation;
- (e) encouraging leadership behaviour in teachers through collaboration with teacher groups and subject organizations;
- (f) preparing materials (books, tapes, slides, pictures) for the new curriculum and ensuring its availability to schools and institutions.

(Annual Report, 1978: p9)

Goals, however excellently formulated, must consider the practical realities of the situation. There were some factors which restricted these ambitions. The first one was that some parents did not favour the idea of change in the curriculum system. The other factor was that of poor quality teaching. However, CDC has tried to bring about change in the following manner:

- (a) assisting teacher groups interested in improving their performance in the teaching of Reading, Mathematics, Social Studies and Science. Assistance takes the form of visits to groups to support seminar or workshop sessions, inviting teachers to visit the Centre for discussions of problems;
- (b) developing a school improvement programme planned to involve teachers in setting objectives, and in planning for the improvement of the learning environment of the school, and to help them to adopt more effective methods of teaching and evaluation so that the needs of all children will be catered for.

(Annual Report, 1978: p14)

Curriculum development is not only a matter of teacher education and course content. In its broader application, it is of importance to parents as well as to children. While the major emphasis at primary and secondary education levels is on teacher performance, at both these levels parents and students are encouraged to participate in national educational goals. Much work is being done on group work through class organizations and activities to develop a curriculum more in keeping with an egalitarian system of education.

Mathematics and Science in the Curriculum

In Zambia the curriculum in Mathematics has been singled out for special attention. The vital role of Mathematics, Science and Technology in the new school curriculum is acknowledged in the Educational Reform in which it is stated that the inclusion of these subjects in the curriculum will make education more responsive to the major needs of the country. Mathematical problems are placed in the context of day to day experiences to which learners are exposed both at home and in their communities. The development of the curriculum in Mathematics is accompanied by research aimed at identifying tasks and mathematical skills relevant to occupational roles in a variety of work situation.^s_^ A great deal of this curriculum development is taking part in in-service training with the emphasis on Mathematics. This is so because an understanding of mathematical concepts is an essential base for scientific development.

Problems associated with science education are acknowledged. The TNDP mentions the serious problems encountered in "Zambianizing" secondary teachers' posts in the sciences. It recommends that training programmes be appropriately designed to rectify this. Taking up the issue of low

standards, the guidelines for the formulation of the Fourth National Development Plan assign high priority to raising standards in science and mathematical subjects in schools, at the University and in specialized technical and engineering colleges and institutions.

At a conference held in Lusaka in 1982 to develop policy for science and technology, the following recommendations were made:

- The Curriculum Development Centre be asked to identify practical laboratory skills which are expected of pupils in the senior secondary sector, a list of experiments designed to develop these skills be produced, and all pupils in this sector be expected to perform these experiments as part of their science course.
- Strong links between mathematics and science departments in secondary schools be encouraged.
- In view of the importance of teacher training in all fields of science and technology, the Ministry of Education and Culture create a unit with overall responsibility for all aspects of teacher education.
- Provisions be made at the School of Education to offer courses that would enable science graduates to be trained as science educators if they so desire.

Curriculum and its relevance to the nation is being overcome by widening the traditional content to include both primary and secondary schools, agricultural education, home economics, and crafts and technical subjects (Ministry of Education, Annual Report, 1978: p14).

Education for development also embraces Co-operatives and co-operative activity. A distinction is made between Co-operatives and co-operative activity. While co-operative activity is a normal part of day to day experience in the classroom curriculum, a knowledge of Co-operatives provides specific knowledge which concerns the economics of development. For example, co-operative 'agricultural production units' in schools will reduce the costs of foodstuff in boarding schools and their utilization in schools will reinforce the Co-operative concept.

Curriculum development is not only a factor in schools, it is also connected to communities of which the schools are part. Work on community projects is now an accepted part of the learning experience of students between the ages of 7 and 15 years, and work in situations gives expression to the values of unity, collective work, and responsibility. Moreover, this form of education is part of an overall plan to provide extended opportunities for a wide range of talents.

EDUCATIONAL BROADCASTING

The Educational Broadcasting Services (EBS) is a department of the Ministry of General Education and Culture with the Ministry of National Guidance Information and Broadcasting providing transmission facilities. EBS is composed of the Educational Radio Service, the Educational Television Service and the Audio-Visual Aids Unit (Figure 4.3). Its general prescribed objectives are:

- (a) to introduce new methods and techniques of teaching (through radio and television) in order to improve the quality and quantity of education in the country.

- (b) to provide planned opportunities through workshops and seminars for the development of a close working relationship among all those concerned with educational media in order to promote a practical unity of purpose.
- (c) to develop a national centre which will work in co-operation with other educational agencies for training in educational media for the provision of visual materials and other learning resources.

(Educational Broadcasting Council (EBC), 1981: p4)

Educational Radio Service

The Educational Radio Service (ERS) was established in 1965. It broadcasts programmes from Grade 5 to Grade 12, plus adult education programmes and a few programmes for teachers. Almost all the primary and secondary (government) schools have been issued with at least one radio receiver or radio/cassette player. There are four subject sections at ERS: English, Social Studies, Science and General Studies, and Adult Education. Programme production responsibility lies with 10 ERS producers, almost all of whom have received training overseas and who jointly represent many years of experience in this field. However, subject panels assist in the planning of ERS series. Subject specialists who form these panels come from the Inspectorate, CDC, UNZA, teachers' training colleges, the National Correspondence College, and primary and secondary schools. The National Correspondence College plays a major role in the scriptwriting and presentation of ERS' adult education series. Programmes transmitted by ERS are based on approved syllabi; all are locally produced apart from a few English Literature programmes from BBC's Transcription Service.

The problem of lack of utilization of the broadcasts is the major issue facing ERS. There are also basic problems of transmission unreliability,

lack of available batteries, theft of sets or extreme tardiness of maintenance when breakdown occurs. To a lesser extent there are problems of time-tabling in primary schools, these latter however assume major or over-riding prominence in secondary schools.

There is a problem of poor reception. Schools in the remote areas of the country find it difficult to get good reception from Zambia Broadcasting Services (ZBS) which are responsible for the national radio and television services. ZBS moved to the new Mass Media Complex in September 1982. Within the Complex ZBS has twenty-two studios, three major television studios, a film studio and all the technical and other facilities that are necessary to support such an operation.

On the transmission side the national broadcasting picture is not so good. There are two separate systems of transmitters - each system containing both medium wave and short wave transmitters. Neither individually nor collectively do these systems provide anything like satisfactory nationwide coverage. In the mid-1970s the World Regulatory Body for Broadcast Transmitters (WARC) recommended that Zambia should increase its main medium wave output from the existing 200kw to 500kw. This is being implemented. Until this reception problem is resolved, ERS programmes will not be received well by its intended target pupils in the remotest areas of Zambia.

ERS is in urgent need of new machinery to ensure consistently high quality production. The present state of recording and editing machines cannot produce the expected quality and excellence of programmes transmitted to schools. The ERS Annual Report (1983) summarizes the situation thus:

Lack of equipment continued to be a big problem in the service. The old recording machines in Studio 2 were often faulty and under constant repair. After ZBS had moved to the New Complex, their engineers who normally assisted in the servicing of our studio machines became reluctant to come over and help free of charge. Also, efforts to try and secure spare parts for the ageing studio machines by making internal arrangements with the Lusaka based Friedrich Neumann Foundation did not bear any fruit because of lack of funds in Zambian Kwacha. (p25)

and Edington (1982) advises that

It is vital that recognition is made of this difficulty and that negotiations are put in hand between ERS, ZBS and the Zambian Institute of Mass Communication (ZAMCOM) to anticipate and deal with the problem in order to avoid further operational difficulties. (p9)

The problems associated with the integration of radio (or indeed television) lessons into the smooth running of a school do not admit of easy solutions. Although primary school headmasters believe that it can and should be possible to use schools broadcasts, some secondary school heads and some of their teachers, are markedly of the view that effective integration is not a realistic proposition. Secondary school teachers appear to follow a rigid and unswerving path through their syllabi. Materials not directly under their control or directly relevant to the matter being taught on the day seem unlikely to command their attention or allegiance.

The attitude of staff becomes a very critical factor in certain institutions. Heap (1981) reports that the head of an institution may be "hostile" or luke-warm about the use of the ERS broadcasts for one or more of the following reasons:

- (1) "I have very competent members of staff who do not need to use radio lessons". (The inference is that radio is not a good teaching medium and that only incompetent teachers need schools' broadcasts).

- (ii) "My staff would become lazy".
 - (iii) "The students would become lazy".
 - (iv) "The students would lose confidence in their teachers".
 - (v) "The use of radio for educational purposes upsets the curriculum".
 - (vi) "The use of radio for educational purposes will involve the staff and students in having to do unnecessary extra work in order to satisfy the requirements of the syllabus".
- (p12)

Radio was therefore (in some secondary schools) conceived as an added burden if not a 'thorough nuisance'. In such schools the timetable was not to be adjusted and any forward-looking teacher who wished to listen to any programme was often left to arrange any exchange of periods with other members of staff. Such ad hoc listening arrangements unfortunately often did not last long.

ERS Budget

The budget allocations on which ERS (in common with the rest of the Educational Broadcasting Services) operates are extremely modest in terms of what was expected of the Service both as regards production output and also encouragement of utilisation of this output. Total production expenses of around K5,000, the amount which is, ironically, less than the salary of one producer (on Lecturer Grade II scale) inevitably leads to a disproportionately small import from a national media system in comparison with the contribution which an overall salary bill for ERS producers of around K80,000 would seem to warrant. The potential is restricted by lack of adequate recurrent expenditure.

Another constraining factor on ERS is the way in which the estimates and allocations are drawn up on the same subheads and forms as those used for all other conventional educational institutions and establishments. This leads to special electronic items being listed under "Tools and other equipment". Under this arrangement ERS estimates suffer major reductions when scrutinized at the Ministry headquarters. The creation and operation of a financial system relevant to the specialized needs of ERS, but still consistent with the government practice could significantly help its operation.

Support material, mainly in the form of teachers' notes and sometimes as wall charts was formerly a highly-regarded feature of ERS. The absence of this at the present moment impairs both the actual and perceived value of the service. The timetables which are sent to schools do not alone meet the needs of the teachers in providing details of the contents of the programmes, week by week. The teachers' notes which are normally printed at Government Printers are at present given a low priority in comparison with the demands by other agencies of Government and their production is erratic. The Printing Service of Educational Services Centre, although possessing the technical facilities, does not have enough materials to enable it to undertake this work.

Despite all these difficulties, ERS puts ^{out} 22 hours and 20 minutes per week for 27 weeks in a year. This is 603 hours of broadcasting per year. This reflects, by any standards anywhere, a major Government commitment to the use of media for educational purposes. The commitment must be accompanied by sufficient funding required for the smooth running of the unit. However, Edington (1982) observes that

The overall view of ERS is of a substantial cadre of capable, experienced personnel carrying out their duties to a high professional level at their production base on very limited resources but that this effort is being dissipated by the lack of efficient delivery and utilization mechanisms. (p11)

Educational Television Service

The Educational Television Service (ETVS) began in Kitwe as an experiment in 1962 and until 1968 catered for the Copperbelt only. In the days of the Federation of Rhodesia and Nyasaland, it was proposed that Kitwe should be one of the three centres for television development. At the same time the mining interests on the Copperbelt had set up a research project into teaching adult mine workers the basic skills of literacy and numeracy using closed-circuit television. In 1965 this project finished and the equipment was given to the Ministry of Education to form the basis of an Educational Television for Schools. The following year the Ministry of Information and Broadcasting took over the buildings and so the ETV Service began to operate with the support and facilities of Television Zambia. At that time Television Zambia (Kitwe) started operations with up-to-date technical facilities as follows:

- (a) 2 large studios (each 50' x 40' x 40') for all types of programmes;
- (b) A continuity/newscasting studio (20' x 14' x 14');
- (c) 3 telecine chains each with 3 video camera channels;
- (d) 3 Marconi MKIV cameras - Image Orthicon consisting of a full complement of lenses ranging from F/2 to F5.6 (2" to 22") as well as Vacotal III and V (Taylor Hobson) lenses in each studio;
- (e) A whole range of microphone types - booms; floor and table stands, loudspeakers on the wall or mounted on wheels, tape and disc recorders, etc.;

(f) An array of lighting fixtures carrying lamps ranging from 500 watts to 2 kilowatts;

(g) A video tape recording room with two recorders;

(h) An outside broadcast unit.

(Ministry of Information and Broadcasting, Annual Report, 1978: p15)

By the end of 1980, arising from the very rapid developments in the television industry, most of the items of equipment in use by both Television Zambia (TVZ) and ETVS had or were becoming obsolete. Spares for equipment for black and white cameras were becoming not only very difficult to find, but also very expensive.

A decision was therefore taken to rehabilitate the studios and their equipment - replacing the Mark IVs with Mark Vs. This work was to be done in phases - involving the complete closure of one studio at a time. At the time when TVZ was producing about 65 per cent of its programmes this was a hard blow, as it became necessary for all the programmes to be crammed into one studio. ETV's telecasts had to be suspended temporarily - a painful but inevitable decision.

Closely allied to the technical problems, which certainly prevented the resumption of the ETV Service until long after the studio rehabilitation exercise in 1983, were the various breakdowns of receivers in various schools. Spares to repair these sets were often in short supply; and where they were available they were quite expensive.

In response to an appeal from the Ministry of General Education and Culture, the Finnish government supplied a quantity of spares and other equipment. The advent of Finnish aid equipment, especially the light-weight, portable cameras, the video-cassette recorders and the electronic

editing provided an understandable but essentially short-term boost to the morale and confidence of ETVS. However, the collaborative system of production whereby the ETVS provides the creative and production skills and TVZ staff provide the technical inputs inevitably leads to tensions and gives rise to feelings within ETVS that they are not fully in control of their output.

The programme output ranges from Grade I to Grade VII and represents more than 250 transmission hours (including repeats) each academic year. This is very substantial. With the exception of Social Studies which are produced for Grade V through to VII, there is no policy of concentration and the remaining programmes have random spread of subject coverage. There are no programmes produced for secondary schools. ETVS has 7 producers including the Head who also produces programmes.

The number of "primary schools which were issued with a TV receiver in 1983 was 350 out of a total of approximately 4,000" (EBS, Annual Report, 1984: p14). The number of sets which are able to receive a picture is certainly very much less than those distributed due to breakdowns, theft and non-availability of suitable antennae. The recurrent budget allocation available for production expenses, that is, paying scriptwriters, making graphics, filming, making models, hiring presenters and so on, is minimal. The amount for the year ending 1983 was only K5,100.

There is no liaison officer on the staff of ETVS with responsibility for contact with user schools in order to determine needs, assess and assist utilization or to encourage feedback and evaluation. For this reason, each producer is expected to do this for his own subject. Unfortunately, current shortages of funds for travel and subsistence almost

completely preclude the discharge of this responsibility.

Edington (1982) found that there was very little top-level support for ETVS from the Ministry of General Education and Culture. This had an inevitable and deleterious effect on morale of staff in ETVS. He arrived at the "inescapable conclusion" that ETVS was having no effect and that it should cease to operate. Edington suggests

Redeployment (of ETVS staff) into TVZ where there is an acute need for staff able to produce programmes of an educative and informational nature would seem worthy of serious consideration. (p13)

The Ministry of Education and Culture (1983) accepted many of Edington's recommendations in general and "is willing to implement them as soon as funds and other relevant materials and facilities become available". However, what the Ministry did not say was how and where it was going to get funds.

The Zambia Daily Mail (1982) argues that the suggestion to close down ETVS is counter-productive. It goes on to say

Admittedly, a lot remains to be done to improve the (ETV) service, but withdrawing it altogether is not the solution. What needs to be done is to look for ways and means of improving it so that it becomes more effective and able to reach a wider audience. The present infrastructure can still provide a good basis for an effective educational broadcasting service. (p1)

The Mail goes further to state

There is nothing wrong with the principle of teaching via radio and television and therefore to drop the idea because of problems which are not insurmountable would be taking the easy way out of it. It is defeatist. (p1)

But there is nowhere in his report where Edington doubts the value of television in education. The crux of his argument is that funds should be raised to support the ETV Service. For example, it is no good tele-casting programmes without knowing whether or not the intended audience (schools) do listen to or view the programmes. Audience figures are useful for providing a picture of the success or otherwise of schools broadcasts. They provide useful information to ETVS or ERS staff on trends - whether particular series over a number of years has gradually caught the interest of teachers. Audience figures can pick out particular successes or failures for a series as a whole. They can be useful for justifying the use of broadcasting to schools within a broadcasting organisation if the figures can demonstrate that large numbers of children are watching or listening.

However, the author agrees with the Mail's sentiment that the withdrawal of ETVS is not a good solution to the problem. If only the Ministry had not ignore^d the yearly complain^ts from the EBS management the services would not have deteriorated to the stage^{of} which they are today. Problems of EBS did not require an overseas expert to bring them out to the knowledge of the Ministry. For example, the Ministry of Education and Culture Annual Report (on EBS) for the year 1978 states that "the Department lacked funds for some of its planned programmes and could not make its tours due to lack of transport. EBS needs equipment (for studios and outside recordings) and transport to carry out evaluation tours" (p12). The 1981 Annual Report went on to say that "due to lack of spare parts TV sets in the workshop could not be repaired. The old recording machines in Studio 2 were often faulty and under constant repair" (p20). But all these appeals fell on deaf ears because of, as Edington stated, apathy from the top-level echelons of the Ministry of Education and Culture.

Audio Visual Aids Services

This unit serves as a resource centre for the audio-visual aids used by ERS and ETVS. It is located in the Educational Services Centre in Lusaka. Its main functions cover the distribution of audio-visual equipment which the Ministry of Education possesses; to provide an audio-visual library service of 16mm films of open-reel and cassette recordings, slides, filmstrips and charts to all schools in the country; and to provide a film production capacity.

Its small staff, scarce resources and wide span of activities enable it only to have a limited impact on the educational system in general and play a modest service and support role to the rest of ERS. Under a Finnish education project, the unit managed to distribute 2,000 radio-cassette recorders and 200 television receivers. Also under this scheme a Mobile Servicing Unit, with operational bases in Kitwe and in Lusaka, was provided to improve the problem of maintenance of receivers and other AV equipment in rural areas.

The role of AV in *reproducing* and distributing educational radio materials is of key importance and one which is likely to grow in size and importance. Increased access to cassette-recorders means that schools, especially the secondary ones, are more and more willing to use ERS material in cassette form. Table 4.13 shows how AV aids circulated during 1983.

The activity of the AV which gives rise to most cause for concern is that of production of films and filmstrips. Since 1983 the unit has not been able to produce any local films and filmstrips. This was as a result of numerous cumulative problems relating to spares, materials,

TABLE 4.13
at
AV Aids Circulated in 1983
X

Month	Films	Cassettes	Film Strip	Charts	Records
January	45	118	-	-	-
February	106	918	-	-	-
March	61	245	-	36	-
April	12	95	-	-	2
May	74	984	-	-	3
June	99	818	-	-	-
July	30	229	-	-	-
August	19	55	-	-	-
September	60	96	-	-	-
October	38	233	-	-	-
November	19	9	-	-	-
December	8	50	-	5	5
TOTAL	571	3,850	-	41	10

Source: MOEC, Annual Report (EBS), 1984

chemicals, lack of training and most inhibiting, lack of sound policy. The production of educational films/filmstrips is an extremely skilled and highly expensive operation. It is capital intensive (although the AVS does in fact possess much of the necessary equipment) and also requires heavy expenditure on film stock, chemicals for processing and copying prints especially when used on a limited basis. There is no case, either economic or operational, which can be made to justify any further expenditure on this sector in Zambia at the present time. This is particularly so because the Mass Media Complex which opened in September 1982 is fully equipped to undertake the complete film production process.

Correspondence Study

The National Correspondence College (NCC) at Luanshya was established in 1972 in order to provide a 'second chance' by distance education to those who had either failed to obtain entry to secondary school following Grade VII or who wished to obtain Junior Secondary Certificate or OCE 'O' level qualifications. The College provides these courses for Supervised Study Groups and for directly-enrolled students. In addition to the correspondence self-study lessons, the NCC also makes considerable use of radio in support of its work. Relevant programme material is broadcast for 8½ hours each week including repeats. Some of this material consists of programmes originated and broadcast by KBS for schools, but a significant proportion is produced especially for the National Correspondence College.

Because this use of radio combined with printed course material is the major one of this kind in Zambia and because such combinations have been

shown to be extremely effective when used in some countries (e.g. Malawi and Kenya) much greater priorities should be given to the NCC in terms of resources, both financial and numbers of personnel (Edington, 1982).

The Department of Correspondence Studies of the Centre for Continuing Education at UNZA provides degree programmes for external students using internal staff and offering full degrees. Private correspondence colleges are mainly run by foreign based companies but must be registered with the Ministry. Various courses are offered but particularly those which lead to foreign awards. It is through these colleges that students are able to sit for OCE 'A' level examinations set by the University of London.

ZAMBIA: NEEDS

Kaufman (1982) affirms that "the identification of needs is a discrepancy analysis that identifies the two polar positions of:

Where are we now?

Where are we to be?

(p28)

Musokotwane (1984) has already identified these:

1. Trained personnel, including teachers at all levels;
2. Mathematical skills for technical careers;
3. Vocational and occupational skills for persons in adult education.
4. Management skills for skills for positions in industry.

(p9)

The identification of needs seem justified on two grounds. First, because this process is crucial to planning before knowing what to plan for.

Second, because a volume of literature in the 1970s demonstrated the interrelation between economic development and education (Vaisey, 1972; Harbison and Myers, 1974). Moreover, an analysis of needs helps to clarify curriculum needs and lay the foundations of the quality of education to be provided. Third, because it ensures that plans are not formulated in a vacuum. These factors help in the determination of quantitative objectives that are required in the system. This approach as Lewis (1980) has shown, would generate the requirements for secondary education, which in turn supports the training of middle management skills in addition to the preparation of college and university-bound students. Secondary education requirements in turn generate requirements for primary education and thus influence the educational objectives for the whole country. Efficacious though this method is, it does not account for changing technology which may demand new skills; but as Carpenter et al. (1981) has indicated in the case of Colombia, a developing country, this method "probably offers the most realistic and workable means of quantifying objectives for the educational system". (p6).

The present needs analysis has two objectives:

- (1) to uncover major defects in the educational system of Zambia, and
- (2) to identify ways for meeting the demand for education at primary and secondary levels.

This analysis must be translated into requirements for resources and facilities for technology if these are found to be necessary. Finally, the alternative for reaching goals will be examined to see those which would best meet the objectives of the system within the context of Zambia's available resources.

Defects within Zambia's
Educational System

According to MOEC, 1984, enrolments in all schools increased during the period (1964-1984). There was a steady growth in the average size of classes, from 39.9 at the primary level in 1978 to 42.6 in 1984, and from 39.4 to 43.3 at the secondary level. There is, unfortunately, no way of determining how much additional enrolment would have taken place if teachers and facilities had been at the disposal of all children during primary school studies. Lack of facilities and teachers which had been so noticeable during the period prior to 1978 was to a certain extent ameliorated, though not completely, and this is an on-going problem. Indeed, the position with regard to teachers is still far from being satisfactory. Kelly et al. (1986) found that more than ever before it is essential that schools have teachers competent to deal with the requirements of the newly-orientated curriculum of a higher level than hitherto; yet the statistics in 1984 show that of a total school teaching force of 27,694 only 24,210 represented trained teachers. This situation was not improved by administrative problems.

These difficulties were incurred paradoxically by the very attempt to improve the primary school system. The increase in schools caused a vast load to be placed on education officers, allowing them to pay less attention to schools and consequently less supervision. This was critical for the new curriculum necessitated feedback and observation. In addition, some delays in the appointment of teachers and headmasters contributed to a general weakness in the morale. (Ministry of Education, 1976: p18).

Educational materials also created problems. Books were inadequate for the growing numbers of children; their relevance to the subject matter

was questionable and careless attention to logistics interfered with the disposition of books for children. (Ministry of Education, 1976: p18).

The school building programme has done much to increase space for primary schools, but the construction of buildings - in many cases of the hall-type variety with classes and teachers in one long row - hampers individual class participation. Besides, the building format makes it difficult for visual and aural aids to be used in one class without disturbing the other classes.

The net consequence of these defects and limitations is a system which is unable to bring about the best in teacher and pupil, placing some hardship on both and a certain frustration among administrators in general (UNDP, 1986).

The growth in enrolment figures in Zambia in secondary education can be seen in terms of the special emphasis on expansion at that level. By 1984 some 125,811 students were receiving some form of secondary education. Despite this, certain deficiencies in the system still remain.

1. Wastage rate due to drop-outs is fairly high.
2. The literary and bookish nature of the curriculum was unsuitable and inadequate.
3. Equipment and books are scarce.
4. A substantial number of the teachers are unqualified and untrained, causing both content and methodology to suffer.

(Ministry of Education, 1978: p12)

These deficiencies still persist and though much effort is underway to change them, it will be some time before conspicuous change will be seen

from these efforts. One such is in the area of teacher education.

Lack of Qualified Teachers

The most critical deficiency is the lack of qualified teachers in both primary and secondary schools. This is particularly so in the fields of Mathematics and Sciences. Although the urban schools are frequently overstaffed in some subjects, "this oversupply is occurring mostly at the level of non-graduate qualified teachers" (Kelly et al., 1986: p377). The expansion of primary and secondary schools took place without the attendant growth in the number of teachers (in some subjects) causing an aggravated situation. In addition teachers who were qualified tended to use the profession as a springboard for other jobs - in particular, private and parastatal companies - causing a depletion in already thin ranks. Also, the reluctance of many teachers to leave the urban areas occasioned a drop in educational standards in rural areas. The net result of this is that a heavy burden is placed on professional teachers who must make good both the deficiencies caused by teacher drop-out and increased student population (UNDP, 1986).

Inappropriate Curriculum

Another problem is the curriculum of studies which is incongruent for the needs of Zambia. Prior to 1970, the curriculum was still slanted to academic subjects, though it was recognized that a broader-based one was more applicable to the concerns of a developing country. The result was that there were inadequate personnel to see to the developing needs of the country, especially in the fields of agriculture, engineering, medicine and vocational education. With the establishment of the

Curriculum Development Centre, guidelines for restructuring education and rectifying the imbalance were begun.

The restructuring of the curriculum was but one of the improvements of the education system in Zambia. Improvements in education may be either qualitative or quantitative (UNESCO, 1970). The former aims at improving the quality of education, the latter to increase the number of students available for education.

Qualitative Improvements

Qualitative improvements to the educational system envisages

- (1) the improvement of the quality of teachers at both the primary and the secondary school levels by an increase in qualified teachers,
- (2) increase in the number of school buildings and facilities, and
- (3) restructuring of curriculum to the needs of Zambian society,
- (4) strengthening of the teaching of mathematics and science at all levels, through the upgrading of teachers, the supply of books and the provision of necessary equipment, and
- (5) the involvement of the community in all aspects of the school-life - including its actual teaching activities.

Quantitative Improvements

Quantitative improvements are concerned with meeting the demand for future enrolments in both primary and secondary school systems. On the basis of current enrolment trends in primary education, it is hypothesized

that 2.57 million of primary school children will be enrolled by the year 2000 (Kelly et al., 1986).

Secondary school education enrolments cannot be accurately forecast for two reasons. First, expansion at this level is influenced by job opportunities, and the growth of the Zambian economy is beyond the considerations of this study. Second, because of the expansion in facilities and school population, predictions can be misleading. However, based on the current enrolment figures, (Kelly et al., 1986) suggests that

The number of junior secondary school-leavers in 2000 will be 75,720 of whom approximately 18,000 will be able to join the secondary school component of second stage education. There will be approximately 18,000 senior secondary school-leavers in 2000 as compared with slightly over 13,000 at present. (p583)

STRATEGIES FOR IMPROVING EDUCATION IN PRIMARY AND SECONDARY SCHOOLS

Strategy 1: Conventional Improvements

One time-honoured way of inducing greater performance and encouraging persons to enter the teaching profession is to raise the salary scales (Beeby, 1968). This depends on the growth of the national income and what the country can afford. Even so, it is unlikely that the teacher shortage will benefit from this largess by the turn of the century.

Building larger schools is also a possibility. Larger schools can be less costly per student, for support facilities can all be housed under one roof and, "more importantly, larger schools can provide higher-quality instruction as well as more benefits that are not central to the process of education". (Carpenter, 1981: p21).

The teacher training programme was designed to meet and supply the crucial needs of both primary and secondary schools. In the event of inadequate financial resources, then fewer teachers might be trained with all the consequences which that entails. A successful teacher-training programme is related to adequate finances, long-term commitment, and adequate personnel (Ministry of Education, 1981). Uncertainty in any one of the three can prejudice the viability of the programme.

Strategy 2: More Government Schools

This is a variation of the first. Poor attendance levels in rural districts tend to reflect the inaccessibility of schools and transport problems. This situation is particularly critical in districts as isolated as Lukulu, Kalabo, Chama and Kabompo which are 700 kilometres from the capital. Some school children are forced to live away from home, residing with relatives or close friends in order to be close to school. The government does not have funds to build hostels for these children. The building of more government schools is related not only to the needs of students particularly in rural areas, but also the availability of teachers and their accommodation. A shortage of resources has curtailed expansion in this area.

Strategy 3: Curriculum Reform

Changes in the basic curriculum attendant on national goals and specific objectives is under way (UNDP, 1986). This process is continuing in addition to others which include:

- (a) the production of supplementary reading material,

- (b) the production of relevant supplementary curriculum materials in various subject-areas, particularly in Mathematics, Social Studies, English and vernacular languages.
- (c) the provision of opportunities to identify and use teaching materials relevant to the various age groups and subject fields.

(Ministry of Education, 1981: p25 and 26)

Curriculum reform is an on-going concern aimed at bringing about a closer relationship between national and educational goals through a closer attention to needs and by changing the psychological orientation of students.

Strategy 4: Use of Educational Radio and Television

This involves using radio and television to aid in the provision of qualified instruction. Educational radio and television have been in operation on a small scale since 1965 as a supplement to textbooks in the formal education system in Zambia, as discussed earlier in this study. In this way these media have been supportive (in a small way) of curriculum development with the education system of Zambia.

These services can be upgraded and expanded. Both of these media already have a core of skilled producers and broadcasters who have been trained either at the British Broadcasting Corporation (BBC); Centre for Educational Development Overseas (CEDO), or locally through the Friedrich Naumann Foundation of the Federal Republic of Germany. Radio, for example, has indeed a tradition of long standing and has been one of the main communications media in the country. There is also a core of teachers who have had some experience in broadcasting. Consequently

there are increased chances of a self-sustaining operation whose costs will not be prohibitive.

Expansion of radio service in Zambia does not involve (a) any dramatic cost increases, (b) the addition of sophisticated machinery (as would be the case for TV), (c) difficulty in maintenance. It does, however, involve an increase in trained skills which should not be difficult to obtain, especially as the University of Zambia now trains students in higher mechanical engineering. These could be used for maintaining studio machines.

Factors Affecting Choice of Strategy

Four strategies have been considered: (1) conventional improvements to the existing system, (2) more public schools, (3) curriculum reform, and (4) use of educational media. Given Zambia's needs, which strategy will best improve the education system in the country? Which strategy will best help implement the necessary changes in the system? Will the strategy to be implemented comprise the core of the education system, or will it be supplementary to it?

The answers are intimately tied to the educational job that needs to be done. Zambia's needs are for trained personnel, including teachers at all levels; mathematical skills for technical careers; management skills for positions in industry.

According to Kelly et al. (1986) figures, there is a need for more teachers in primary and secondary schools over the next twelve years - at the rate of 700 yearly. Estimates, however, show that between now

and the year 2000 there will be a shortage of teachers within the formal education system and, consequently, a great burden will be placed on the existing system.

Zambia's pupil population is fairly high and there is an immediate need to harness all resources at the country's disposal for educational purposes. The number of both primary and secondary school children to be served is large. There is, therefore, need to engage communication media in education such as television and radio. Television and radio have been used for direct teaching in several developing countries. The media of television and radio do exist in Zambia and there are valid justifications for using them for educational or development purposes. The first argument for their use is that both media can improve the quality of existing educational provision. The focus in this approach is on the use of television and radio for improvement within the formal education system, the target groups being those already in full-time education at school or college. The second perspective justifies the use of television and radio by arguing that it can equalize or spread more widely educational opportunities - what McAnany and May (1979) have called "the democratization of educational opportunities". The focus here is on providing educational opportunities beyond the formal school and college system, through part-time, off-campus education for those outside the normal age range or geographical reach of the basic school or college system.

However, although some researchers have accepted the role of television as an effective tool for education, they also argue that it is capital-intensive and therefore may not be cost-effective. Radio, on the other hand, is attractive for the following reasons: (1) radio can cover a

wide area and this is welcome in view of the rural district schools, (2) the low cost is a likely incentive (radio operates on low-powered, low-cost batteries), supplementary rather than core programmes makes it an attractive option for early implementation and expansion, programmes can be made locally because of local expertise, thus minimizing the cost.

Nature of the audience. What is the nature of the audience? Clearly, the audience will be primary and secondary school pupils based in schools. The education system in Zambia cannot afford individualized instruction. Radio and television programmed texts are suitable for both home and school use. Radio is suitable as an all-round proposition because it can cover a wide area and because of the need to extend formal learning beyond the primary and secondary school system.

Related experiences. Related though not similar experiences of success of one alternative is likely to favour its choice. Radio has been successfully used in Australia to extend secondary education (Kinane, 1986); and indeed, research seems to suggest that no particular medium is limited for any particular level of education. For example, radio is used in Mexico to expand education in primary and secondary schools. Sweden uses both radio and television to reach adults. Kenya has had a commendable radio correspondence school for secondary education and for higher education (MacKenzie and Postgate, 1976).

SUMMARY

The general trends of education in Zambia were considered against the background of social, demographic, economic and historical advance. Educational policy from colonial times to the present day was examined

and social, environmental factors which affected and affect educational policy were examined.

The three-tier system of education in Zambia - primary, secondary, and higher education - was described, and particular attention was paid to curriculum development, teacher education, technical and vocational education, and the present educational broadcasting services.

The needs of the present system were documented and alternative possibilities which might be addressed to those needs were explored. The main problems that confront educational authorities were listed and discussed and prospects for solving them considered. One prospect which emerged was the application and expansion of educational media to educational problems. Evidence was provided of countries which have successfully applied educational media to their educational problems. The next chapter is concerned with management of educational broadcasting.

CHAPTER V

MANAGEMENT OF EDUCATIONAL BROADCASTING

Objectives

An educational broadcasting department is an organization. An organization is a number of people working or acting together to accomplish certain goals which they cannot achieve separately (Sisk, 1969; p239). The organization needs a common purpose, a common goal and a common identity.

This is not simply a matter of human relations. It is impossible to plan without going through this process. Planning is required to anticipate problems and increase efficiency; to measure performance as the work proceeds towards the end result. No single sentence will suffice as a statement of goals. What kind of education? What are radio's and television's specific contributions to a curriculum development project? What are the mechanisms for integrating the broadcast element with other elements in the educational strategy? A statement of goals must clearly bear in mind all these questions, and many more. The statement of goals should extend to a formulation of programme areas; quantitative targets should be set, in terms of the number of programmes and support packages. And some feedback mechanism will need to be set up at the very beginning to ensure that the statement of goals really does meet the defined need, that they really are achievable and that they really are met.

Functions

(a) Identify customer requirements

Assuming that national or local needs are clear there will have to be some way of setting suitable objectives for the educational broadcasting system. Should these come as an "input" from outside the system, or should people within the system set their own objectives? From an organizational point of view there is a major problem in that educational broadcasting often implies the existence of two separate systems, the educational system and the broadcasting system. Their objectives may not be compatible and there will have to be some means of co-ordination, in the form of a joint council or committee. This committee (ideally of not more than eight or ten people) will need to call on the views

of advisers, teachers, parents, pupils, producers and administrators. Its decisions have then to be communicated to those responsible for putting the objectives into programme terms.

(b) Assess and allocate resources

Having agreed on objectives and a programme schedule devised, it will be essential to assess what resources of time, personnel, money, space, equipment and services can be allocated to each programme series. To do this it will probably be necessary to consult engineers, accountants and designers, though ultimately decisions are likely to be made with the system's total capacity and existing commitments in mind, so an overall view will be required. A planning committee consisting of heads of departments might negotiate for resources. Whether decisions are made autocratically or whether consultation takes place will depend on the style of the organization, but consultation and participation in decision-making are more likely to encourage positive and co-operative attitudes. Programming based on educational objectives decided at the highest level may ultimately affect drivers, typists, cleaners and maintenance men and women. The organizational structure should ensure that they, too, are working together for the common purpose.

(c) Plan and produce programmes

When each producer becomes familiar with his or her task and resources, including the timescale to which he or she is committed, the next step is to plan the content, level, sequencing and method for his or her programmes. If he or she is an educationist he or she may do much of the research and writing, but it is more likely that other people may

have to be consulted for their expertise in particular fields, while the producer concentrates on his or her own expertise of managing information in media terms. The external "inputs" of expertise could come from a number of sources: Ministry of Education officials, teachers, researchers, doctors, sociologists and so on.

If a contractual arrangement is necessary, legal, personnel and financial services will be involved and unless they are geared to the same time-scale as the producer, they could bring the system to a halt. Organization here means keeping the sub-systems in step with each other or, in more human terms, making sure that everyone understands the significance of their own work and its interaction with their colleagues' functions.

(d) Transmission of programme material

When it comes to transmission facilities the organizational structure of educational broadcasting is often complex. The educational authority may have its own studios and transmitter, or it may depend on facilities provided by a national or commercial broadcasting authority, which in turn may have to work through the national telecommunications network. In other words the transmission process may belong to a sub-system of the educational system or of the broadcasting system, or it may lie outside the educational broadcasting system altogether. If it is not an integral process, there will have to be some organizational means of ensuring co-ordination.

(e) Evaluation and improvement of programmes

The same need for co-ordination applies to other processes in the total educational broadcasting cycle, such as publicity, reception and utilization. Who, for example, is responsible for training teachers in the use of school broadcasts? In a dual system, the danger is that neither the educationists nor the broadcasters will take an active role. Who pays for the maintenance and repair of school radio and television receivers? Who devises the evaluation process? How is feedback channelled in the system? There are many such questions that demand detailed attention, but the main point of these examples is that if the entire educational broadcasting process is seen in dynamic systems terms all the interactive elements become apparent and can be accounted for in terms of organizational structure.

If the purpose of an educational broadcasting system is to solve educational problems by producing and transmitting effective programmes, then all the sub-systems involved must serve that primary objective. Where the system boundary is drawn has less importance than the fact that the entire process of producing and transmitting programmes is conceived as a system, and that all the available resources - finance, manpower, equipment, space and expertise - are geared to the achievement of objectives.

However, where essential functions are performed by more than one organization, as in the case of educational broadcasting systems which depend on both the Ministry of Education (for content) and the Ministry of Information and Broadcasting (for facilities), co-ordination must be built in at every point of contact. If satisfactory co-ordination between separate bodies cannot be achieved, then obviously it would be better

to re-organize all the processes into a single integrated system with its own facilities.

Some Concepts in Educational Broadcasting Organization

1. Specialization. Any organization exists only to achieve objectives that could not otherwise be achieved. Any element in the organizational structure of educational broadcasting that does not contribute to the production, distribution and reception of effective programmes is useless. In educational broadcasting there are many kinds of specialist expertise - education, production, engineering and management. On the technical side, specialization is inevitable, since engineers are highly trained in skills and knowledge which cannot be acquired by most producers and managers. However, while professionalism is to be encouraged, Quaal and Brown (1976) warn that specialization can lead to isolationism and inevitable failures in communication. The most effective managers and producers understand the significance of the engineer's work, while good engineers appreciate managers' problems. This leads to mutual respect. Over-specialization can mean inefficiency or boredom. The vision-mixer who never works on anything but current affairs programmes, or the sound engineer who is permanently assigned to tape operation, may become experts in their narrow fields, but learn little and cannot identify with the organization's overall aims.

2. Co-ordination. Co-ordination means ensuring common objectives, providing the right resources at the right time and gearing sub-systems so that their activities mesh and do not cause inefficient friction or delay. In many respects co-ordination is synonymous with communication

- making sure, for example, that script writers, graphics artists and engineers know what the aims of a programme are, what time is available and what facilities are required. For some purposes co-ordination will have to be formally structured by the creation of committees, such as the Joint Education and Broadcasting Council, or by holding special meetings, but "it is often most effectively achieved by direct, 'horizontal' communication between people in different departments" (Dale, 1975: p164).

3. Authority, responsibility and delegation. Authority implies the right to make decisions on the use of resources, including finance, equipment and the abilities of personnel. This right is, ideally, commensurate with the responsibility attached to the post. So, in an educational broadcasting organization, the Head of Finance should have control of all expenditure, the senior transmission engineer should control the storage tapes and the maintenance transmitters, and the cleaner responsible for the first floor should hold the key to the broom cupboard of that particular floor. Ideally, again, some authority could be delegated, and the producer of a history series should be able to control his own budget, and a technician able to remove equipment from service on his own judgement. In practice, those responsible often fail to delegate authority because they are ultimately responsible for the mistakes committed by others.

The main principle should be that a job should be done by the person (or department in some cases) best able to do it, and that, subject to this, he or she should delegate as much of the task as possible to others. In this way, all those working within an organization are involved

in the overall work-flow and are, in theory, stimulated by working to the best of their capabilities.

4. Span of control and chain of command. Span of control refers to horizontal spread of authority (Simon, 1967). Dale (1975) says chain of command is the number of hierarchical levels in an organization which, in turn, is a measure of the length of that organization's vertical lines of communication.

No manager or supervisor should have more than six subordinates whose work is interrelated. General Sir Ian Hamilton, who commanded the British forces in the Battle of Gallipoli in World War I observed, "The average human brain finds its effective scope in handling three to six other brains" (Arnold, 1921: p299). In the same manner a manager who has more than four or five people directly responsible to him may find the number of relationships and division of his attention leave him insufficient time for planning and control. On the other hand, a wide span of control makes it impossible for a manager to interfere directly with matters which have been properly delegated, and encourages concentration on the degree of specialization and supervision involved. For example, the Head of Educational Broadcasting should not be expected to co-ordinate the work of all the producers in his department, especially as their activities involve subject specialization. He will have perhaps four senior producers covering Languages, Science, Mathematics and Social Studies. On the other hand, the manager controlling facilities may co-ordinate the work of many sub-managers including those responsible for cleaning, maintenance, transport, scheduling and stationery.

A short chain of command is usually reckoned to be a good thing. There should not be too many steps of authority between controlling managers and those whose work is controlled, as communication then becomes ineffective. If there is only a chief technician between a cameraman and the Head of Engineering, negotiation over policies or grievances is easier and the cameraman can be sure his contribution to the organization will not go unrecognized.

5. Divisionalization. The educational broadcasting department of the parent organization may be given division status. That is to say, the Head of ETV or Educational Radio is given a budget and complete authority to use it as he sees fit without reference to higher authority. This is, on the surface, an efficient arrangement, but it may not be entirely advantageous if the educational service is still dependent on the parent organization for major facilities such as studios, especially if these facilities have to be paid for. Most organizations work best if they have comprehensive control of all the resources and sub-systems required to achieve their objectives and if facilities are shared the degree of control will have to be negotiated.

6. Personnel. The personnel needs vary with the size of the educational system or establishment, the objectives, and the financing. Mentello and Wimberly (1975) *divide* personnel into three categories. These are:

- (a) Managers who might be at city or rural level and are concerned with decision-making and responsible for planning. Their function is to decide what is to be done. This is planning and working out methods of meeting the goals and objectives of the organization.

- (b) Producers are personnel responsible for curriculum, the production of programmes and engineers and maintenance personnel.
- (c) Teachers and their aides who conduct and support learners in the classroom.

Recruitment of the right kind of applicants depends on their availability, on pay and career prospects, and on the competition from other employers. In general educational broadcasting may be less attractive than general broadcasting to ambitious candidates drawn by the glamour of the media, but more attractive than teaching or educational administration to well-qualified professionals. It tends to attract highly motivated people in general, but pay may not compare too favourably with other occupations, particularly for technicians and designers. There may be cause for resentment if educational broadcasting poaches teachers from understaffed schools or colleges, and there may be a need to negotiate a job-rotation scheme with the Ministry of Education or other relevant bodies. It takes a long time to train a producer, however, and the value of employees in educational broadcasting increases with the length of time they stay in employment, so it will be better to aim at a permanent career service. If specialists are to have any chance of promotion, it ought to be possible for them to share a career structure with those in the national or commercial broadcasting services. Secondment from other ministries or organisations can cause problems if people come in with better pay or privileges than the existing staff, or have to be moved out again as soon as they are promoted. Excessive reliance on freelance personnel will also cause difficulties, not only in terms of their quality or commitment to educational aims, but also because it leaves gaps in the overall structure which prevent steady growth and it deprives permanent staff of valuable experience. In the formative

early years of ^{an} educational broadcasting organization, flexibility is as important as expertise and the most valuable qualities ^{of} enthusiasm, imagination, and intelligence with a high degree of adaptability.

In educational broadcasting, as in many other organizations, it is essential when advertising a post to say why it exists; what the purpose of the job is; what its responsibilities are and its level of accountability in terms of money, people or equipment; what the appointed person will actually be doing and what the criteria of performance will be. An employee will have a real grievance if the job description is quite inaccurate, unless it is made clear that he or she may be asked to adapt himself or herself to unforeseen circumstances.

In addition, the prospective candidate will want to know the minimum educational and professional qualifications for the job; experience or special abilities such as languages which may be required, and any special evidence of achievement or ability he may be asked to produce. Finally, the details must include the salary range of the post, any special working conditions such as extra long hours or travel, and the likely career prospects. A technician may want to know what equipment he will be asked to operate; a script writer or researcher may want to know if he can work at home, and so on. The perfect advertisement would produce only one candidate - the ideal person for the job.

7. Training and staff development. Training may consist of formal sessions on or off the job, or informal activities woven into the organization's daily work. Training is also an essential part of every manager's responsibility for personnel matters, and should be seen as a continuous process.

Newly appointed staff will need induction courses to help them to get to know the overall workings and philosophy of the organization. Perhaps courses could include a leaflet explaining who's who and what's what, and short attachments to the various departments to get to know the people, the resources and the procedures. This will have a pay-off in improved communications at a later stage when studio managers can talk to typists and technicians to designers, with some degree of mutual comprehension.

Engineers and technicians will obviously need formal training when new equipment is introduced, for example, but much of the time the best training for everybody may simply be regular but informal meetings to exchange ideas or analyse programmes. Many 'training' benefits come from good communication, through the circulation of information and professional journals, the availability of a library and resources centre. Programme producers, too, need some kind of training where they can familiarize themselves with the new techniques of programme production.

Managers sometimes question the economics of training. It is true that inappropriate training is worse than none at all, but a producer or technician may one day be running his or her unit, or the whole educational broadcasting organization, so it is better to give these people good training. Besides the obvious psychological advantages of a sense of identity, recognition and status which training can give, there are more reasons for ensuring an adequate training programme for example, efficiency. An educational broadcasting organization may lose qualified people if they feel that their careers cannot be advanced within the organization, and unqualified people will not join an organization which is not prepared to train them.

Staff development leads to expectations of promotion, but in most educational broadcasting organizations in the developing countries, the prospects are fairly limited and it is best to be honest with staff who should be encouraged to concentrate on the job in hand. What is important, however, is that everybody should have an equal opportunity.

The problems of educational broadcasting organization, with regard to working conditions of service, are not so different from other organizations. The only major difference is the need for late night working which may be difficult for some people, especially if the studios are a long way from town and no transport is provided. Air conditioning, office space, telephones and typing services are frequent causes of complaint.

8. Equipment. Three main factors influence the choice of equipment in the design of the educational technology system. These are:

- (a) Maintenance
- (b) Utilization
- (c) Flexibility

Depending on what alternative is finally selected, each of these might assume a different degree of importance. For example, maintenance would not be as important in a nationwide system of programmed instruction as it would be in television.

(a) Maintenance. It is a truism that without proper maintenance services, equipment suffers and the overall system can be seriously handicapped. This problem must be measured not only in terms of equipment wastage but also wastage in learning opportunities and teaching. Maintenance services generally comprise check-up and both basic and extensive repairs.

In Zambia, maintenance services assume great importance, not only because of the distance from major manufacturers of heavy equipment, but also because of climatic conditions which impose certain constraints - excessive dust and sand getting into the machines and other equipment can impair functioning. Also, the problem of maintaining repair services in a vast country with poor transport facilities is well understood.

Brown and Norberg (1985) pose several pertinent questions:

1. What are the pros and cons of operating an institutional equipment and repair service as compared with contracting for such services through outside commercial agencies?
2. What is the optimum amount of decentralization for equipment maintenance and repair services? Which services should be provided at the school level? Which should not be provided at all? By whom should these services be provided at each of these levels?
3. What general administrative provisions may be put into effect to ensure systematic and adequate preventative maintenance of instructional equipment? (p113)

The distance which separates Zambia from manufacturers of heavy equipment makes it necessary to provide local maintenance and repair service with most up-to-date machinery and also competent technicians. In fact, the government places great importance on the policy of self-reliance.

Decentralisation of maintenance and repair services seems to be the most efficient method of designing a logistic support system. This is so for a number of reasons:

1. The wide expanse of Zambia places too many additional burdens on a centralized service.
2. Some schools in the remotest parts of the country are inaccessible to centralized depots but easier to reach from a depot within the schools' district headquarters.

A system of mobile repair vans would expedite communication with each district.

(b) Utilization. Effective utilization is a composite of understanding the media, skill, and motivation. Knowledge of media, their strength and limitations, and how best they can be arranged for maximum results are essential elements in the utilization process. Brown and Norberg (1985) identify five elements required for utilization of media:

1. Understanding of the behavioural process involved in communication and learning.
2. Knowledge of media characteristics.
3. Ability to evaluate and conduct or participate in experimental work.
4. Familiarity with appropriate materials and their sources.
5. Command of necessary mechanical skills.

(p162)

For each of these five elements, there is need for help and support for the teacher, and these can only take place within the context of proper utilization facilities. Knowledge of media utilization implies not only the scientific knowledge of how they operate but also their potentiality. It also implies the social and psychological factors which influence the impact of the media. In Zambia,

radio is the most pervasive means of communication, but there has been no exhaustive study about its effects on the audience or, indeed, any study of critical dimensions even though schools broadcasting has been in operation for 20 years. In an expanding media situation, the teacher should have the opportunity to try out new methods and evaluate new practices using media. Research in this field should also encompass the situation in which the media can be used for maximum effectiveness. The results of such research can then be the reservoir from which policy is formed.

(c) Flexibility. Educational media is not a static process. It is a constantly changing field in which learning, resources, and methods are continually being revised as a result of research evidence (Cook, 1981). In fact, the field of educational media is challenging some of the shibboleths of our time (Dieuzeide, 1981). Hence developing countries in general, and Zambia in particular, must guard against being locked into an inflexible system. As a result of evaluation of the system, changes might be required and new initiatives taken. Flexibility then will best be enhanced by observation of the following points:

1. Provision for large as well as small group instruction and individual study.
2. Flexibility in choice of equipment; equipment which can serve many purposes is to be preferred to that which has limited possibilities.

9. Programme Materials. Materials for a new education system generate the need for production services. Textbooks relevant to a curricular change have to be printed and programmes and other materials developed. Because of this, local production is an essential ingredient for four reasons:

1. Locally produced materials cost less than imported materials.
2. Local production supports local industry, contributing to pride and local industry.
3. Locally produced materials have the advantage over the imports because they can more often fit the demands of the local situation.
4. Locally produced materials tend to be adaptable to local needs, both in relation to the environment and to the people - a not unimportant consideration acknowledged by UNESCO (1985). "The biggest obstacle in the way of educational development today, even under serious financial difficulties, is socio-psychological in character". (p141).

But because it is admittedly advantageous to initiate and encourage local production where possible, it does not imply that it should be gone into for its own sake. Several factors for appraising the suitability of local products might be applied. These are

1. Need
2. Suitability of product for purpose in hand
3. Feasibility of product
4. Practicality of product.

These four factors refer to the more fundamental questions such as: What materials should be prepared? Who should prepare materials. and Where are these materials to be prepared? Decisions of this nature are difficult to determine and indeed vary with the situation and "educational media can help to reintroduce a certain amount of flexibility into the

functioning of a school system which has been in a rut for decades" (Dieuzeide, 1981: p34).

A materials production unit could be established to fulfil the need for materials. Such a unit would be responsible for production, media design and provide the services of a consultant. It should be emphasized that the integration of responsibilities is desirable. In fact, the integration of materials, teacher, and learner is the most efficacious way of utilizing media resources and obtaining the best value from each as the example of El Salvador suggests (McAnany and May, 1979). The production unit must be considered as part of a total environment whose aims are consistent with that environment. Indeed, programme materials and their production must be a part of a strategy for "coherence, equilibrium and continuity - the very basis of sound strategy" (UNESCO, 1980: p141): such a strategy must include extensive information and consultation. More specifically, consultation services in production will advise on:

1. Objectives to be achieved by means of products.
2. Choice of appropriate channels or media to produce them.
3. Assistance to the development and production of products.
4. Dissemination of products.
5. Periodic checks and monitoring.

The emphasis on programme materials should be on flexibility and versatility. Guerin (1983) counsels:

With a versatile production capability, the materials centre becomes a complete instrument for the facilitation of communication because it can supply not only a broad selection of ready-made materials of all kinds but also can create new materials carefully designed to help a specific group of students to grasp a given concept or idea. (p183)

At present, there is an attempt in Zambia to try and "enable teachers to develop a variety of productive activities in the schools, in order to broaden the educational experience of the students and bring benefits to the school through self-reliant efforts" (NGEC and MHE, 1985: p5). This is hoped to be achieved through the school-based teachers' centres which have already been widely established throughout the country. These 'resource centres' are not operating as well as they should because some of the teachers are untrained. Kelly et al. (1986) summarize the situation thus:

Available written and verbal reports on the training of resource personnel indicate that there are serious gaps in teachers' knowledge and that not all existing resource teachers are competent enough to advise their colleagues on how they can upgrade their knowledge and skills. Consequently, resource teachers' workshops funded by UNICEF have been running at a low academic and professional level. (p482)

The development and training of resources teachers, and the creation of well-run school-based teachers' centres are precisely the consideration of the 1985 Report by the two Ministries of Education. The Self-Help Action Plan for Education (SHAPE) team examined the problems encountered by teachers, lecturers and students in their efforts to establish school-based centres, practical skills programmes and productive activities at provincial, district and school levels. NGEC (1986) gives advice on the action required to be taken regarding organization, staff development and facilities at all the levels.

SUMMARY

Educational broadcasting is a complex activity involving many specialist skills and unless the processes which lead from policy to production transmission and utilization are seen as elements in an integrated system

there are bound to be organizational weaknesses.

In this chapter educational broadcasting within the context of educational planning was examined. Some factors which constitute management of educational broadcasting organizations were also discussed.

CHAPTER VI

THE PLAN

Based on the evidence of successful utilization of educational broadcasting in developing countries, the researcher believes that the problems of education in Zambia can be greatly alleviated by the expansion of educational broadcasting services. Planning for educational broadcasting is an exercise in co-operation at the National, Provincial, District and School levels, involving media professionals working with administrators, users and community members. The plan is composed of seven sections:

1. Purpose
2. Educational Broadcasting and Educational Goals
3. Zambia: Goals and Problems
4. Organization
5. Personnel
6. Educational Broadcasting Programme
7. Priorities and Further Recommendations

1. PURPOSE

The purpose of this plan is to design a framework for the development of an expanded educational broadcasting service in the formal secondary education system of Zambia. The plan will be concerned with the planning and operation of an expanded educational broadcasting system and its utilization in formal secondary education. Formal education is defined as the system comprising the three-tier education structure of Zambia: Primary, Secondary and Higher education.

2. EDUCATIONAL BROADCASTING AND EDUCATIONAL GOALS

2.1 Definition of Educational Broadcasting

Educational broadcasting as referred to in this plan exhibits the following dominant characteristics:

- (a) its programmes are arranged in series to assist cumulative learning by using radio and TV;
- (b) they are explicitly planned in consultation with external educational advisers;
- (c) they are commonly accompanied by other kinds of learning materials, such as textbooks and study guides, and
- (d) there is some attempt made to evaluate use of the broadcasts by teachers and students.

(Hawkrige and Robinson, 1982: p25)

For developed countries, educational broadcasting for adults is generally a means of making learning an individual process where a person learns at home. Developing countries will see educational broadcasting more as an opportunity to diffuse knowledge to large groups of people and to provide them with skills necessary for development.

2.2 Role in Developing Countries

Educational broadcasting has been tackling diverse problems; among them are: Curriculum reform (El Salvador); teaching methods (Niger); retraining of teachers (Kenya); enrichment purposes (Thailand); low literacy and illiteracy (Ivory Coast); and developing the core curriculum in rural areas (Mexico).

2.3 Role in Zambia

The initial foundation for educational broadcasting has already been laid; curriculum reform within the context of national objectives; retraining of teachers congruent with the national educational reform plan; and specification of behavioural objectives for learning. These three areas can form the basis for a system of expanded educational broadcasting services.

2.4 Current Status of Educational Broadcasting

In addition to curriculum reform and specification of behavioural objectives, work has been progressing on other fronts. The Education for Development plan has advocated the planning of school buildings to facilitate the utilization of the media in classrooms. The present Department of Educational Broadcasting Services has increased not only the number of programmes for schools, but has also increased programmes for adult education classes. Radio broadcasts have been part of the national tradition since World War II and the educational uses of radio since 1965. The coming of independence in 1964 increased the role of radio and its influence was extended to the remote areas of the country and more curriculum related programmes were designed. But there are constraints:

- (a) Lack of personnel, both administrative and technical.
- (b) Scarce financial resources.
- (c) Climatic conditions which create additional maintenance problems with delicate machinery.
- (d) Rising costs.
- (e) Lack of equipment and programme materials.

- (f) Poor management planning.
- (g) Lack of widespread citizen participation because of poor information diffusion.
- (h) Infrastructure inadequate to the needs of development.

3. ZAMBIA: GOALS AND PROBLEMS

At the First National Education Conference held in Lusaka in 1969, President Kaunda outlined the national, educational and humanistic goals which represent official policy.

3.1 National Goals

- (a) To make Zambia self-sufficient and self-reliant.
- (b) To stimulate productivity in those areas where it lags and promote it where it does not exist.
- (c) To develop Zambia through the formation of co-operatives.
- (d) To orient the school population to occupations relating to the three major goals of feeding, clothing and housing the nation.
- (e) To involve the school population in community schemes which identify job opportunities and job needs in the rural and urban areas.
- (f) To provide for the organization of skills which prepare young people for self-employment in accordance with their skills and interests.

3.2 Education Goals

- (a) To improve aggressively the quality of education and services.
- (b) To eliminate regional and other inequalities in educational provision.

- (c) To increase progressively Grades 8-9 places so that, in due course, every child who completes Grade 7 shall be able to enter Grade 8 and complete Grade 9.
- (d) To strengthen relations between the various levels of education.
- (e) To expand and consolidate the new system of technical education and vocational training.
- (f) To promote co-operation among the ministries so that they work in close relationship in order to develop and utilize technical skills to meet national demands.

These general educational goals indicate the areas where education might contribute to and reinforce national development. Emphasis on the increase in skills is one example; vocational and technical education is another.

3.3 Humanistic Goals

- (a) The creation of a learning environment which will develop a feeling of self-worth in the individual and promote harmonious interpersonal relationships.
- (b) The inculcation of patterns of human behaviour which support strategies determined for national development.
- (c) The provision of academic training relevant to the wide range of occupational skills necessary for the economic and social development of Zambia.

The attainment of these goals is not inconsistent with the application of the measures of educational broadcasting; indeed, the Educational Reform proposals and recommendations of the Ministry of Education (1977) specifically discuss the possible use of extensive media services in the re-organization of Schools' Broadcasting System (p60).

4. ORGANIZATION

Well-integrated, clear-cut lines of authority and proper co-ordination are needed if the plan is to be effective.

4.1 National Level

Under the present constitution, the government has charge of the direction and control of education through the Ministry of Education which is expected to provide leadership in the area of educational broadcasting as it does in all matters pertaining to education. It is recommended that the Ministry of Education should:

- (a) Plan for an effective programme of an expanded educational broadcasting system based on its resource needs and budgetary considerations.
- (b) Create some effective new lines of authority in the organisation of the administrative staff and professional staff. Two reasons are advanced for this approach: first, the volume of additional work and responsibilities as a consequence of adopting expanded educational media programmes would indicate that new posts and appointments are necessary, and second, because problems often attend the introduction of new measures which might best be tackled through specialised channels as opposed to placing additional burdens on existing ones.

At the present time the Department of Educational Broadcasting Services (EBS) is responsible for Schools' Broadcasts. There are three principal sections engaged in media production, the heads of whom are responsible to the Controller of the Department and, through him, to the Permanent Secretary. These sections are Radio, Television and Audio-Visual Materials Production. It is recommended that an additional service function be established within EBS to provide four important support

services, namely: Evaluation and Utilization, Engineering, Library, and Administration. Each of them should have a Head.

Production

Radio
Television
Audio-Visual Materials

Support Services

Evaluation and Utilization
Engineering
Library
Administration

It is also recommended that the post of Controller be renamed 'Director' and that the Deputy Director post should be created so that the Department is in conformity with other ministerial departments. The Director should report directly to the Permanent Secretary of the Ministry of Education in order to prevent administrative bottlenecks.

In Educational Broadcasting, effective utilization demands a system which, amongst other things, ensures the outward flow of information and support materials from the Department to the points of use. This liaison between the Department and the users is of very great importance. Just as important, however, is the flow of information from the users back to the Department. It is, therefore, essential that this two-way flow of information be established and maintained and that the one-way flow of the broadcasts be supported by liaison between producers and users.

4.2 Provincial (Regional) Level: Media Centre

Educational Broadcasting in a province is best organized when the administrative arrangements are placed within the portfolio of the province concerned. This ensures that resources are deployed in a way which closely relates to the goals of the province. The following recommendations are made to ensure the infrastructure necessary for effective utilization:

(a) In each province there should be appointed, at the level of regional inspector of schools, a Full-time Media Supervisor who would have overall responsibility for the utilization of educational media in his province. The duties of the Provincial Media Supervisor would include:

1. direct liaison with the Department of Educational Broadcasting Services (EBS) on matters of policy affecting the use of media in his province;
2. responsibility for co-ordinating the flow of materials, equipment and information for the whole province;
3. responsibility for liaison with teacher training colleges where appropriate;
4. direct supervision of evaluation of educational broadcasting programmes in the province.

(b) There should be established in each province a Teacher Resource and Development Centre which will act as a base for the Provincial Media Supervisor and the focal point for the storage and distribution of audio-visual aids equipment and materials. More important, it will function as a centre for training, information and production on an appropriate scale. The location of such a centre is likely to vary and there should be consultation with the Chief Education Officer in each case.

Suggested sites include attachments to the Office of the Chief Education Officer or even such institutions as Community Centres. Extra financial provision should be made for the establishment of such centres.

4.3 District Level

Each district should have a Media Specialist who will be responsible to the Provincial Media Supervisor. He, or she, should be skilled and capable of directing the activities of educational media in his/her district. The District Media Specialist will be under the administrative hierarchy of the District Education Officer, but he or she should be

able to initiate such action as he or she considers in harmony with the district situation. He or she should have responsibility for ensuring that the outward flow of timetables, teachers' guides, radio and TV sets, support materials and other information reaches all schools on schedule and that the inward flow of comments, requests, suggestions and questionnaires is channelled to the provincial office.

4.4 School Level

In each school a teacher should be appointed to have specific responsibility for the use of audio-visual media and be given the title of School Media Co-ordinator.

Arrangements should be made to ensure that there is no deterrent effect on the enthusiasm of the teachers concerned by their having to accept responsibility by signature for the items of materials and equipment supplied.

These School Media Co-ordinators should be given adequate training to enable them to undertake their duties, which will include:

1. responsibility for the care and operation of the audio-visual equipment (including radio and television sets) and materials in the school;
2. responsibility for informing his or her Provincial Media Supervisor, through the District Media Specialist, of breakdowns of equipment and storage of materials;
3. responsibility for ensuring prompt arrival and distribution to his or her colleagues of teachers' guides and other materials;
4. ensuring that copies of the timetables of the school broadcasts are received and displayed

5. ensuring that such questionnaires and requests for information related to media use sent to the school for completion by his colleagues and himself or herself are given prompt and regular attention.

Evaluation of the educational broadcasting programmes is the concern of the Headmaster, the District Media Specialist, the Provincial Media Supervisor and members of the Evaluation and Utilization Section at EBS. Each of the four will bring to the evaluation differing viewpoints. The Headmaster will want to know if the broadcast programmes have succeeded in meeting the objectives of the school and the expectation and interests of the learners. The Provincial Media Supervisor will want to know if the programmes have responded to the provincial objectives. The District Media Specialist will want to ascertain the quality of the programmes, and the extent to which they have attained their own stated objectives and his or her personal objectives.

4.5 Relationships with Other Ministries

The success of an expanded Educational Broadcasting Service in reaching and influencing the widest possible audience in formal secondary education, will depend, in large measure, on the kind and degree of co-operation that exists between the Ministry of Education and other development ministries and agencies both in Lusaka and in the field. Pooling of resources and expertise will be essential if radio and television programmes of the right quality and in the right number are to reach the schools and to be utilized effectively and if the services of EBS in production and training are to be fully and economically harnessed.

The recommendations made in the following paragraphs are designed to make the most effective use of the services that the expanded EBS can offer, provided that its human and financial resources are strengthened.

1. The constitution and the organization of the EBS should be such as to ensure representation of all users of its services at the policy level.
2. In the planning and production of programmes there should be the closest personal collaboration between the representatives of the various agencies responsible for programme content, e.g. scriptwriters and producers in the EBS.
3. Effective procedures should be established for the continuing evaluation of programmes. The research facilities of the University should contribute to this end.
4. The professional services of the Provincial Media Supervisor should be available to those using the programmes in their work in non-formal as well as in formal education.
5. There should be close co-ordination between the EBS and the various agencies in the production of media materials.
6. The existing "Memorandum of Understanding" signed by representatives of the Ministry of Education, the Posts and Telecommunications Corporation and Zambia Broadcasting Services (ZBS) which covers details of air time, costs and programme content should be retained.
7. The co-operation which exists at present at the operational, technical and training levels among EBS, ZBS and Zambia Institute of Mass Communication (ZANCOM) should be strengthened.

4.6 Relationship to Existing Organizations

The organization framework of the proposed plan does not disturb existing arrangements in the education system. The plan emphasises the smooth and orderly flow of communications at both administrative and professional levels between the Permanent Secretary (or Minister) of Education and the personnel responsible for educational broadcasting at these levels.

In this way information would be available for education policy-makers at the national level. It is not anticipated that the organizational arrangements for educational broadcasting will create any dislocation in the education system. The functions created for new personnel are related to and are part of the existing organizational arrangements.

5. PERSONNEL: POSITIONS AND JOB SPECIFICATIONS

New positions will have to be created in order to accommodate the job that needs to be done. Personnel who uphold and support the educational broadcasting plan include professional staff and support staff.

5.1 National Level

- (a) It is recommended that a Director be in overall charge of Educational Broadcasting Services. Responsible to the Director would be Heads of seven Sections suggested earlier in 4.1.
- (b) It is recommended that a Deputy Director for Educational Broadcasting Services be appointed. Responsible to him will be nine Provincial Media Supervisors, District Media Specialists, all School Media Co-ordinators, technical personnel of the Material Production Unit responsible for graphics and photography and all radio and TV producers and evaluators.
- (c) Producer. Additional radio and TV producers should be appointed in phase with the expansion of radio and TV services. In operational terms television and radio production staff will largely be interchangeable, with some of the producers on either side responsible for directing TV programmes and floor management.
- (d) Media Specialist. A Media Specialist at the national level will have academic training in media and education, and competency in at least one area of educational broadcasting. Ideally, it would be advantageous to have two areas of competency. Management and production are the recommended skills because both are in short supply. Specialists should have been exposed

to a year's training beyond the OCE 'O' level certificate in an institute of higher learning abroad.

- (e) Engineer. An engineer will have to be appointed to head the Engineering Section. He will be in charge of technicians responsible for radio, television and audio-visual maintenance. Television and radio studio maintenance will be his responsibility also. Only those who hold a BSc degree in engineering and have not less than two years' working experience in studio maintenance should be considered for the job.
- (f) Technician. A technician will be skilled in a number of fields including operation and maintenance of radio and television equipment, photographic production and graphics production. Because of limitations on numbers of personnel, selection of technicians should be with an eye to flexibility of functions. As the programmes of educational broadcasting expand, so will the need for more specialised technicians in the above-mentioned areas, and also for support staff such as TV cameramen, studio operators, vision mixer and lighting and sound technicians.
- (g) Media Aides. A Media Aide will perform tasks as designated by the media professionals. These tasks include, among others, clerical duties.

Personnel at the national level are expected to promote effective professional practices at the provincial and district levels. Likewise provinces and districts can call on national services to strengthen their development. Also, personnel at the national level are expected to exert leadership in maintaining programmes at the provincial and district levels to a high degree of efficiency and effectiveness.

5.2 Provincial (Regional) Centre

- (a) Provincial Media Supervisor. The Provincial Media Supervisor should be a graduate of educational technology, should be an

administrator, educator, and should possess the ability to apply educational media to the teaching and learning problems of the country.

- (b) Staff. Staff working under the direction of the Provincial Media Supervisor should be on the basis of function and responsibility. These functions take into account utilization, processing, purchasing and storage.

5.3 District Media Programmes

- (a) District Media Specialist. A university graduate who has had a year's training in educational media should be responsible for the administration of the district with regard to schools' broadcast programmes. He should be a media specialist who has extensive knowledge of media and education.

- (b) Staff. Staffing needs will be influenced by the number of schools, students and teachers in each district. It is, however, desirable to employ adequate technical and clerical staff to support the work of the Media Specialist wherever possible. Each district, therefore, will have the following personnel: One Media Specialist, one Maintenance Technician and two Media Aides.

5.4 Training Requirements

Both pre-service and in-service training programmes will have to be instituted in the plan for educational media. But data gathering procedures will be required to determine the amount of training needed. Data might be gathered by means of questionnaires, interviews with teachers, and other relevant sections of the Ministry of Education. The analysis of data would indicate how many teachers require in-service training. In-service training can make a stimulating contribution to better utilization of upgrading performance of teachers within the education system. Such teacher training requires:

- (a) Clear understanding of child psychology.
- (b) Knowledge of media characteristics.
- (c) Evaluation of teaching and learning processes.
- (d) Ability to operate applicable equipment and machines, such as radios and television sets.

5.5 General Recommendations on Training

(a) Each Teacher Training College in the country should establish a course in the use of media and communication and have a member of staff specifically trained and responsible for this course. Each college should be provided with the necessary equipment and materials for this training and have a close and direct link with the Head of Evaluation and Utilization at the Department of Educational Broadcasting Services as well as the Provincial Media Supervisor.

(b) For the firm establishment and extension of a national system of utilization of educational broadcasting media a series of in-service training and familiarisation courses should be initiated.

1. The Head of Evaluation and Utilization should undertake a study tour to observe the organisation and management of similar activities in countries where such systems are established.
2. The Evaluation and Utilization Section of EBS should provide familiarisation courses for:

Chief Education Officers
District Education Officers
Inspectors of Schools
Staff of Teacher Training Colleges

3. The Provincial Media Supervisors should provide familiarisation courses in the teacher resource and development centres and elsewhere for:

District Education Officers
District Inspectors of Schools
School Media Co-ordinators
Headmasters

4. All existing and proposed teacher up-grading courses should include a component concerned with utilization of educational broadcasting.

6. EDUCATIONAL BROADCASTING PROGRAMMES

6.1 Determination of Needs

There is a lack of training resources of the kind just mentioned. Traditionally, teaching has emphasized subject matter and content of various disciplines, and teachers in training have not been systematically exposed to educational media.

Fundamentally, the teacher in a formal education system needs:

- (a) To know what materials for use are available
- (b) Knowledge of how to obtain materials
- (c) Information about the quality of materials, their content, and their value
- (d) Technical support for the media he or she elects to use.

These services are quite limited and because of this the following alternative means are recommended to promote utilization of media:

- (a) Application of pre-service training in education and educational media to further enhance teaching competencies.
- (b) Provision of in-service training in short courses and seminars as stated in 5.5.
- (c) Provision of consultative services for teachers and education personnel.

6.2 Personnel Level

- (a) Persons should be employed who have diverse talents which can be utilized over more than one area, for example, personnel in research and development who can carry out evaluation.

- (b) Persons who are adaptable to new situations and who have good interpersonal relations should be selected wherever possible for positions in educational broadcasting.
- (c) Greater time should be concentrated on those teachers who are ready, willing and able to utilize media. Their example might encourage others to do likewise.
- (d) A system of reward should be established such as promotion or reduced teaching load.

6.3 Administrative Level

Each provincial media centre should be autonomous and should be in charge of its own budget; that is, it should have a free hand in the administration of finances allotted to it by the government. In this way the media centre would provide services to the province by reducing cumbersome interdepartmental administration.

7. PRIORITIES AND FURTHER RECOMMENDATIONS

7.1 Priorities

- (a) The first priority is the training of personnel to carry out some of the innovations in this plan. Energetic efforts must be made to recruit and train them.
- (b) The second priority is curriculum development, involving continued work on streamlining educational objectives and evaluation.

7.2 Further Recommendations

- (a) It is recommended that radio transmission together with printed materials be the predominant system of distribution for secondary

schools. Three reasons support this recommendation: (i) the growing demand for secondary school places cannot be satisfied by traditional means and radio is readily available; (ii) there has been a tradition of educational broadcasting and the expansion of radio based on research to meet the secondary demand would pose no difficulty; (iii) radio has been apparently successful in this respect in Mexico, Ghana, Thailand and India.

- (b) School broadcasting should be given its own transmission channel as is the case in Zimbabwe.
- (c) ETV programmes should be extended to secondary schools. This is because television, among other reasons for this recommendation, heightens the motivations of students and also makes available to the classroom teacher resources that often would otherwise lie beyond his or her reach.
- (d) In order to make the television operation more cost-effective, the emphasis at the present time should be on improvement and consolidation in the existing transmission areas rather than on extending the geographical coverage. In order for this plan to be implemented effectively, personnel must perform certain functions. These are logistics, production, design, utilization, evaluation, research and development.
- (e) Logistics involves the storage, acquisition, maintenance and management of the media. The following recommendations are made:
 - (i) National level. That processing, including ordering of all major items (such as radios and television sets) and distribution should remain the responsibility of EBS. Due to the size of the country, the distances to be covered and the nature of the terrain, production and distribution of support materials must be thoroughly planned and organized on schedule.
 - (ii) Provincial level. That the Provincial Media Supervisor of the media centre assume the responsibility of this distribution function in the interest of efficiency. Also, provincial media centres should be supported by adequate transport facilities for pick-up and delivery of materials from the districts to media centres.

- (iii) District level. The District Media Specialist should try to ensure prompt delivery and distribution of radios, TV sets and other support materials to schools within his or her administration. He or she should also encourage teachers to seek out skills which aid their ability to select and use media.
- (iv) School level. The Headmaster and his or her School Media Co-ordinator should develop a system whereby materials and other equipment would move freely around the school.
- (f) Production is concerned with the development of specialized products which carry out the specifications of the design. The following recommendations are made:
- (i) National level. It is, at present, agreed that materials in the Audio-Visual Aids Section of EBS is at an exceptionally low ebb after the fruitful activity of the first years of its existence. This is the result of numerous problems relating to equipment, spares and lack of training. The Section, therefore, should be given financial upgrading in order to enable it to provide and extend support services for broadcasts. At the request of the producers, this Section should provide charts, posters, pictures, models, film strips and 16mm film, both silent and sound, in sufficient quantities. Personnel and staff requirements will be affected by increased services.
- (ii) Provincial level. It is recommended that:
- The production services provide leadership for those working at the district level and complement their production output.
 - That communication between the provincial media centre and the district centre be encouraged in order to share production and programming ideas.
 - A still photography unit to develop and process black and white prints and slides, for radio vision programmes, be set up.
- (iii) District level. It is recommended that production be less complex and sophisticated than either at the national or provincial levels.
- (iv) School level. Production should stress only that which is peculiar to a particular school; for example, hand

drawings, charts and display kits which are pertinent and relate to groups of students.

- (g) Design is the application of theory and empirical evidence about learners, media and technique to the requirements of instruction. It is recommended that:

- (i) This function exist only at the national level because it will involve a cross-section of personnel based at EBS and the Ministry Headquarters.
- (ii) A media specialist initiate a plan design strategy, formulate objectives, establish priorities, select alternatives, evaluate materials. Duties associated with this function should be shared among the staff of EBS.
- (iii) A media specialist in charge of this function be an individual trained in education and educational methods. He or she should be flexible with regard to changes in the learning situation since a variety of personnel of diverse backgrounds will be involved - teacher, curriculum specialist, learner and administrator.

- (h) Utilization is the engagement of the media for the purpose of bringing about change in the learner.

- (i) National level. It is recommended that:

- Seminars be instituted to promote maximum interest in and concern for the behavioural processes involved in communication and learning; knowledge of media characteristics and capacities; ability to evaluate and conduct or participate in media utilization; familiarity with appropriate materials and their sources; command of necessary manipulative skills.
- The design of buildings be such that the equipment is protected from theft by means of proper secure storage facilities.
- Support materials are designed to be an integral part of the use of media. This should be emphasized in all courses of training in utilization.

- (ii) Provincial level. It is recommended that the Provincial Media Centre Supervisor of each centre should ensure that the support materials reach the District Media Specialist in time for subsequent distribution and use by schools in his or her district.

- (iii) District level. It is recommended that the District Inspector of Schools and the District Media Specialist should work hand in hand to ensure the proper use of educational media.

(iv) School level. It is recommended that:

- Sufficient electric power should be provided particularly in rural areas to cover equipment usage.
- Every school should be provided with timetables, schedules and information on using and tuning receivers.

(i) Evaluation assesses the attainment of objectives and information which can be used for making later decisions about the conduct of operations and the engagement of media instruction. The establishment and operation of effective evaluation procedures is a prime requisite of media systems which are essentially one-way carriers of information.

The basic purposes of evaluation systems are:

- (a) to provide short-term feedback to the producer to enable modifications to be made to subsequent programmes;
- (b) to provide long-term feedback about the educational effectiveness of a series of programmes in particular and the use of media in general;
- (c) to provide information about trends, attitudes, reception habits of target audience.

(i) National level. It is recommended that:

- A sustained programme of visits to schools using the broadcasts by personnel experienced in evaluation techniques or equipped with pre-prepared questions should be developed.
- Personnel responsible for the national evaluation of programmes will be the staff of the Evaluation and Utilization Section of EBS together with the Provincial Media Supervisors, the District Media Specialists and Inspectors of Schools.
- Regular checks be instituted to determine both the fidelity of listening and whether lesson plans are being carried out.

(ii) Provincial level. It is recommended that:

- The Provincial Media Supervisors together with the Regional Inspector of Schools be the pivot of evaluation procedures in the province.
- Heads of Audio-Visual Aids departments in all the provincial Teacher Training Colleges should be co-opted in the evaluation of educational media programmes.

- (iii) District level. The District Specialists and the District Inspectors of Schools should be part of the evaluation team.
- (iv) School level. It is recommended that:
 - The concerns of the school evaluation programme should be to determine: numbers within the schools affected by educational broadcasting; participation level of teachers and learners and the accomplishment of educational broadcasting in the schools.
 - All affected schools should be obliged to make returns. There should be continuing evaluation of student achievement.
- (j) Research and Development involves the testing of theory which contributes to educational broadcasting and the development of validated media products. It is recommended that at the:
 - (i) National level. A co-ordinator be appointed to administer and co-ordinate research interests between the University of Zambia, the Teachers' Colleges and the Offices of the Chief Education Officers. In addition to working in harmony with administrators in schools the co-ordinator will encourage participation at all levels in research.
 - (ii) Provincial level. It is recommended that the provincial Media Supervisor should draw up research priorities which might assist in the activities of both the provincial media centre, the districts and the schools.
 - (iii) At the District and School levels. research interests are the concern of the Provincial Media Supervisor who receives input from the District Media Specialists, and the School Media Co-ordinators.

Figure 7 shows the proposed EBS Organizational structure.

SUMMARY

This chapter has dealt with a draft of a proposed plan of expanded educational broadcasting services in the formal secondary school education system in Zambia and is composed of seven parts: purpose; educational broadcasting and educational goals; Zambia: goals and problems; organization; personnel; educational broadcasting programme; and priorities and recommendations. The next chapter will be an analysis of the data gathered in response to the proposals incorporated in this chapter.

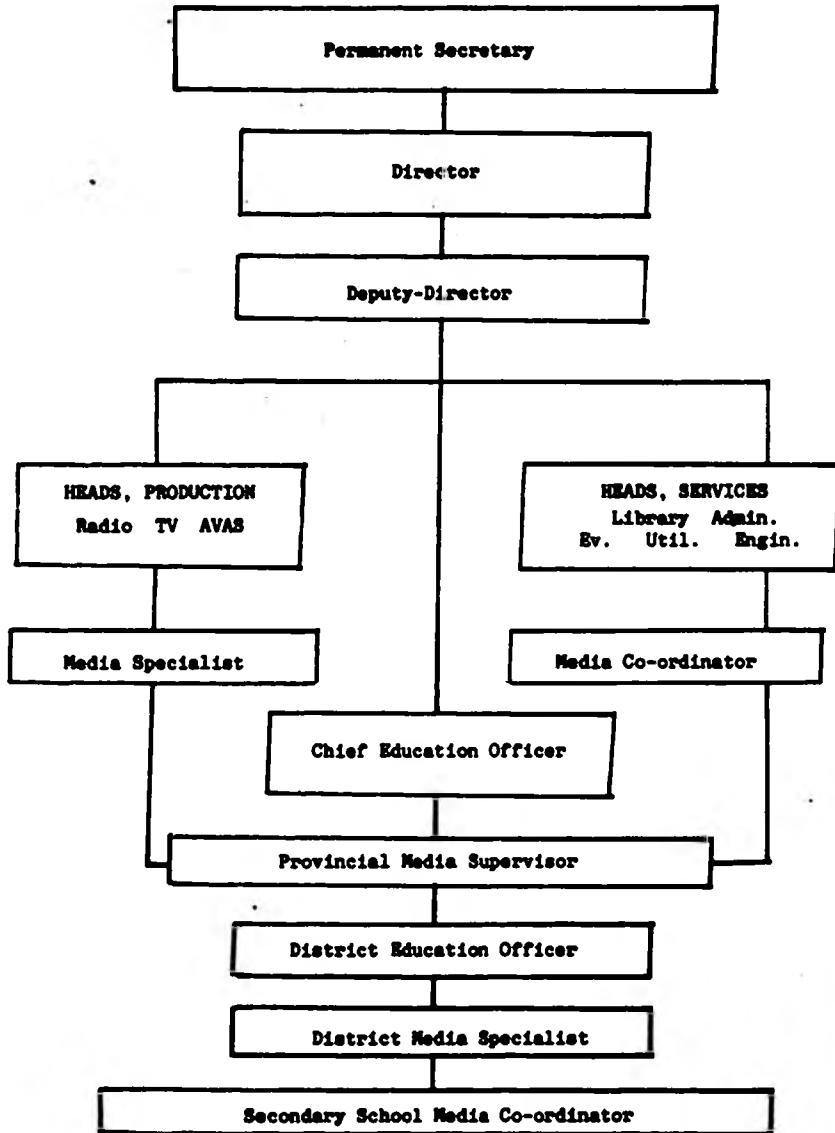


FIGURE 6.1 : The Proposed EBS Organizational Structure

CHAPTER VII

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

The draft of a plan of expanded educational broadcasting services for Zambia presented in Chapter VI was developed from generalizable principles drawn from a review of literature. A draft of the plan was then mailed to a panel of educational experts for scrutiny. A questionnaire which accompanied the draft was designed with a view to obtaining feedback which could assist in possible modifications to the draft plan before the final plan was established.

This chapter deals with an analysis of data in two sections: Section I analyzes data from Questionnaire A; Section II is an analysis of data collected from the feedback of the panel. Because of the small size of the numerical distribution, advice was given to the author to provide a gross summary of results rather than detailed tabulations.

Section I: Data from Questionnaire A

Data for the study were gathered using a structured questionnaire (shown in Appendix B). The questionnaire solicited information about attitudes towards educational broadcasting and prospects for expanded educational broadcasting by teachers and administrators in Zambia. More specifically, the data collection instrument had four major parts:

1. Utilization of educational broadcasting
2. Attitudes towards educational broadcasting
3. Feasibility of expansion, and
4. Chances of successful implementation.

Respondents fell into two professional groups, teachers and administrators. The criteria for the selection of these teachers and administrators were

two-fold: (i) educational expertise, and (ii) knowledge of the country's educational and political system. Respondents were asked to fill in the questionnaire in dichotomous "Yes" or "No" categories. Ninety persons out of the one hundred and fifty who were sent questionnaires responded: seventeen administrators and seventy-three teachers. The purpose of the questionnaire was explained in the cover letter.

Utilization of Educational Broadcasting

Respondents were presented with Hawkrige's definition of educational broadcasting as

the development of systematic broadcasting techniques with pre-determined educational objectives, normally planned in series which are designed to lead to the mastery of a body of knowledge or a skill or to the acquisition of experience or the development of attitudes. (1982)

It was explained that these systematic techniques might include curriculum reform, work on the specification of behavioural objectives, selection of media, production of educational materials, and teacher training. They were then asked to indicate whether educational broadcasting methods were used in the school system.

Attitudes to Educational Broadcasting

Attitudes towards educational broadcasting were analyzed on the basis of

- (a) professional experience of respondents (because this can be an indication of understanding both of the society of which they are a part, as well as the possibilities of the society for educational advancement), and
- (b) travel, because this can also be an index of external contact and crude measure of exposure to change.

Results drawn from the question indicating interest in educational broadcasting, show that administrators who had over 15 years' professional experience had a favourable attitude towards educational broadcasting. Those who had 5-9 years' and 10-14 years' experience had a lukewarm attitude towards educational broadcasting. Teachers from all professional categories had, on the whole, favourable attitudes towards educational broadcasting with the exception of six from the 0-4 group, five from the 5-9 group, and one from the 10-14 group and two from the 15 years and over group.

The personal attitude of administrators and teachers towards educational broadcasting was next analyzed. Here, both teachers and administrators had positive attitudes to educational broadcasting; that is, they were personally interested and believed that a well-designed system of an expanded educational broadcasting service could be implemented in Zambia.

Travel

Travel was found to be indicative of external contact and exposure to an external environment, and it is also a measure of cosmopolitan outlook. Cosmopolitan attitude has been found to be correlated with innovativeness Rogers (1980). In this study, a traveller is taken to mean a person who has taken one or more trips outside Zambia to countries whose environment is different in social, cultural and economic respects from that of Zambia. There were differences in attitudes towards educational broadcasting between travellers and non-travellers. Travellers displayed quite a favourable attitudes towards educational broadcasting; that is, they were both personally and professionally interested and believed that a well-designed system of expanded broadcasting could be implemented in

the formal secondary school system of Zambia. Non-travellers, however, did not show much interest.

Feasibility of Expansion

In their responses regarding feasibility of the expansion, administrators appear to see that money is a major problem and they believed that it would be impossible for the educational system to provide the necessary revenue to implement a system of expanded educational broadcasting. Administrators also ranked the present teaching methods and lack of administrative support, respectively, as areas of concern.

Some teachers also considered money a problem and saw funding as the biggest obstacle involved with implementing a programme of expanded educational broadcasting. However, twenty-four teachers (33 per cent) of those reached, believed that the education system could produce the necessary funds. Also, forty-one teachers (56 per cent) felt that the present methods of teaching, in which usage of communication media is limited, were a hindrance. Eight administrators shared the view of the forty-one teachers.

Chances of Implementation

In reacting to questions regarding the implementation of a system of expanded educational broadcasting, administrators believed that they and their colleagues would support such a system. In fact, sixteen (94 per cent) of the seventeen administrators indicated that they saw the prospect of administrative support for such a system. Furthermore, they were unanimous in seeing much support from the ranks of teachers. They also believed

that a well-designed system of expanded educational broadcasting services would enhance learning in the Zambian system of secondary education.

Teachers indicated even greater support for a system of expanded educational broadcasting services in that sixty-seven (92 per cent) of them believed that a well-designed system would improve learning for students and an even greater number of sixty-nine (95 per cent) believed they would support a system. However, although fifty-eight teachers (79 per cent) said the administrators would support the system, twelve (16 per cent) felt that the necessary administrative support was lacking, and three teachers (4 per cent) were not sure whether the administrators would support it. In general, both teachers and administrators indicated great support for expanded educational broadcasting system.

Information generated from the preceding data guided the planning and policy formation of the expanded educational broadcasting plan. As far as these responses are generalizable, they indicate favourable attitudes to an educational broadcasting system, thus increasing the possibility of utilization. The responses also indicated that the draft of the plan of expanded educational broadcasting services was feasible and could be implemented. Furthermore, this information reassured the author inasmuch as "any development system is defective unless it provides feedback from those

whose lives are affected by a specific development programme." (Whyte, 1975: p39). This feedback suggested that the draft of the plan should pay careful attention to finances and to encourage the participation of both teachers and administrators. Above all, the plan should be a workable one.

Section II: Analysis of Feedback on Questionnaire B

This section of the analysis is concerned with feedback from an expert panel on the draft of the plan. A questionnaire was designed with the aim of obtaining feedback which could assist in modifications to the draft plan before the final one was made. Six of the eight members of the panel responded to the questionnaire. The questionnaire designed to obtain feedback was divided into four sections:

- (1) Functions of the plan, consisting of logistics, production, utilization, design, evaluation, research and development;
- (2) Organization;
- (3) Personnel and Services;
- (4) Recommendations.

Each function was delineated under its concept and the respondents were asked to provide feedback on all the attributes of the function presented. Questions were asked about the appropriateness, feasibility, implementation, desirability, and efficiency of the function.

Each function was to be answered by either a "Yes" or "No", but any of the panel members who did not make either response was considered in the "Not sure" category. Free and frank opinions were solicited from

the respondents. Panel members who gave "No" responses contributed to the value of the plan by giving explanations in some cases. In most cases as much can be learned from negative responses as from positive responses.

Most of the responses from the panel agreed with the original draft plan submitted by the author. Suggestions by a few of the panel were noted and considered for inclusion in the plan even though these represented "minority" opinions. Alterations were made where there were mistakes of fact in the draft of the plan and where the suggestions appeared to be based on a more accurate reading of the local situation. Substantive alterations were made on the basis of a simple majority from the members of the panel who consisted of one university senior lecturer (Dean of School of Education), the Chief Inspector of Schools, the Director of Technical Education and Vocational Training, the Controller of Educational Broadcasting Services, a provincial education officer and the Head of Audio-visual Services. The panel was selected on the basis of criteria relating to professional and educational interests. These criteria were senior positions in either academic or professional areas of education. Questions which were put before the panel dealt with four sections of the plan: (i) the programme, (ii) organization, (iii) personnel and services, and (iv) recommendations. The expanded educational programme consisted of six functions: logistics, production, utilization, design, evaluation, and research and development. Each function was defined and developed according to its likely place in the expanded educational broadcasting plan. For each function, a question was asked about its appropriateness, feasibility, implementation, desirability and efficiency.

Copies of the plan and letters requesting early responses were mailed to the panel in mid-October 1976 via the Controller of Educational Broadcasting Services. All responses were received by 6 March 1987. The following tables illustrate the data from the feedback.

TABLE 7.1
A Comparison of Responses of Panel to Logistics Function of Expanded Educational Broadcasting Services by Governmental Level

	National		Provincial		District		School		Respondents' Comments			
	A	D	A	D	A	D	A	D				
Appropriateness	6	0	5	1	0	4	2	0	6	0	0	Educational goals have been changed and should reflect change to the philosophy of humanism
Feasibility	6	0	4	2	0	3	3	0	6	0	0	
Implementation	6	0	4	2	0	3	3	0	5	1	0	
Desirability	6	0	4	2	0	3	3	0	6	0	0	
Efficiency	4	0	2	2	2	2	2	2	3	1	2	

Note: A = Agree; D = Disagree; N = Not sure

TABLE 7.2
A Comparison of Responses of Panel to Production Function of Expanded Educational Broadcasting by Governmental Level

	National		Provincial		District		School		Respondents' Comments			
	A	D	A	D	A	D	A	D				
Appropriateness	6	0	3	3	0	3	3	0	6	0	0	
Feasibility	6	0	0	5	1	0	3	3	0	6	0	0
Implementation	6	0	0	4	2	0	3	3	0	6	0	0
Desirability	5	1	0	4	2	0	4	2	0	6	0	0
Efficiency	3	1	2	2	2	2	3	1	2	3	1	2

Note: A - Agree; D - Disagree; N - Not sure

Can work quite well with the availability of appropriate equipment

TABLE 7.3
Responses of Panel to Design Function of Expanded Educational
Broadcasting by Governmental Level

	National			Respondents' Comments
	A	D	N	
Appropriateness	6	0	0	In designing programmes, EBS should co-opt on to their committee subject specialists from CDC, Univ. of Zambia's department of Mass Communication, and some members of the Inspectorate
Feasibility	6	0	0	
Implementation	5	1	0	
Desirability	6	0	0	
Efficiency	4	2	0	

Note: A = Agree; D = Disagree; N = Not sure

TABLE 7.4
A Comparison of Responses of Panel to Utilization Function of Expanded Educational Broadcasting by Governmental Level

	National			Provincial			District			School			Respondents' Comments
	A	D	N	A	D	N	A	D	N	A	D	N	
Appropriateness	6	0	0	4	2	0	3	3	0	6	0	0	Some heads of schools resist the idea of schools' broadcasts and obstruct the utilization of instructional media by interested teachers. Proper utilization can only take place if classes have enough radio sets to go round.
Feasibility	6	0	0	4	2	0	3	3	0	6	0	0	
Implementation	6	0	0	4	2	0	3	3	0	6	0	0	
Desirability	6	0	0	6	0	0	4	2	0	6	0	0	
Efficiency	4	0	2	3	1	2	3	3	0	5	0	1	

Note: A = Agree; D = Disagree; N = Not sure

TABLE 7.5
A Comparison of Responses of Panel to Evaluation Function of Expanded Educational Broadcasting by Governmental Level

	National		Provincial		District		School		Respondents' Comments
	A	D	A	D	A	D	A	D	
Appropriateness	6	0	5	1	4	2	0	0	There should be insistence upon continuing evaluation at all levels. To prove the success of a system, it is important to know when components malfunction, to find out when participants are discontent and why they are discontent, and to determine whether or not goals are being met and whether or not resources within the system should be reallocated
Feasibility	6	0	4	2	4	2	0	0	
Implementation	5	1	4	2	4	2	0	0	
Desirability	6	0	4	2	4	2	0	0	
Efficiency	3	1	2	2	2	2	2	2	

Note: A = Agree; D = Disagree; N = Not Sure

TABLE 7.6
A Comparison of Responses of Panel to Research Function of Expanded Educational Broadcasting by Governmental Level

	National			Provincial			District			School			Respondents' Comments
	A	D	N	A	D	N	A	D	N	A	D	N	
Appropriateness	6	0	0	5	1	0	4	2	0	5	1	0	Shortage of skilled personnel makes it imperative to restrict this to national level only
Feasibility	6	0	0	5	1	0	4	2	0	5	1	0	
Implementation	6	0	0	5	1	0	4	2	0	5	1	0	
Desirability	5	1	0	5	1	0	4	2	0	5	1	0	
Efficiency	3	1	2	4	0	2	3	1	2	3	1	2	

Note: A = Agree; D = Disagree; N = Not sure

TABLE 7.7
A Comparison of Responses of Panel to Organization of Plan of Expanded Educational Broadcasting by Governmental Level

	National		Provincial		District		School		Respondents' Comments	
	A	D	A	D	A	D	A	D		
Appropriateness	6	0	5	1	4	2	0	6	0	Plan seems more appropriate for large groups than individual lessons
Feasibility	5	1	4	2	3	3	0	5	1	
Implementation	5	1	4	2	4	2	0	5	1	Financial considerations might affect implementation and the "government might allocate priorities in other directions" Lack of coordination might affect implementation, too
Desirability	5	1	5	1	4	2	0	5	1	
Efficiency	3	1	2	2	2	3	1	4	2	

Note: A = Agree; D = Disagree; N = Not sure

TABLE 7.8
Responses of Panel to Personnel and Services of Expanded Educational Broadcasting Plan

Personnel	Agree	Disagree	Respondents' Comments
Director	6	0	
Deputy Director	6	0	
Heads of Sections	6	0	
Research Co-ordinator	6	0	
National Media Specialist	6	0	Great concern for shortage of qualified personnel
School Media Co-ordinator	5	1	Media co-ordinators and specialists should be appointed from among those Teacher Training Resource Centres' staff with experience in the use of media
District Media Specialist	4	2	
School Media Co-ordinator	6	0	
Engineer	6	0	Money should be set aside to train technicians at home and abroad
Technicians	6	0	
Media Aides	6	0	
Radio and TV Producers	6	0	There should be emphasis on professional training for media specialist rather than academic
TV Cameramen	6	0	

TABLE 7.9
Responses of Panel to Distribution and Utilization Services by Provincial Media Centre Staff

Item	Agree	Disagree	Respondents' Comments
Radio and TV Sets	4	2	
Teachers' Guides and Timetables	5	1	
Audio-Visual Equipment	4	2	The distribution of all audio-visual equipment and other materials for use in schools should be issued direct from EBS to schools
Slides	4	2	Lack of transport to enable provincial media centre staff to visit schools and distribute materials may prohibit smooth utilization of the service
Filmstrips	4	2	

TABLE 7.10
Responses of Panel to Evaluation Service by Provincial Media Centre Staff

Evaluation	Agree	Disagree	Respondents' Comments
Consultation with teachers on educational broadcasting service	6	0	Student and teacher evaluation should be carried out in collaboration with secondary school inspectors of schools
Advice on improvement of radio and TV reception	5	1	Working relationships between the Provincial Media Centre staff and secondary school inspectors need to be improved, since they now belong to different Ministries
Advice on selection of radio metre-bands	4	2	Provincial Media Centre staff be supplied with either bicycles or motorcycles for use in their evaluation exercises
Student evaluation	5	1	
Teacher evaluation	5	1	
Media and material evaluation	5	1	

Recommendations

The final section of the draft plan dealt with eight recommendations. These recommendations grew out of the details suggested in the draft plan and are based on considerations which are peculiar to the Zambian situation. They were also influenced by studies related to the educational problems of developing countries considered elsewhere in this study.

The eight recommendations consisted of the application of procedures of educational broadcasting to curriculum development in secondary school education; the training of administrative personnel at ministerial, provincial and district levels in the process of educational broadcasting; priority in training programmes at pre-service and in-service levels; extensive co-operation and commitment to teachers and administrators; that printed materials, overhead transparencies, slides, filmstrips should complement expanded educational broadcasting in secondary schools; that radio and television transmissions together with printed materials be the delivery system, too, for secondary schools; that educational technology on the whole be instituted as part of the system of higher education; that careful study be made of the possibilities of integration of all components of the educational technology system.

Respondents were asked to indicate their agreement/disagreement with each of the eight recommendations and in the event of disagreement, to state reasons. All the members of the panel agreed with each of the recommendations. Provision was, however, made in the questionnaire for suggestions and/or critical comment on the proposed plan. These are now considered.

Suggested Modifications of Draft Plan

1. More provision should be made within the body of the draft plan for the potentiality of the individual learner as distinct from the large groups of people apparently considered.
2. That educational guidance should be included in the draft plan.
3. That national goals as contained in the draft plan have been modified and should be included in the plan. This was because the national goals have been formulated in keeping with the humanist aspirations of the governing political party, UNIP.
4. Additional educational goals have been identified as a result of the political change to humanism and these should be included in the plan.
5. More reliance should be placed on professional training for the media specialist rather than academic training.
6. The distribution of all the audio-visual equipment and other related materials should be issued direct from EBS to schools.

It may augur well to talk about modifications to the draft plan. But an amended plan is no guarantee of adoption. At most, such a revised plan satisfies objective conditions for implementation; that is to say, it is congruent with national objectives and is pertinent and relevant to the Zambian situation. There are constraints quite apart from objective realities which might well interfere with and prevent the implementation of the plan.

Constraints which Might Affect the Implementation of the Plan

The following constraints have been listed by the few respondents as likely to affect the implementation of the plan.

1. As comprehensive as the plan might be, financial considerations could conceivably prevent its implementation. Two members of the panel pointed out that while they did not think the cost of implementing the plan would be unduly prohibitive, "the party and its government might allocate priorities in other directions."
2. Shortage of qualified personnel might constitute a sizeable limitation.
3. Lack of co-ordination might hinder the implementation of the plan.
4. The time needed to orient teachers, inspectors of schools, district education officers and other personnel to the demands of a new system would be a limiting factor.

SUMMARY

This chapter was devoted to an analysis of data and comprises two sections. Section I analyzed data from Questionnaire A which was for teachers and administrators. Section II analyzed data gathered from feedback of the panel of six members.

Data from Section I were analyzed in major parts:

1. Utilization of expanded educational broadcasting
2. Attitudes towards expanded educational broadcasting
3. Feasibility of the expansion, and
4. Chances of successful implementation.

There was disagreement among teachers and administrators over the present use of educational broadcasting in the schools. Some teachers and administrators responded in the affirmative and others in the negative. Both administrators and teachers share the view, however, that a well-designed

system of expanded educational broadcasting would improve the learning of students in the formal secondary education system of Zambia. Both administrators and teachers saw money as the single most important problem and more teachers than administrators considered administrative support as the single most important problem. Administrators believed that the present methods of education could be adapted to a system of expanded educational broadcasting, but teachers did not. Teachers agreed that they could support a system of expanded educational broadcasting, administrators, too, believed that teachers would do so. On the other hand, teachers (twelve of the fifty-eight respondents) did not believe that administrators would support such a system, but all, except one, administrators responded that they would.

Attitudes of both teachers and administrators towards a system of expanded educational broadcasting were positive; that is, each group was most agreeable to such a system.

Section II presented data from six of the eight members of the panel. An examination of the data revealed a positive attitude towards the draft of the plan as evidenced by the acceptable responses to the questionnaire. Suggested modifications from the panel and constraints likely to affect the implementation of the plan were noted. The following chapter will deal with the modifications to the plan.

CHAPTER VIII

MODIFICATION OF THE PLAN

This chapter aims at presenting recommendations for the modification of the plan following feedback from members of the panel.

Modifications

Due to the fact that the plan was received favourably, major modifications are not necessary. However, mistakes of fact are rectified. It was essential to make changes as a result of some feedback received from the panel. Wherever these changes are made a discussion and rationale will be provided. Also, where the author believes changes are not necessary - despite a given argument from a respondent - he will indicate likewise and justify the decision.

First proposed change. One panel member observed that more provision be made for the individual learner. He alleges that the plan caters largely for groups of people. Moreover, he questions the assumption that the Third World countries, and Zambia in particular, should be concerned with mass education.

Discussion. A system of education is not incompatible with the development of individual potential through personalized instruction. Nor is it to be assumed that the procedures of an expansion of educational broadcasting could not be applied to the one case as well as to the other, to mass education and to individualized learning.

Educational research and publication is replete with suggestions for individualized instruction and there is increasing awareness of the needs of each child. The market place is full of remedies of one sort or another for the needs of individualized education.

The criticism that the draft plan does not make provision for individualized learner does not hold water. If by individualized learning is meant a system which is planned for non-group learners, then the charge is equally unfounded, for no such system was intended. Indeed, even if such a system was contemplated, the expanded educational broadcasting services planned for formal secondary education in Zambia can be adapted to suit the requirements of the individual learner. The recommendations made in the plan specify curriculum development, training programmes of all kinds and integration of all components of an educational broadcasting system; namely, teachers, learners, parents, community and educational materials. Also, the recommendations advise that ways should be explored to see how learning resources can be completely and systematically utilized. Furthermore, the Report of the Organization for Economic Co-operation and Development, OECD, (1970) lists eight media which can assist in individualized learning:

- print in all forms
- moving visual and audio-visual media (film, television, videotape)
- static visual media (slide transparencies, photographs)
- sound media (tape recording, radio, gramophone discs)
- situational information (as in drama, role playing, educational games, case studies)
- information and physical objects (models, simulators)
- computers (CAI, CMI)
- human resources (teachers and peers).

The draft plan contains many of the media listed in this report, in addition to other elements of education advanced such as curriculum development, training programmes and integration of the components of the system. Trained teachers, appropriate and relevant media, and a conducive learning environment provide the best guarantee that mass education as well as individualised learning would flourish.

Group learning and individual learning are ^{not} incompatible. There will always be shared learning experiences of the group learners to the broadcast, but there will be individual learning as far as each individual responds differently to the experiences of the broadcast and will subsequently engage in private learning activity as he follows up the learning stimulus of the programme.

Second proposed change. It is suggested that educational guidance or counselling for pupils should be included in the programme provision of the draft plan.

Discussion. Again, educational broadcasting is applicable to many learning situations. The study was designed to bring about changes in learning at a specific level: the formal secondary educational level. Furthermore, teacher training was recommended and guidance is an integral part of teacher training. In fact, the function of the teacher is to help the individual learner to discover his/her own uniqueness, to develop his/her talents and to use them in pursuit of his/her goals. The function of guidance is to give help to the individual learner when such help is needed. This functions at its best when the teacher explores, develops,

and utilizes all the resources at his/her command.

In addition, specific recommendations for guidance were omitted because educational broadcasting (within the total framework of educational technology) goes beyond any particular medium, device or consideration. "It is more than a sum of its parts. It is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objects..." (Tickton, 1970: p21).

All in all, guidance best occurs at interpersonal level not through the medium of broadcasting. In the context of finite broadcasting resources, it is also felt that essential core subjects should be given a high priority.

Third proposed change. The national goals in the plan should be changed to reflect the humanist goals which are incorporated into the present governing political party, UNIP, a respondent stated.

Discussion. Given that Zambia seeks a humanist state, this proposal necessarily becomes acceptable. Clearly, the acceptance of humanism as the official political ideology of the governing party implies changes also in national goals as well as educational goals. Kaunda (1974) explicitly outlines the structure of the form of humanism that is to run the country:

Humanism seeks to create a classless or egalitarian society - that is a society in which there is equal opportunity for self-development for all. Every citizen is valuable and has an important social task to perform. Equal opportunity cannot come about without society organizing itself on a humanist basis.

(p111)

Dumont (1973) refers to this as the "foundations of a self-critical socialism" and goes on to say that:

this collective search means that there must be a system that favours the development of everyone, which is no small requirement. Yet there are certain pre-requisites which seem to be indisputable: to begin with, the right of every man to full mental and physical development - to receive the vital minimum, with the limits of productive capacity that will enable him to live a complete life.

(p107)

Fourth proposed change. Another member of the panel said that educational goals have been changed as a result of the political change to Humanism and for completeness should be included in the plan.

Discussion. Some of the educational goals have been revised as a result of the political change to Humanism. They amounted to an exclusion of those goals that have already been achieved (see 3.2, Educational Goals, in the draft plan). Other goals have been specified in the area of teacher education and higher education. These will be specified in an amended plan and will appear in the Appendix.

Fifth proposed change. Also, another member of the panel suggested that more reliance be placed on professional training for the media specialist rather than on the academic training.

Discussion. This suggestion is unacceptable. Professional training as understood from the comments advanced by the respondent consists of training in the use of the broadcasting equipment. The suggestion implies the separation of functions between what is normally considered "academic"

and what is usually considered "professional". Such a separation does not support the kind of flexibility among personnel that is and should be a feature of most developing countries. Furthermore, any institution that will train personnel in the procedures of educational broadcasting, will incorporate curriculum that is both "academic" and "professional". Also, it is desirable that the practical production perspective is integrated with the critical educational perspective.

Sixth proposed change. It was suggested that the distribution of all audio-visual equipment and other materials for use in schools' broadcasts be issued direct to schools from EBS.

Discussion. This suggestion cannot be accepted for the simple reason that its acceptance would be a gross negation of one of the principles the study is intended to highlight, namely - that all materials should be distributed to the provincial media supervisors who should arrange for their delivery to schools via the district media specialists. The provincial media supervisors and their district media specialists should be given this responsibility of distributing materials because they are more familiar with the problems and requirements of the schools under their jurisdiction than officers at headquarters who are many kilometres away. Clearly, one way in which the expanded educational broadcasting system is to be an effective instrument in carrying out the educational goals, is to get some of its work done through others outside the head office. The most effective way to work through others is to delegate responsibility. In other words the distribution of audio-visual equipment would better be carried out under a decentralized system.

Seventh proposed change. The plan should make provision for the additional evening transmission of those secondary schools' programmes relevant for adult education studies.

Discussion. This modification is acceptable. Full utilization of the secondary schools' programmes and other facilities ensures that there is very little wastage of educational resources. Maximum utilization of the available resources is crucial to the mobilization of the country's total educational resources. Also, this transmission of relevant secondary school radio and television programmes to adults in the evening is congruent with the "idea of lifelong education, that education lasts uninterruptedly throughout life, and is making steady progress and is likely to transform the very essence of education system in its entirety" (UNESCO 1970: p135).

Of the recommended modifications, three of them have been found acceptable. Two of these concern national goals and educational goals, both of which have been revised as a result of Zambia's Humanist political ideology. Appropriate amendments will be made in the final plan and will appear in the Appendix. The third recommended modification is the full utilization of the secondary schools' relevant radio and television programmes to adult students.

SUMMARY

In this chapter modifications suggested by respondents were discussed and changes which the author believed necessary were made. The next chapter will be devoted to a summary, implications, strategy for implementation and suggestions for further study.

CHAPTER IX

SUMMARY, IMPLICATIONS, STRATEGY FOR IMPLEMENTATION
AND SUGGESTIONS FOR FURTHER RESEARCH

In the previous chapter a discussion of modifications and proposed changes to the model plan was presented. This Chapter will be devoted to a summary of the entire study. The implications of the study will be discussed and arising out of these implications, a strategy for the implementation of the plan will be worked out. The chapter will conclude with recommendations for further research.

SUMMARY

The objective of this study was to develop the organizational model plan for expanded educational broadcasting services in the formal secondary school education system of Zambia. The study was composed of four main sections:

- (1) Statement of problem areas of Zambia's education system and examination of alternative solutions, with particular reference to educational broadcasting,
- (2) Design of a draft plan for educational broadcasting services based on data collected in and about Zambia in the area of formal education,
- (3) Feedback on the proposed plan from teachers and a panel of educational experts in Zambia, and
- (4) Modification of the plan as a result of the feedback received.

In order to determine the problem areas in Zambia's education system, a search of the literature was carried out. Critical problem areas fell into four major categories: (1) Shortage of trained teachers, (2)

Inadequate supply of educational materials and equipment, and (3) Lack of administrative and technical personnel. The likely causes of each problem-area were examined and solutions considered in terms of educational broadcasting and its application in other developing countries. A development model based on Hamreus (1970) was found to be applicable to the Zambian situation. Hamreus identified two functions for the institutional setting: the first or operations group consists of (a) logistics, (b) production, (c) utilization, (d) design, (e) evaluation, (f) research and development. The second or management group includes (a) organization, (b) personnel management.

The design of the plan was based on data collected by means of the descriptive survey research method. This method was used because it is appropriate for educational fact-finding and a useful tool in finding out information on social facts, beliefs and attitudes. It was necessary to determine attitudes of educational personnel towards educational broadcasting, its possible utilization, feasibility and chances of implementation.

One hundred and fifty teachers and administrators were sent questionnaires to fill out. Also, a panel of eight educational leaders received the proposed plan for scrutiny.

Ninety persons, 73 teachers and 17 administrators, out of one hundred and fifty actually responded to the questionnaires. In addition to primary data, secondary data were also collected from the Ministry of Education, Ministry of Information and National Guidance, and the Ministry of National Commission for Development Planning. Data collected from the questionnaires were analyzed and responses to the various categories reported.

Analysis of the questionnaires indicated that both administrators and teachers had positive attitudes to an expanded educational broadcasting system and were prepared to support its implementation.

Based on data collected from the questionnaire, ^{and a} ~~the~~ review of ^{the} ~~the~~ literature, including related projects of educational broadcasting, a draft plan was prepared. The draft plan was mailed to an eight-member panel of educational leaders selected on the basis of criteria related to professional and educational interests and status in the educational establishment of Zambia. A questionnaire was designed as part of the feedback process. Each member of the panel was asked to fill in the questionnaire and return it at his earliest convenience. The purpose of the feedback was to gain information as to the appropriateness, feasibility, desirability, implementation and efficiency of the plan and to modify it should this be necessary. Data obtained from the questionnaire were analyzed on these bases.

Analysis of the six responses received to the questionnaire revealed that the four sections of the plan: the expanded educational broadcasting services programme; organization; personnel; priorities and recommendations were largely accepted. Many suggestions from some members of the panel concerning the plan were made. These suggestions were discussed and those modifications made which would contribute to the overall design of the plan.

IMPLICATIONS OF THE STUDY

The present study has a number of implications:

1. Although the whole plan is designed to be implemented within the present set-up of the educational system of Zambia, some aspects of it assume more immediate importance than others. Respondents placed great stress on personnel and training. Because of this, it seems necessary to consider personnel and training as priorities for implementation.
2. The expanded educational broadcasting services plan can be implemented within the present formal education system of Zambia since its main recommendations advocate work that, in some cases, has already started. For example, in curriculum development and formation of behavioural objectives.
3. As a result of the methodological design a number of educational leaders have already been exposed to the main ideas behind the plan. This could be helpful in the implementation of it.

STRATEGY FOR IMPLEMENTATION

According to UNESCO (1970), strategy of education

requires clearly defined objectives....strategy means liaison and harmonization....strategy seeks to resolve problems by reciprocal action....strategy is an exercise in timing.... strategy must make allowance for social and psychological factors. (ppi39-141)

Clearly Defined Objectives

A distinction must be made between objectives and means. A plan of expanded educational broadcasting services for the formal secondary education system is a means to education and must not be considered an end in itself.

A distinction must also be made between objectives: some might be primary and others might be secondary. A list of priorities might have to be

drawn up, for clearly, while all of them are important, some assume greater importance because of greater need. Priorities must also be balanced against budgetary considerations; indeed, the amount of money available helps to determine priorities. The Ministry of Education will have to consider the cost benefit of various programmes. For example, balancing returns of expansion of secondary education against those of higher education; of expanding facilities in secondary schools against the need to increase facilities at Teacher Training Colleges and Technical Institutes. The returns might not always be foreseen, for the impact of a given priority on future developments is not immediately realizable. Finally, priorities are influenced by what is easier to do at a given point in time. Traditional methods have been tried and are being tried, but there is evidence to show that they are limited when faced with the increasing demands of a developing society. The Party, and its government, has already begun the process of revolutionizing the formal education system. This has not been completely successful for not only are the traditional attitudes deep-rooted, but even those responsible for training in many cases need re-training. It might be easier to continue with the traditional methods in the short run, but in the long run, the methods of expanded educational broadcasting services might be more efficacious, given the ambitious objectives of the country's Educational Reform Plans.

Strategy 1: Liaison and Harmonization

Planning for education involves considerations such as buildings, equipment, teacher training, supportive staff and so on. It takes time to achieve these components and this must be done in a harmonious fashion; that is to say, the educational system must have an internal equilibrium. For example, an increase in the number of primary school children will

place additional demands on secondary schools at a later date and also eventually on higher education. This holds good in areas such as curriculum development, where secondary level curricula must be prepared with an eye to primary and higher education curricula. Continuity in education means harmonization in subject as well as curriculum areas (UNESCO, 1970). Much emphasis is placed on secondary schooling in Zambia. An expanded educational broadcasting plan which seeks to involve secondary education must not be restrictive of other components in the general education system.

Strategy 2: Problem Resolution by Reciprocal Action

Expanded educational broadcasting services must not be instituted in a way which would help solve one situation at the expense of another. Secondary education must not receive the potential benefits of educational broadcasting if this will create dysfunctional effects in other areas. The institution of expanded educational broadcasting services might bring to light weaknesses in other components. Research will have to be first carried out to see what problems could be addressed by a simultaneous and a wider application of educational broadcasting. For example, the use of radio and television in secondary school education might be expanded to include adult education and also higher education.

Educational broadcasting is not a panacea for all the educational ills of any country. It must, as indeed must any educational strategy, affect a balance between education and the needs and potentialities of society. The problem of adapting the structures of the Zambian society to expanded educational broadcasting is an important one, particularly now that the country has embraced a new political ideology. The resources of the

country must be utilized to the full. All the components of education which are sometimes taken for granted, or are hardly mentioned, must be utilized to the full if adaptation of social structures to education is to be effective.

Strategy 3: An Exercise in Timing

If the plan is adopted by the Ministry of Education, work must progress in many areas. Teachers will have to be trained, equipment ordered, school facilities put in readiness, a programme of information worked out and so on. The adaptation of teachers to the new system and methods entails training and re-training, i.e. the existence of teachers already at the Teacher Training Colleges who would have been themselves trained by a team of experts in education media methods. The recruitment of this team would be one of the top priorities of the plan which would take up to a year to produce tangible results. The ability to apportion time to task analysis and to a work-load prevents uncontrolled optimism and enhances strategy. More importantly, it is a way of monitoring the operation of the system, for at any given moment it will be possible to determine how the work is progressing.

Strategy 4: Social and Psychological Factors

A strategy which seeks to implement a plan of expanded educational broadcasting must be aware of social and psychological forces which could stand in the way of acceptance. The objectives of the plan must comply with the understanding of many deep-rooted attitudes, conservatism and other forms of resistance that can be stumbling blocks. The best means of avoiding some of them would be to implement a programme of information

and consultation. This can be effective for it invites participation and counsel which can turn away the cutting edge of negation.

So far the general guidelines which should be considered before the plan is implemented have been discussed. Specific considerations will now be looked into.

The majority of the members of the panel found the plan acceptable, but misgivings were voiced in two areas: Costs, and the required personnel for implementation. The general consensus was that the plan is feasible if the money can be found and the personnel to implement it. These limitations will now be addressed.

COSTS

If education fostered economic growth, then surely educational broadcasting, as part of education, could be justified on economic grounds, the more so if it could be shown that broadcasting was a cost-effective way of educating large numbers of children and adults, preferably at a lower per capita cost than through face-to-face teaching in classrooms.

The most significant finding of the thesis, discussed at some length in Chapter 2, is that many distance-teaching projects had relatively high variable costs which limited the economies of scale available to them. These variable costs reflected mainly expenditure on setting up a network for the field support of groups or individuals, and the training of those working in such a network. The costs of such support were generally lower than the cost of maintaining teachers in traditional schools or agricultural extension agents in the field: economies were possible here partly because of the limited hours worked by field staff and partly by the use of volunteers.

Doubt is being expressed about whether educational broadcasting can indeed be justified on grounds of cost-effectiveness except under certain conditions (discussed in Chapter 2). It is difficult to ascertain costs and effects, yet both must be considered by decision-makers in reaching judgments about economic factors related to educational broadcasting planning. Cost-effectiveness studies prior to 1978 frequently included only marginal costs, thus possibly exaggerating apparent benefits from educational broadcasting. Cost analysis of conventional schooling was not very thorough either.

In general, costs of educational broadcasting have not fallen at all upon the consumer, that is, the student, whether in formal or non-formal sector. There are a few rare exceptions in formal education: the British Open University, in charging its students fees, could be said to be recovering a small proportion of the money it pays each year to the BBC to make and broadcast its television and radio programmes. The balance of funds needed comes from government subsidy. The Latin American 'radio-phonics' (radio-and-correspondence) schools, operating in the non-formal sector rather than formal, collect fees too. But in all these cases, it would be reasonable to regard the fees as covering the cost of tutoring and perhaps printed materials, rather than broadcasting. In no case is the total cost of educational broadcasting met by students.

Costs are increasingly a constraint upon educational broadcasting. For example, although electronic equipment is becoming cheaper (and more versatile) in real terms, technological change can be very costly. The switch to colour in television has implied relatively greater costs, particularly of receivers, compared with black and white (monochrome). This has been a serious problem for Zambia. We could not continue much longer with monochrome equipment because we could not be sure of obtaining spares.

LACK OF TRAINED PERSONNEL

Lack of trained personnel was the concern among some of the members of the panel. It seems appropriate, therefore, that this should be addressed. Before the plan is implemented, the following steps should be taken with regard to personnel.

1. A data bank should be established which identifies all available personnel within the education system, listing them by function and competency. This measure will determine availability of personnel and establish a roster of those who should receive the required training. It will also determine where qualified people are located. The data bank will be set up at the Ministry of Education which will be responsible for its maintenance.
2. Ways should be explored to train personnel for the various positions recommended in the plan. For example, a training plan should be prepared to give details of categories of personnel to be trained and their corresponding levels of training.
3. A suitable period should be allocated for the initial team to be trained.
4. Ways should also be explored to train existing personnel involved in aspects of the educational broadcasting system to an under-

standing of other features of the system. For example, curriculum specialists might receive training as media specialists.

EDUCATIONAL MATERIALS

In addition to personnel requirements, educational materials need to be taken into consideration. An inventory of what is available and where it is to be found is the next priority before the plan is implemented. A survey organized and administered by the Ministry of Education would satisfy this requirement. The directory would then be made available in published form to the administrators and other personnel.

The benefit of both the data bank for personnel and the inventory is that specific steps would have been taken to identify personnel and educational materials, thus contributing to the general information vital in implementing the plan. Based on what is known of personnel and educational materials, the following steps should be taken:

1. A list should be made of what educational personnel and materials are required.
2. Procedure for organization of various functions should be studied.
3. Educational administrators in the provinces should get together and work out details of the programmes and projects for those parts of the plan for which they are in charge.
4. A programme of information and education be launched to reach top as well as lower echelon administrators, teachers and the community in general about the plan. An essential task is to explain the aims of the plan and convince as many as possible about the need for and the steps to be taken by them individually. These efforts should not be limited to teachers and administrators only, but must go beyond them.

The plan may not receive universal acceptance, for it is likely to upset certain established positions, arouse jealousy and appear to threaten some of the established order. But if the plan is explained satisfactorily and the reasons for its implementation made known, opposition to it will tend to be less critical.

However, information in itself is hardly sufficient. Information must be allied to a form of consultation which must encourage people to come forward and give their impressions and communicate their anxieties. This process can encourage and stimulate criticism which can only help in the long run in enriching the plan and making it more flexible. Because of the importance of information and consultation, the author recommends that this process be the first stage in the implementation of the plan.

The implementation of the plan is a complex operation. It comprises three phases: information and consultation; personnel organization and equipment inventory and training; and implementation of the functions of the plan vis-a-vis logistics, production, utilization, research and design, and evaluation. Each phase takes in various operations of varying length. It is important to realize that operations are not locked into a specific time sequence but should often overlap when need be.

Staffing requirements for the three phases are:

1. A co-ordinator of logistical functions at the four levels: national, provincial, district and school, should be appointed.
2. A research co-ordinator whose function should include work in evaluation, research and also utilization should be hired. He will shuttle between national, provincial, district and school levels. He will also

be expected to co-ordinate research interests among the staff of the University of Zambia, the Teachers' Training Colleges and the secondary schools.

3. A consultant should be brought in to advise on the extent of expansion to the present recording studios and the equipment needed to furnish them. Personnel and staff requirements as well as production services will be affected by his work.

Phase 1

Information and Consultation

In charge of this stage will be the Chief Inspector of Schools. He will enlist the services of the Provincial Media Supervisors who would draw on the services of the Provincial and District Education Officers. These Education Officers would be expected to become thoroughly familiar in advance with information about the plan, the developmental plans for the regions and for the entire country and the budgetary constraints. They should be helped to see the realities of Zambia's educational problems. Open and frank discussion would permit valuable exchanges and provoke critical comments. It would also facilitate acceptance of the programme. Enlightened community leaders would also be drawn into this discussion. The following steps are advised:

1. Publication of the plan and dissemination among teachers in secondary schools and teacher training colleges.
2. Arrangement of seminars to discuss the main features of the plan.
3. Discussion among the seminar groups of points which need clarification and further explanation.

4. Group discussion of details in the plan based on feedback.
5. Use of radio, television and the press to publicize the plan and invitation to interested persons to communicate their ideas.
6. Feedback from radio, television and the press communicated to planners who will review the process of information and consultation with all the persons involved.
7. Records of written correspondence should be kept for review.

Phase 2

Personnel Organization and Equipment Inventory and Training

Phase 1 dealt with a programme of information and consultation. The next phase is concerned with personnel organization and equipment inventory. Responsible for this phase will be the Director of Educational Broadcasting Services and an Assistant Secretary (Staffing) at the Ministry of Education to co-ordinate matters between administration and professional staff. In addition, the following steps should be taken simultaneously.

A. National level

Lists of administrative and professional staff and other personnel directly connected with the implementation of the plan should be prepared. Briefing sessions should be held during which details of the plan will be communicated and feedback solicited. Liaison with personnel responsible to the Chief Officers of both administrative and professional departments should be established. In the administrative section this includes the Assistant Secretary responsible for administration at the Ministry of Education, staff responsible for radio and television production, members of the Curriculum Development Centre and the Bursaries Committee.

B. Provincial level

The Provincial Education Officer will:

- (i) List members of the staff responsible to him by function which includes production services, utilisation selection, purchasing and storage.

A job description will be developed for each role.

- (ii) Arrange for the training of staff, and retraining of those who already have the necessary skills but are in need of refresher courses.

C. District and School levels

The District Education Officer acting with help from his Media Specialist will:

- (i) List members of his staff by function and job description.
- (ii) Single out those who need further training and make plans to train them.
- (iii) Begin plans for the integration of the secondary schools with their District Media Centres.
- (iv) Establish plans for increased participation of secondary school teachers in the educational broadcasting plan.
- (v) Plan with school headmasters for the distribution of materials and equipment.

Equipment and Materials Inventory

The equipment necessary for the implementation of the plan should be listed under respective divisions: National, Provincial, District and School levels. Examples include:

- (i) National level: inventory of equipment, now in use, at EBS, materials production unit.

- (ii) Provincial level: basic equipment such as photography materials for pictures and slides.
- (iii) District and School levels: equipment at these levels includes location charts, posters, printed materials, filmstrips and slides.

Training

A programme of continuous training should be worked out for secondary school teachers and teacher training tutors, and also for administrators. The author places great emphasis on training because there would be little hope of the plan becoming operational if teachers and administrators did not understand it and strive to improve their skills. If the plan is to work successfully, teachers must be trained from the outset. The following are the suggestions to meet training requirements for teachers.

At the conclusion of training, teachers should be able to:

1. Explain the elements that comprise the plan.
2. Describe and illustrate steps in the preparation of an educational radio and television lesson.
3. Point out and illustrate the similarities and differences in specified programmes.
4. List specific components of a teaching model.
5. Enumerate major characteristics of entering behaviour.
6. Define the various intelligence tests and indicate how to use them.
7. Enumerate the characteristics of motivation.
8. Define positive and negative reinforcement and distinguish between them.
9. Define the term "learning".
10. Illustrate learning in relation to stimulus, response and learner.
11. Describe the main characteristics of radio and TV as media communication.
12. Select media for various instructional strategies.
13. Write criteria for selecting instructional materials.

14. Write behavioural objectives.
15. Illustrate operation of relevant equipment.

The following are suggestions to meet training requirements for senior administrators, including heads of departments and inspectors of schools.

1. Explain the main elements that comprise the expanded educational broadcasting model plan.
2. Describe main characteristics of educational broadcasting in relation to educational technology.
3. Discuss the role of educational broadcasting in developing countries.

The following are suggestions to meet the training requirements for middle-level administrators, including statisticians, accountants and economists who have tasks connected with education such as planning manpower forecasts, calculations of costs and advising on technical matters. At the conclusion of their training these administrators should be able to:

1. Explain the main characteristics of the plan.
2. Describe the main features of educational broadcasting in developing countries.
3. Describe the role of educational broadcasting in developing countries.
4. Examine their own level of participation in the plan.

It should be emphasized that this division between senior and the middle-level administrators does not entail any rigidity at all, for inflexibility is not the aim or by-product of the plan. Nor is the division for the sake of administrative convenience, for it will be noted that two of the suggestions in each case are the same. The division was designed because the author presumes that each category would make its own unique contribution to the plan.

Training and the programmes attached to it raises three very important questions. First, the necessity of agreeing on categories of persons to be trained and also on levels of training; second, what personnel should be sent abroad to receive particular kinds of training; third, the extent to which training personnel will be recipients of aid from international or national agencies. These are beyond the limits of this study.

Phase 3

The final phase concerns the implementation of the functions of the plan.

The author does not recommend the implementation of the six major functions (logistics, production, utilization, research, design and evaluation) until Phase 2 has been accomplished, because of the importance he attaches to information and consultation and training, the two previous Phases. Secondly, because it is more efficient to start implementation of all functions at the same time rather than separately. Third, because trained and well-briefed personnel are more likely to perform the various functions efficiently and confidently.

SUGGESTIONS FOR FURTHER RESEARCH

The effort of drawing a plan for expanded educational broadcasting in the formal secondary education system entailed certain specific operations: definition of goals and objectives, organization, consideration of personnel, needs of the education system, selection of alternatives, priorities and recommendations, and strategies for implementation. Because of the specificity of the study many areas within the education system were left untouched. For example, further research is needed to forecast more accurately the manpower needs of Zambia and also research is needed to identify those curricular areas most suitable for educational broadcasting not covered in the present study.

The proposal for the present study declared that no attempt would be made at cost analysis regarding the implementation of the plan, and no such attempt was made. A future study might investigate the relative costs of systems such as printed materials, radio and television within the context of educational broadcasting in the formal education system of Zambia.

The problems that beset the current education system have been identified by many experts and researchers, and the reasons for these problems have been documented fully in researches carried out by Kelly *et al.* (1966); UNDP (1966); and SIDA (1967). A knowledge of these reasons is of

immeasurable assistance in confronting these problems.

The present study used rather limited means of obtaining feedback: seventy three teachers, seventeen educational administrators and a panel of six educational experts were selected. There is no doubt that the data is flawed and inadequate. An instrument utilizing a wider sample might conceivably allow for a wider margin of difference, thus contributing to the overall worth and effectiveness of the plan. This is not to imply that a greater number of respondents equals a better plan. A broad consensus, however, can assist implementation by pointing out weaknesses omitted by a limited panel.

An extensive survey of media utilization needs to be known before the plan is implemented. It might well be that changes will have to be made in personnel, organization and equipment following a study. Also, a study concerning attitudes of teachers and other personnel towards the use of media should be conducted. Such a study could be quite significant in determining the factors which affect the use of media in the formal education system.

SUMMARY

This chapter addressed itself to a summary of the entire study, implications of the study, a strategy for the implementation of the plan and suggestions or recommendations for further research. It was found that the implementation of the plan of expanded educational broadcasting services for formal secondary education required that certain aspects of it be given priority over others; also, the plan had certain implications beyond that studied; namely in the area of non-formal education.

The strategy for implementation required clearly defined objectives and co-ordination between the various departments and facilities, liaison with personnel, organization of work and a sensitivity to social and psychological relations.

Organization of work and the implementation of the plan were designed to take place in three stages equivalent to information and consultation: personnel organization, equipment inventory and training, and implementation of the function of the plan. Also suggestions for further research were considered.

Finally, until educational broadcasting services are appropriately decentralized and placed in the hands of the people who are close to learners and with the right skills, it will not be possible for it to play a central role in the accomplishment of societal objectives that are important to Zambia. As Zambia plans for the next decade, professional educators and administrators from all over the country with the support of the community people and students they serve, must begin a new sense of responsibility. They should now make educational media more responsive to learners and ensure that education is a compelling force in the improvement of the Zambian society.

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APPENDIX A

**LETTER SENT TO THE HEADS OF SECONDARY SCHOOLS
IN THE STUDY**

Department of Film & Media Studies/Education
University of Stirling
Stirling, FK9 4LA
Scotland, UK

The Head

September, 1986

Dear Sir/Madam

I am working on a doctorate here at the University of Stirling in Scotland, UK. The proposed dissertation topic "An Organizational Model Plan for the Application of Expanded Educational Broadcasting Services in the Formal Secondary School Education System of Zambia" is well underway. To complete this task I need your assistance.

All you need to do is fill in the accompanying questionnaire (A) by ticking the appropriate boxes and then return it to: Controller, EBS, Box 50231, Lusaka, who will mail all the questionnaires to me. The questionnaires should take less than 15 minutes to complete. Your responses to the questionnaire will be held in the strictest confidence. The answers you give will only be used as part of group totals in writing a final dissertation.

Your School/Institution is one of the few selected for my study, so it is very important that you send the questionnaire back. The Head and the Deputy are also expected to be among the respondents. Please return the questionnaire to the Controller by 15 December 1986. Your help and co-operation are appreciated.

Sincerely yours

Alfred M Kakanda
TS 2595

APPENDIX B

**QUESTIONNAIRE (A) TO OBTAIN DATA FOR A PROPOSED PLAN
FOR AN EXPANDED EDUCATIONAL BROADCASTING SERVICE
IN ZAMBIA**

QUESTIONNAIRE (A) to obtain data for a Proposed Plan for an Expanded Educational Broadcasting Service in Zambia

BACKGROUND INFORMATION

1. Sex: M F

2. Name of School/Institution _____

3. Your present position _____

4. Your present responsibility:
Teaching Administration Research

5. Your experience:
(a) With present position _____ years
(b) Total experience _____ years

6. Have you travelled outside Zambia? Yes No

7. If you have:
(a) Which country/countries have you visited?

- (b) For how long? _____

- (c) Purpose of trip? _____

8. Which of the following statements best describes your situation?
(a) Have a Junior Secondary Education _____

- (b) Completed Senior Secondary Education (Form V or its equivalent) _____

Educational broadcasting has been defined as the development of systematic broadcasting techniques with pre-determined educational objectives, normally planned in series which are designed to lead to the mastery of a body of knowledge or a skill or to the acquisition of experience or the development of attitudes. (Hawkrige and Robinson, 1982).

These systematic techniques might include curriculum reform work on specification of behavioural objectives; teacher training and so on. Based on this information:

1. Do you use educational broadcasting programmes, at present, in your school?

Yes No

2. Have you had experience in using schools' broadcasts?

Yes No

3. At present do you have any professional interest in using broadcasting for schools?

Yes No

4. Do you believe that a well-designed system of an expanded educational broadcasting could be implemented in formal secondary education in Zambia?

Yes No

5. Other problems notwithstanding, is your personal interest in educational broadcasting the primary reason for exploring a system of an expanded educational broadcasting in the formal secondary education system in Zambia?

Yes No

6. Lack of money is the single largest problem in an effective system of educational broadcasting in the formal secondary education system of Zambia.

Yes No Don't Know

7. Lack of administrative support ranks as the single biggest problem in implementing an effective system of an expanded educational broadcasting in the formal secondary education system of Zambia.

Yes No Don't Know

8. Do you believe that the education system of Zambia can provide the required funds to implement an expanded educational broadcasting system?

Yes No Don't Know

9. Do the present methods of teaching in our secondary schools lend themselves to adoption of a system of an expanded educational broadcasting?

Yes No

10. Do you believe that a well-designed system of educational broadcasting would improve learning for students in the formal secondary education system of Zambia?

Yes No

11. Would teachers support a system of an expanded educational broadcasting in the formal secondary system of Zambia?

Yes No

If your answer is No, give reasons

12. Would administrators support a system of an expanded educational broadcasting in the formal secondary education system?

Yes No

If your answer is No, give reasons

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

APPENDIX C

LETTER SENT TO THE PANEL OF EXPERTS IN ZAMBIA

University of Stirling
Dept. of Film & Media Studies/Education
STIRLING, FK9 4LA
Scotland, UK

September, 1986

Dear Sir

I am pursuing studies leading to a doctoral degree here at the University of Stirling in Scotland, UK. The proposed dissertation topic "An Organizational Model Plan for the Application of Expanded Educational Broadcasting Services in the Formal Secondary School Education System of Zambia" is well underway.

The nature of the study requires me to present a draft of the proposed plan to a select panel of educators in Zambia for the purpose of obtaining feedback with which to modify the plan if need be. You have been selected as one of the eight members of the panel because of your experience and position in the education system in Zambia.

The questionnaire is divided into five parts: demographic data, functions of the plan, organization of the plan, personnel and services, and recommendations. You are asked to fill in the questionnaire on demographic data and tick the appropriate responses in the succeeding sections and return them to the Controller, Educational Broadcasting in Lusaka by the end of November 1986.

Please feel free to comment on any aspects of the plan if you wish to do so. The answers you give will only be used as a part of group total in writing a final dissertation. Your help and co-operation are appreciated.

Sincerely yours

Alfred M Kakanda
TS 2595

APPENDIX D

QUESTIONNAIRE (B) TO OBTAIN FEEDBACK TO PROPOSED PLAN

QUESTIONNAIRE (B), to obtain feedback to a plan for educational broadcasting in the formal secondary education system in Zambia.

NOTE: You need not sign your name. The response to this questionnaire does not imply your acceptance or rejection of this plan. Your frank opinion is sought in order to develop a plan which is worthwhile.

1. DEMOGRAPHIC DATA

- (a) Sex M F
- (b) Name of school/institution _____
- (c) Your present position _____
- (d) Your present responsibility:
- Teaching Administration Research
- (e) Your highest academic qualification: _____
- (f) Your experience:
- (i) With present position _____ years
- (ii) Total experience _____ years
- (g) Have you travelled outside Zambia? Yes No
- (h) If you have:
- (i) Which country/countries have you visited?
- _____
- _____
- (ii) For how long? _____
- (iii) The purpose of your visit
- _____
- _____
- _____

II FUNCTIONS OF THE PLAN

The following questions refer to the functions of the proposed plan for an expanded educational broadcasting in the formal secondary education system of Zambia. The plan includes six major functions:

1. Logistics; 2. Production; 3. Design; 4. Utilization;
5. Evaluation; 6. Research and Development.

Each function is separately listed and you are asked to circle the appropriate response for each question.

1. Logistics

- | | | | |
|-----|--|-----|----|
| (a) | Is the concept <u>appropriate</u> at the national level? | Yes | No |
| " | " " provincial level? | Yes | No |
| " | " " district level? | Yes | No |
| " | " " school level? | Yes | No |
| | | | |
| (b) | Is it <u>feasible</u> at the national level? | Yes | No |
| " | " " provincial level? | Yes | No |
| " | " " district level? | Yes | No |
| " | " " school level? | Yes | No |
| | | | |
| (c) | Can it be <u>implemented</u> at the national level? | Yes | No |
| " | " " provincial level? | Yes | No |
| " | " " district level? | Yes | No |
| " | " " school level? | Yes | No |
| | | | |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| " | " " provincial level? | Yes | No |
| " | " " district level? | Yes | No |
| " | " " school level. | Yes | No |
| | | | |
| (e) | Is this function <u>efficient</u> at the national level? | Yes | No |
| " | " " provincial level? | Yes | No |
| " | " " district level? | Yes | No |
| " | " " school level? | Yes | No |

PLEASE READ THE SECTION ON PRODUCTION BEFORE RESPONDING

2. Production

- | | | | |
|-----|---|-----|----|
| (a) | Is this concept <u>appropriate</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (b) | Is it <u>feasible</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (c) | Can it be <u>implemented</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (e) | Is this function <u>efficient</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |

PLEASE READ THE SECTION ON DESIGN BEFORE RESPONDING

3. Design

- | | | | |
|-----|--|-----|----|
| (a) | Is this concept <u>appropriate</u> at national level? | Yes | No |
| (b) | Is this concept <u>feasible</u> at the national level? | Yes | No |
| (c) | Can this function be <u>implemented</u> at the national level? | Yes | No |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| (e) | Is this function <u>efficient</u> at the national level? | Yes | No |

PLEASE READ THE SECTION ON UTILIZATION BEFORE RESPONDING

4. Utilization

- | | | | |
|-----|--|-----|----|
| (a) | Is the concept <u>appropriate</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (b) | Is it <u>feasible</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (c) | Can this function be <u>implemented</u> at national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| (e) | Is the function <u>efficient</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |

PLEASE READ THE SECTION ON EVALUATION BEFORE RESPONDING

5. Evaluation

- | | | | |
|-----|--|-----|----|
| (a) | Is this concept <u>appropriate</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (b) | Is this concept <u>feasible</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (c) | Can this function be <u>implemented</u> at national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (d) | Is the function <u>efficient</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |

PLEASE READ THE SECTION ON RESEARCH & DEVELOPMENT BEFORE RESPONDING

6. Research & Development

- | | | | |
|-----|--|-----|----|
| (a) | Is this concept <u>appropriate</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (b) | Is this concept <u>feasible</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (c) | Can this function be <u>implemented</u> at national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (d) | Is this function <u>desirable</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |
| | | | |
| (e) | Is this function <u>efficient</u> at the national level? | Yes | No |
| " | " provincial level? | Yes | No |
| " | " district level? | Yes | No |
| " | " school level? | Yes | No |

III ORGANIZATION OF THE PLAN

The proposed plan has been organized on the four levels: national; provincial; district and school levels. Please indicate your agreement or disagreement with each level by circling the appropriate response.

1. National

- | | | |
|----------------------------|-----|----|
| (a) Is it appropriate? | Yes | No |
| (b) Is it feasible? | Yes | No |
| (c) Can it be implemented? | Yes | No |
| (d) Is it desirable? | Yes | No |
| (e) Is it efficient? | Yes | No |

2. Provincial

- | | | |
|----------------------------|-----|----|
| (a) Is it appropriate? | Yes | No |
| (b) Is it feasible? | Yes | No |
| (c) Can it be implemented? | Yes | No |
| (d) Is it desirable? | Yes | No |
| (e) Is it efficient? | Yes | No |

3. District

- | | | |
|----------------------------|-----|----|
| (a) Is it appropriate? | Yes | No |
| (b) Is it feasible? | Yes | No |
| (c) Can it be implemented? | Yes | No |
| (d) Is it desirable? | Yes | No |
| (e) Is it efficient? | Yes | No |

4. School

- | | | |
|----------------------------|-----|----|
| (a) Is it appropriate? | Yes | No |
| (b) Is it feasible? | Yes | No |
| (c) Can it be implemented? | Yes | No |
| (d) Is it desirable? | Yes | No |
| (e) Is it efficient? | Yes | No |

IV PERSONNEL AND SERVICES

The following are the major divisions of personnel provided in the plan. Please indicate whether you believe they are adequate for the requirements of the plan by circling the appropriate response.

Administration

- | | | |
|---|-----|----|
| (a) Director, Educational Broadcasting Services? | Yes | No |
| (b) Deputy Director, EBS, | Yes | No |
| (c) Head of seven sections: Radio, TV, Audio-Visual, Evaluation and Utilization, Engineering, Library and Administration? | Yes | No |
| (d) Research co-ordinator? | Yes | No |

Professional Staff

- | | | |
|-------------------------------------|-----|----|
| (a) National media specialist, EBS? | Yes | No |
| (b) Provincial media supervisor? | Yes | No |
| (c) District media specialist? | Yes | No |
| (d) School media co-ordinator? | Yes | No |
| (e) Engineer? | Yes | No |
| (f) Technicians? | Yes | No |
| (g) Media Aides? | Yes | No |
| (h) Radio and TV producers? | Yes | No |
| (i) TV cameramen? | Yes | No |

The following is a list of services for which the staff of the provincial media centre will be responsible. Please indicate () as many services as you consider the centre should provide. Put "A" in the box provided if you agree or "D" if you disagree.

Production/Reproduction of

Graphics

Sound Recording

Photocopying

Other (Specify)

Distribution/Utilization

Radio and TV Sets	<input type="checkbox"/>	Slides	<input type="checkbox"/>
Teachers' Guides and Timetables	<input type="checkbox"/>	Filmstrips	<input type="checkbox"/>
Audio-visual equipment	<input type="checkbox"/>	Other (Specify)	<input type="checkbox"/>

Evaluation

Consultation facilities with school teachers on educational broadcasting	<input type="checkbox"/>
Advice on improvement of radio and TV reception	<input type="checkbox"/>
Advice on selection of radio metre bands	<input type="checkbox"/>
Advice on evaluation academic programmes:	
Student evaluation	<input type="checkbox"/>
Teacher evaluation	<input type="checkbox"/>
Media and materials evaluation	<input type="checkbox"/>
Procurement of some educational broadcasting materials on:	
Purchase	<input type="checkbox"/>
Loan	<input type="checkbox"/>
Rent	<input type="checkbox"/>

V RECOMMENDATIONS

Eight recommendations comprise the plan. Indicate your agreement/disagreement with each by circling the appropriate response. In the event of a negative response to any of the recommendations, give reasons for your response.

Recommendation 1

That curriculum development, now in progress under the Educational Reforms, take into consideration the application of methods of educational broadcasting and other media for reaching goals of formal secondary education:

Do you agree with this recommendation? Yes No

If you disagree, explain reasons:

Recommendation 2

That administrative personnel at the ministerial and provincial headquarters levels be given training in the process of educational broadcasting and other related media by the present personnel at EBS so that they might better understand the implications of the process.

Do you agree with this recommendation? Yes No

If you disagree, explain reasons:

Recommendation 3

That training programmes, both pre-service and in-service, be given priority in manpower planning.

Do you agree with this recommendation? Yes No

If you disagree, explain reasons:

Recommendation 7

That printed materials, overhead transparencies, slides and film-strips be instituted as part of the system of higher education in order to reinforce the educational broadcasts.

Do you agree with this recommendation? Yes No

If you disagree, explain reasons:

Recommendation 8

That careful study be made of the possibilities of integration of all components of an overall educational technology system; namely, teachers, learners, parents, community and educational materials to see in what ways the learning resources can be completely and systematically utilized.

Do you agree with this recommendation? Yes No

If you disagree, explain reasons:

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

APPENDIX E

MODIFIED PLAN

THE PLAN

Based on the evidence of successful utilization of educational broadcasting in developing countries, the researcher believes that the problems of education in Zambia can be greatly alleviated by the expansion of educational broadcasting services. Planning for educational broadcasting is an exercise in co-operation at the National, Provincial, District and School levels, involving media professionals working with administrators, users and community members. The plan is composed of seven sections:

1. Purpose
2. Educational Broadcasting and Educational Goals
3. Zambia: Goals and Problems
4. Organization
5. Personnel
6. Educational Broadcasting Programme
7. Priorities and Further Recommendations

1. PURPOSE

The purpose of this plan is to design a framework for the development of an expanded educational broadcasting service in the formal secondary education system of Zambia. The plan will be concerned with the planning and operation of an expanded educational broadcasting system and its utilization in formal secondary education. Formal education is defined as the system comprising the three-tier education structure of Zambia: Primary, Secondary and Higher education.

2. EDUCATIONAL BROADCASTING AND EDUCATIONAL GOALS

2.1 Definition of Educational Broadcasting

Educational broadcasting as referred to in this plan exhibits the following dominant characteristics:

- (a) its programmes are arranged in series to assist cumulative learning by using radio and TV;
- (b) they are explicitly planned in consultation with external educational advisers;
- (c) they are commonly accompanied by other kinds of learning materials, such as textbooks and study guides, and
- (d) there is some attempt made to evaluate use of the broadcasts by teachers and students.

(Hawkrige and Robinson, 1982: p25)

For developed countries, educational broadcasting for adults is generally a means of making learning an individual process where a person learns at home. Developing countries will see educational broadcasting more as an opportunity to diffuse knowledge to large groups of people and to provide them with skills necessary for development.

2.2 Role in Developing Countries

Educational broadcasting has been tackling diverse problems; among them are: Curriculum reform (El Salvador); teaching methods (Niger); retraining of teachers (Kenya); enrichment purposes (Thailand); low literacy and illiteracy (Ivory Coast); and developing the core curriculum in rural areas (Mexico).

2.3 Role in Zambia

The initial foundation for educational broadcasting has already been laid; curriculum reform within the context of national objectives; retraining of teachers congruent with the national educational reform plan; and specification of behavioural objectives for learning. These three areas can form the basis for a system of expanded educational broadcasting services.

2.4 Current Status of Educational Broadcasting

In addition to curriculum reform and specification of behavioural objectives, work has been progressing on other fronts. The Education for Development plan has advocated the planning of school buildings to facilitate the utilization of the media in classrooms. The present Department of Educational Broadcasting Services has increased not only the number of programmes for schools, but has also increased programmes for adult education classes. Radio broadcasts have been part of the national tradition since World War II and the educational uses of radio since 1965. The coming of independence in 1964 increased the role of radio and its influence was extended to the remote areas of the country and more curriculum related programmes were designed. But there are constraints:

- (a) Lack of personnel, both administrative and technical.
- (b) Scarce financial resources.
- (c) Climatic conditions which create additional maintenance problems with delicate machinery.
- (d) Rising costs.
- (e) Lack of equipment and programme materials.

- (f) Poor management planning
- (g) Lack of widespread citizen participation because of poor information diffusion.
- (h) Infrastructure inadequate to the needs of development.

3. ZAMBIA: GOALS AND PROBLEMS

At the First National Education Conference held in Lusaka in 1969, President Kaunda outlined the national, educational and humanistic goals which represent official policy.

3.1 National Goals

- (a) To make Zambia self-sufficient
- (b) To pursue a commitment to the Humanistic ideals and more particularly to ensure that the people of Zambia own and control the natural resources of the country.
- (c) To provide every Zambian the opportunity to work for and share in the economic well-being of the country and to ensure that there is equality of opportunity in the political, economic and social life of the country.
- (d) To motivate the Zambians to improve their own efforts, and through the Party, the communities in which they live.
- (e) To work for the closest possible association of Zambia with her neighbours in the Southern African Development Co-ordination Conference (SADCC) and the Preferential Trade Area (PTA) states.
- (f) To provide for the organization of skills which prepare young people for self-employment in accordance with their skills and the observed needs of particular communities.

3.2 Education Goals

- (a) To strengthen relations between the various levels of education.

- (b) To make teacher education more relevant to the local needs.
- (c) To foster and promote research in education at the University of Zambia.
- (d) To allocate air-time for the transmission of secondary school programmes relevant to the adult education subjects.
- (e) To establish approved vocational centres for the school-leavers of all ages.

These general educational goals indicate the areas where education might contribute to and reinforce national development. Emphasis on the increase in skills is one example; vocational and technical education is another.

3.3 Humanistic Goals

- (a) The creation of a learning environment which will develop a feeling of self-worth in the individual and promote harmonious interpersonal relationships.
- (b) The inculcation of patterns of human behaviour which support strategies determined for national development.
- (c) The provision of academic training relevant to the wide range of occupational skills necessary for the economic and social development of Zambia.

The attainment of these goals is not inconsistent with the application of the measures of educational broadcasting; indeed, the Educational Reform proposals and recommendations of the Ministry of Education (1977) specifically discuss the possible use of extensive media services in the re-organization of Schools' Broadcasting System (p60).

4. ORGANIZATION

Well-integrated, clear-cut lines of authority and proper co-ordination are needed if the plan is to be effective.

4.1 National Level

Under the present constitution, the government has charge of the direction and control of education through the Ministry of Education which is expected to provide leadership in the area of educational broadcasting as it does in all matters pertaining to education. It is recommended that the Ministry of Education should:

- (a) Plan for an effective programme of an expanded educational broadcasting system based on its resource needs and budgetary considerations.
- (b) Create some effective new lines of authority in the organisation of the administrative staff and professional staff. Two reasons are advanced for this approach: first, the volume of additional work and responsibilities as a consequence of adopting expanded educational media programmes would indicate that new posts and appointments are necessary, and second, because problems often attend the introduction of new measures which might best be tackled through specialised channels as opposed to placing additional burdens on existing ones.

At the present time the Department of Educational Broadcasting Services (EBS) is responsible for Schools' Broadcasts. There are three principal sections engaged in media production, the heads of whom are responsible to the Controller of the Department and, through him, to the Permanent Secretary. These sections are Radio, Television and Audio-Visual Materials Production. It is recommended that an additional service function be established within EBS to provide four important support

services, namely: Evaluation and Utilization, Engineering, Library, and Administration. Each of them should have a Head.

Production

Radio
Television
Audio-Visual Materials

Support Services

Evaluation and Utilization
Engineering
Library
Administration

It is also recommended that the post of Controller be renamed 'Director' and that the Deputy Director post should be created so that the Department is in conformity with other ministerial departments. The Director should report directly to the Permanent Secretary of the Ministry of Education in order to prevent administrative bottlenecks.

In Educational Broadcasting, effective utilization demands a system which, amongst other things, ensures the outward flow of information and support materials from the Department to the points of use. This liaison between the Department and the users is of very great importance. Just as important, however, is the flow of information from the users back to the Department. It is, therefore, essential that this two-way flow of information be established and maintained and that the one-way flow of the broadcasts be supported by liaison between producers and users.

4.2 Provincial (Regional) Level: Media Centre

Educational Broadcasting in a province is best organized when the administrative arrangements are placed within the portfolio of the province concerned. This ensures that resources are deployed in a way which closely relates to the goals of the province. The following recommendations are made to ensure the infrastructure necessary for effective utilization:

(a) In each province there should be appointed at the level of regional inspector of schools, a Full-time Media Supervisor who would have overall responsibility for the utilisation of educational media in his province. The duties of the Provincial Media Supervisor would include:

1. direct liaison with the Department of Educational Broadcasting Services (EBS) on matters of policy affecting the use of media in his province;
2. responsibility for co-ordinating the flow of materials, equipment and information for the whole province;
3. responsibility for liaison with teacher training colleges where appropriate;
4. direct supervision of evaluation of educational broadcasting programmes in the province.

(b) There should be established in each province a Teacher Resource and Development Centre which will act as a base for the Provincial Media Supervisor and the focal point for the storage and distribution of audio-visual aids equipment and materials. More important, it will function as a centre for training, information and production on an appropriate scale. The location of such a centre is likely to vary and there should be consultation with the Chief Education Officer in each case.

Suggested sites include attachments to the Office of the Chief Education Officer or even such institutions as Community Centres. Extra financial provision should be made for the establishment of such centres.

4.3 District Level

Each district should have a Media Specialist who will be responsible to the Provincial Media Supervisor. He, or she, should be skilled and capable of directing the activities of educational media in his/her district. The District Media Specialist will be under the administrative hierarchy of the District Education Officer, but he or she should be

able to initiate such action as he or she considers in harmony with the district situation. He or she should have responsibility for ensuring that the outward flow of timetables, teachers' guides, radio and TV sets, support materials and other information reaches all schools on schedule and that the inward flow of comments, requests, suggestions and questionnaires is channelled to the provincial office.

4.4 School Level

In each school a teacher should be appointed to have specific responsibility for the use of audio-visual media and be given the title of School Media Co-ordinator.

Arrangements should be made to ensure that there is no deterrent effect on the enthusiasm of the teachers concerned by their having to accept responsibility by signature for the items of materials and equipment supplied.

These School Media Co-ordinators should be given adequate training to enable them to undertake their duties, which will include:

1. responsibility for the care and operation of the audio-visual equipment (including radio and television sets) and materials in the school;
2. responsibility for informing his or her Provincial Media Supervisor, through the District Media Specialist, of breakdowns of equipment and storage of materials;
3. responsibility for ensuring prompt arrival and distribution to his or her colleagues of teachers' guides and other materials;
4. ensuring that copies of the timetables of the school broadcasts are received and displayed

5. ensuring that such questionnaires and requests for information related to media use sent to the school for completion by his colleagues and himself or herself are given prompt and regular attention.

Evaluation of the educational broadcasting programmes is the concern of the Headmaster, the District Media Specialist, the Provincial Media Supervisor and members of the Evaluation and Utilization Section at EBS. Each of the four will bring to the evaluation differing viewpoints. The Headmaster will want to know if the broadcast programmes have succeeded in meeting the objectives of the school and the expectation and interests of the learners. The Provincial Media Supervisor will want to know if the programmes have responded to the provincial objectives. The District Media Specialist will want to ascertain the quality of the programmes, and the extent to which they have attained their own stated objectives and his or her personal objectives.

4.5 Relationships with Other Ministries

The success of an expanded Educational Broadcasting Service in reaching and influencing the widest possible audience in formal secondary education, will depend, in large measure, on the kind and degree of co-operation that exists between the Ministry of Education and other development ministries and agencies both in Lusaka and in the field. Pooling of resources and expertise will be essential if radio and television programmes of the right quality and in the right number are to reach the schools and to be utilized effectively and if the services of EBS in production and training are to be fully and economically harnessed.

The recommendations made in the following paragraphs are designed to make the most effective use of the services that the expanded EBS can offer, provided that its human and financial resources are strengthened.

1. The constitution and the organization of the EBS should be such as to ensure representation of all users of its services at the policy level.
2. In the planning and production of programmes there should be the closest personal collaboration between the representatives of the various agencies responsible for programme content, e.g. scriptwriters and producers in the EBS.
3. Effective procedures should be established for the continuing evaluation of programmes. The research facilities of the University should contribute to this end.
4. The professional services of the Provincial Media Supervisor should be available to those using the programmes in their work in non-formal as well as in formal education.
5. There should be close co-ordination between the EBS and the various agencies in the production of media materials.
6. The existing "Memorandum of Understanding" signed by representatives of the Ministry of Education, the Posts and Telecommunications Corporation and Zambia Broadcasting Services (ZBS) which covers details of air time, costs and programme content should be retained.
7. The co-operation which exists at present at the operational, technical and training levels among EBS, ZBS and Zambia Institute of Mass Communication (ZANCOM) should be strengthened.

4.6 Relationship to Existing Organizations

The organization framework of the proposed plan does not disturb existing arrangements in the education system. The plan emphasises the smooth and orderly flow of communications at both administrative and professional levels between the Permanent Secretary (or Minister) of Education and the personnel responsible for educational broadcasting at these levels.

In this way information would be available for education policy-makers at the national level. It is not anticipated that the organizational arrangements for educational broadcasting will create any dislocation in the education system. The functions created for new personnel are related to and are part of the existing organizational arrangements.

5. PERSONNEL; POSITIONS AND JOB SPECIFICATIONS

New positions will have to be created in order to accommodate the job that needs to be done. Personnel who uphold and support the educational broadcasting plan include professional staff and support staff.

5.1 National Level

- (a) It is recommended that a Director be in overall charge of Educational Broadcasting Services. Responsible to the Director would be Heads of seven Sections suggested earlier in 4.1.
- (b) It is recommended that a Deputy Director for Educational Broadcasting Services be appointed. Responsible to him will be nine Provincial Media Supervisors, District Media Specialists, all School Media Co-ordinators, technical personnel of the Material Production Unit responsible for graphics and photography and all radio and TV producers and evaluators.
- (c) Producer. Additional radio and TV producers should be appointed in phase with the expansion of radio and TV services. In operational terms television and radio production staff will largely be interchangeable, with some of the producers on either side responsible for directing TV programmes and floor management.
- (d) Media Specialist. A Media Specialist at the national level will have academic training in media and education, and competency in at least one area of educational broadcasting. Ideally, it would be advantageous to have two areas of competency. Management and production are the recommended skills because both are in short supply. Specialists should have been exposed

to a year's training beyond the OCE 'O' level certificate in an institute of higher learning abroad.

- (e) Engineer. An engineer will have to be appointed to head the Engineering Section. He will be in charge of technicians responsible for radio, television and audio-visual maintenance. Television and radio studio maintenance will be his responsibility also. Only those who hold a BSc degree in engineering and have not less than two years' working experience in studio maintenance should be considered for the job.
- (f) Technician. A technician will be skilled in a number of fields including operation and maintenance of radio and television equipment, photographic production and graphics production. Because of limitations on numbers of personnel, selection of technicians should be with an eye to flexibility of functions. As the programmes of educational broadcasting expand, so will the need for more specialised technicians in the above-mentioned areas, and also for support staff such as TV cameramen, studio operators, vision mixer and lighting and sound technicians.
- (g) Media Aides. A Media Aide will perform tasks as designated by the media professionals. These tasks include, among others, clerical duties.

Personnel at the national level are expected to promote effective professional practices at the provincial and district levels. Likewise provinces and districts can call on national services to strengthen their development. Also, personnel at the national level are expected to exert leadership in maintaining programmes at the provincial and district levels to a high degree of efficiency and effectiveness.

5.2 Provincial (Regional) Centre

- (a) Provincial Media Supervisor. The Provincial Media Supervisor should be a graduate of educational technology, should be an

administrator, educator, and should possess the ability to apply educational media to the teaching and learning problems of the country.

- (b) Staff. Staff working under the direction of the Provincial Media Supervisor should be on the basis of function and responsibility. These functions take into account utilization, processing, purchasing and storage.

5.3 District Media Programmes

- (a) District Media Specialist. A university graduate who has had a year's training in educational media should be responsible for the administration of the district with regard to schools' broadcast programmes. He should be a media specialist who has extensive knowledge of media and education.
- (b) Staff. Staffing needs will be influenced by the number of schools, students and teachers in each district. It is, however, desirable to employ adequate technical and clerical staff to support the work of the Media Specialist wherever possible. Each district, therefore, will have the following personnel: One Media Specialist, one Maintenance Technician and two Media Aides.

5.4 Training Requirements

Both pre-service and in-service training programmes will have to be instituted in the plan for educational media. But data gathering procedures will be required to determine the amount of training needed. Data might be gathered by means of questionnaires, interviews with teachers, and other relevant sections of the Ministry of Education. The analysis of data would indicate as to how many teachers require in-service training. In-service training can make a stimulating contribution to better utilization of upgrading performance of teachers within the education system. Such teacher training requires:

- (a) Clear understanding of child psychology.
- (b) Knowledge of media characteristics.
- (c) Evaluation of teaching and learning processes.
- (d) Ability to operate applicable equipment and machines, such as radios and television sets.

5.5 General Recommendations on Training

- (a) Each Teacher Training College in the country should establish a course in the use of media and communication and have a member of staff specifically trained and responsible for this course. Each college should be provided with the necessary equipment and materials for this training and have a close and direct link with the Head of Evaluation and Utilization at the Department of Educational Broadcasting Services as well as the Provincial Media Supervisor.
- (b) For the firm establishment and extension of a national system of utilization of educational broadcasting media a series of in-service training and familiarisation courses should be initiated.
 - 1. The Head of Evaluation and Utilization should undertake a study tour to observe the organisation and management of similar activities in countries where such systems are established.
 - 2. The Evaluation and Utilization Section of EBS should provide familiarisation courses for:
 - Chief Education Officers
 - District Education Officers
 - Inspectors of Schools
 - Staff of Teacher Training Colleges
 - 3. The Provincial Media Supervisors should provide familiarisation courses in the teacher resource and development centres and elsewhere for:
 - District Education Officers
 - District Inspectors of Schools
 - School Media Co-ordinators
 - Headmasters

4. All existing and proposed teacher up-grading courses should include a component concerned with utilization of educational broadcasting.

6. EDUCATIONAL BROADCASTING PROGRAMMES

6.1 Determination of Needs

There is a lack of training resources of the kind just mentioned. Traditionally, teaching has emphasised subject matter and content of various disciplines, and teachers in training have not been systematically exposed to educational media.

Fundamentally, the teacher in a formal education system needs:

- (a) To know what materials for use are available
- (b) Knowledge of how to obtain materials
- (c) Information about the quality of materials, their content, and their value
- (d) Technical support for the media he or she elects to use.

These services are quite limited and because of this the following alternative means are recommended to promote utilization of media:

- (a) Application of pre-service training in education and educational media to further enhance teaching competencies.
- (b) Provision of in-service training in short courses and seminars as stated in 5.5.
- (c) Provision of consultative services for teachers and education personnel.

6.2 Personnel level

- (a) Persons should be employed who have diverse talents which can be utilized over more than one area, for example, personnel in research and development who can carry out evaluation.

- (b) Persons who are adaptable to new situations and who have good interpersonal relations should be selected wherever possible for positions in educational broadcasting.
- (c) Greater time should be concentrated on those teachers who are ready, willing and able to utilize media. Their example might encourage others to do likewise.
- (d) A system of reward should be established such as promotion or reduced teaching load.

6.3 Administrative Level

Each provincial media centre should be autonomous and should be in charge of its own budget; that is, it should have a free hand in the administration of finances allotted to it by the government. In this way the media centre would provide services to the province by reducing cumbersome interdepartmental administration.

7. PRIORITIES AND FURTHER RECOMMENDATIONS

7.1 Priorities

- (a) The first priority is the training of personnel to carry out some of the innovations in this plan. Energetic efforts must be made to recruit and train them.
- (b) The second priority is curriculum development, involving continued work on streamlining educational objectives and evaluation.

7.2 Further Recommendations

- (a) It is recommended that radio transmission together with printed materials be the predominant system of distribution for secondary

schools. Three reasons support this recommendation: (i) the growing demand for secondary school places cannot be satisfied by traditional means and radio is readily available; (ii) there has been a tradition of educational broadcasting and the expansion of radio based on research to meet the secondary demand would pose no difficulty; (iii) radio has been apparently successful in this respect in Mexico, Ghana, Thailand and India.

- (b) School broadcasting should be given its own transmission channel as is the case in Zimbabwe.
- (c) ETV programmes should be extended to secondary schools. This is because television, among other reasons for this recommendation, heightens the motivations of students and also makes available to the classroom teacher resources that often would otherwise lie beyond his or her reach.
- (d) In order to make the television operation more cost-effective, the emphasis at the present time should be on improvement and consolidation in the existing transmission areas rather than on extending the geographical coverage. In order for this plan to be implemented effectively, personnel must perform certain functions. These are logistics, production, design, utilization, evaluation, research and development.
- (e) Logistics involves the storage, acquisition, maintenance and management of the media. The following recommendations are made:
 - (i) National level. That processing, including ordering of all major items (such as radios and television sets) and distribution should remain the responsibility of EBS. Due to the size of the country, the distances to be covered and the nature of the terrain, production and distribution of support materials must be thoroughly planned and organized on schedule.
 - (ii) Provincial level. That the Provincial Media Supervisor of the media centre assume the responsibility of this distribution function in the interest of efficiency. Also, provincial media centres should be supported by adequate transport facilities for pick-up and delivery of materials from the districts to media centres.

- (ii) Provincial level. That the Provincial Media Supervisor of the media centre assume the responsibility of this distribution function in the interest of efficiency. Also, provincial media centres should be supported by adequate transport facilities for pick-up and delivery of materials from the districts to media centres.
- (iii) District level. The District Media Specialist should try to ensure prompt delivery and distribution of radios, TV sets and other support materials to schools within his or her administration. He or she should also encourage teachers to seek out skills which aid their ability to select and use media.
- (iv) School level. The Headmaster and his or her School Media Co-ordinator should develop a system whereby materials and other equipment would move freely around the school.
- (f) Production is concerned with the development of specialized products which carry out the specifications of the design. The following recommendations are made:

- (i) National level. It is, at present, agreed that materials in the Audio-Visual Aids Section of EBS is at an exceptionally low ebb after the fruitful activity of the first years of its existence. This is the result of numerous problems relating to equipment, spares and lack of training. The Section, therefore, should be given financial upgrading in order to enable it to provide and extend support services for broadcasts. At the request of the producers, this Section should provide charts, posters, pictures, models, film strips and 16mm film, both silent and sound, in sufficient quantities. Personnel and staff requirements will be affected by increased services.
- (ii) Provincial level. It is recommended that:
- The production services provide leadership for those working at the district level and complement their production output.
 - That communication between the provincial media centre and the district centre be encouraged in order to share production and programming ideas.
 - A still photography unit to develop and process black and white prints and slides, for radio vision programmes, be set up.
- (iii) District level. It is recommended that production be less complex and sophisticated than either at the national or provincial levels.
- (iv) School level. Production should stress only that which is peculiar to a particular school; for example, hand

drawings, charts and display kits which are pertinent and relate to groups of students.

(g) Design is the application of theory and empirical evidence about learners, media and technique to the requirements of instruction. It is recommended that:

- (i) This function exist only at the national level because it will involve a cross-section of personnel based at EBS and the Ministry Headquarters.
- (ii) A media specialist initiate a plan design strategy, formulate objectives, establish priorities, select alternatives, evaluate materials. Duties associated with this function should be shared among the staff of EBS.
- (iii) A media specialist in charge of this function be an individual trained in education and educational methods. He or she should be flexible with regard to changes in the learning situation since a variety of personnel of diverse backgrounds will be involved - teacher, curriculum specialist, learner and administrator.

(h) Utilization is the engagement of the media for the purpose of bringing about change in the learner.

(i) National level. It is recommended that:

- Seminars be instituted to promote maximum interest in and concern for the behavioural processes involved in communication and learning; knowledge of media characteristics and capacities; ability to evaluate and conduct or participate in media utilization; familiarity with appropriate materials and their sources; command of necessary manipulative skills.
- The design of buildings be such that the equipment is protected from theft by means of proper secure storage facilities.
- Support materials are designed to be an integral part of the use of media. This should be emphasized in all courses of training in utilization.

(ii) Provincial level. It is recommended that the Provincial Media Centre Supervisor of each centre should ensure that the support materials reach the District Media Specialist in time for subsequent distribution and use by schools in his or her district.

(iii) District level. It is recommended that the District Inspector of Schools and the District Media Specialist should work hand in hand to ensure the proper use of educational media.

(iv) School level. It is recommended that:

- Sufficient electric power should be provided particularly in rural areas to cover equipment usage.
- Every school should be provided with timetables, schedules and information on using and tuning receivers.

(i) Evaluation assesses the attainment of objectives and information which can be used for making later decisions about the conduct of operations and the engagement of media instruction. The establishment and operation of effective evaluation procedures is a prime requisite of media systems which are essentially one-way carriers of information.

The basic purposes of evaluation systems are:

- (a) to provide short-term feedback to the producer to enable modifications to be made to subsequent programmes;
- (b) to provide long-term feedback about the educational effectiveness of a series of programmes in particular and the use of media in general;
- (c) to provide information about trends, attitudes, reception habits of target audience.

(i) National level. It is recommended that:

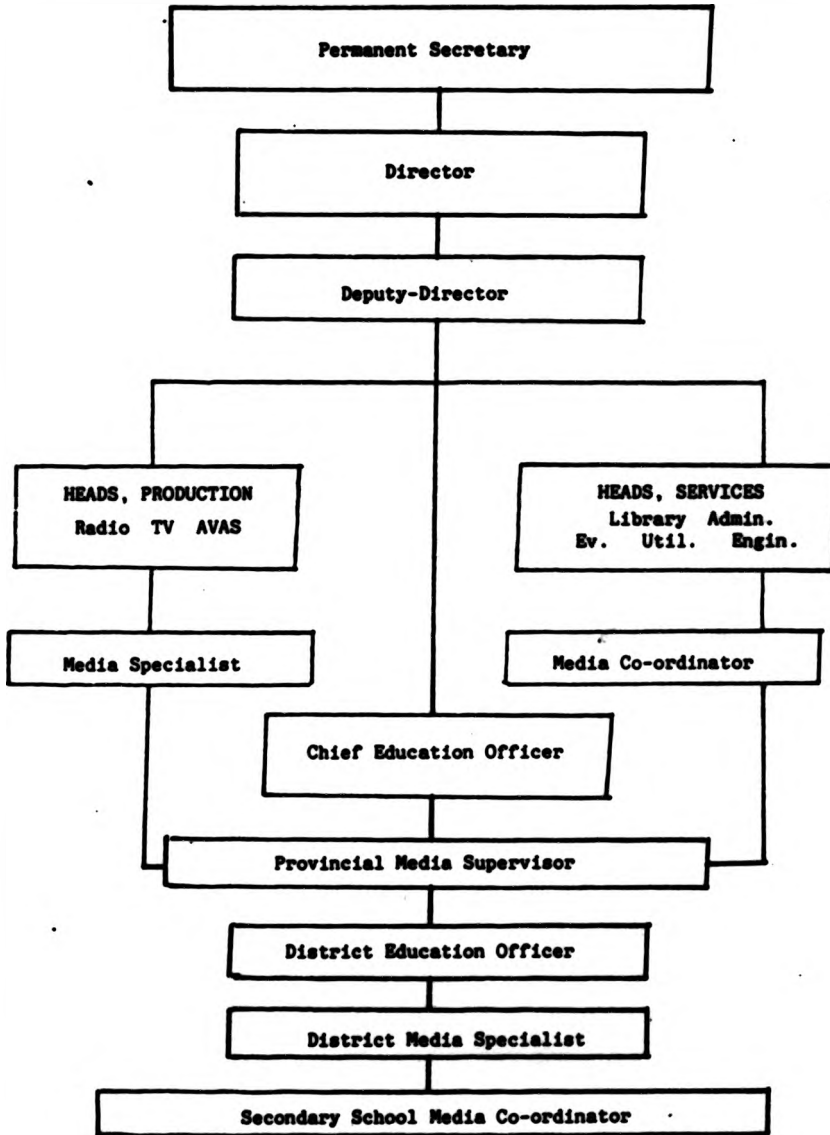
- A sustained programme of visits to schools using the broadcasts by personnel experienced in evaluation techniques or equipped with pre-prepared questions should be developed.
- Personnel responsible for the national evaluation of programmes will be the staff of the Evaluation and Utilization Section of EBS together with the Provincial Media Supervisors, the District Media Specialists and Inspectors of Schools.
- Regular checks be instituted to determine both the fidelity of listening and whether lesson plans are being carried out.

(ii) Provincial level. It is recommended that:

- The Provincial Media Supervisors together with the Regional Inspector of Schools be the pivot of evaluation procedures in the province.
- Heads of Audio-Visual Aids departments in all the provincial Teacher Training Colleges should be co-opted in the evaluation of educational media programmes.

- (iii) District level. The District Specialists and the District Inspectors of Schools should be part of the evaluation team.
- (iv) School level. It is recommended that:
- The concerns of the school evaluation programme should be to determine: numbers within the schools affected by educational broadcasting; participation level of teachers and learners and the accomplishment of educational broadcasting in the schools.
 - All affected schools should be obliged to make returns. There should be continuing evaluation of student achievement.
- (j) Research and Development involves the testing of theory which contributes to educational broadcasting and the development of validated media products. It is recommended that at the:
- (i) National level. A co-ordinator be appointed to administer and co-ordinate research interests between the University of Zambia, the Teachers' Colleges and the Offices of the Chief Education Officers. In addition to working in harmony with administrators in schools the co-ordinator will encourage participation at all levels in research.
- (ii) Provincial level. It is recommended that the provincial Media Supervisor should draw up research priorities which might assist in the activities of both the provincial media centre, the districts and the schools.
- (iii) At the District and School levels. research interests are the concern of the Provincial Media Supervisor who receives input from the District Media Specialists, and the School Media Co-ordinators.

Figure 7 shows the proposed EBS Organizational structure.



6.1
FIGURE 7 The Proposed EBS Organizational Structure